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CAXTON HOUSE, WESTMINSTER

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July 1, 1908. Volume 29. No. 699.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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"Is it Art?"

Much has been written concerning art in general and sculpture in particular, since the "Evening Standard" drew attention to the altogether unconventional and daring treatment of the figures used in the adornment of the new building of the British Medical Association in the Strand. We confess that when our contemporary's criticism first appeared we thought, in common no doubt with many others, that the attack made on the statues was merely one of the nature of those periodical outbursts of puritanical wrath against the employment of the nude in art to which we have grown accustomed, and with which we have not the slightest sympathy. But, after a careful inspection of the works in question, we feel bound to return an emphatic negative to the question propounded by the "Evening Standard," viz., "Is it Art?" For not only are some of the much-debated figures vulgar—not to say revolting in treatment (and Art is *never* either the one or the other), but even if they were all works of art it would be quite impossible for them, owing to the unsuitability of the architectural treatment of the niches in which they are placed, to adequately fulfil the purpose for which, presumably, they are intended, namely, that of adding to the æsthetic appearance of the building. We are sorry to notice that while, in the course of the controversy regarding these statues, much has been said relative to their inartistic appearance, no one has thought it necessary to refer, in terms of equal condemnation, to the character of the architecture of the building on which the statues are placed. But perhaps the majority of our art critics have yet to learn that architecture is the most important of the fine arts, and, consequently, that it is quite as necessary to provide city thoroughfares with beautiful buildings as to insist that any sculpture with which our street architecture may be embellished shall be artistic in its treatment and free from all objectionable elements.

The Gifts of the Drapers' Company.

By the recent grant of £22,000 for a new electrical laboratory to be attached to the University museum at Oxford, the Drapers' Company has given another proof that the objects for which the company was founded are still recognised by the court in the disposition of its funds. Among other valuable gifts made by the Drapers' Company, the following may be mentioned, namely, £30,000 to the University of London, to promote the incorporation of University College, £7,000 per annum to the People's Palace (to which institution it has otherwise granted various sums of money amounting in the aggregate to about £130,000), and £800 a year towards the foundation of the recently-established School of Agriculture at Cambridge. The Company has also provided the University of Oxford with its Radcliffe Memorial Buildings, whilst to the Poplar Hospital (to which it makes an annual subscription of £1,000) it has presented the necessary funds for the extension of the building.

A Note on Persian Architecture.

The troubles in Teheran have, it appears, involved the destruction of two fine buildings—the Parliament House, and one of the finest mosques in the city. Persian architecture would be peculiarly interesting if only because of its strongly marked national character. "In Persia," an authority on the subject has observed, "as perhaps nowhere else except in China, the art of architecture has been actively practised by natives, in their own way, without interruptions, from the sixth century B.C. down to our own day, borrowing freely, at times, from other styles, but never without a pronounced character, which is easily recognised." So strong is this persistency of type, that probably, in the inevitable exchange of architectural ideas that occurred after the Arab conquest, the Arabs got far more than they gave. Hence it happens that the most interesting remains of the first period (641-1221) of Persian architecture—a number of tombs, dating perhaps from the tenth century—are found, not in Persia, but near Bagdad, yet are nevertheless clearly Persian and not Arabic in style. The second of these periods into which Persian architecture is divided, begins with the conquest by Jenghis Khan in 1221, and ends with the accession of the Sefi dynasty in 1499. It is to the third period, of course, that the existing buildings mostly belong. Under Shah Abbas I. (1557-1628), who, besides being the greatest of modern Persian rulers, was one of the greatest of the world's builders, there was an extraordinary revival of architectural activity—the traditions of the past were developed into a distinctive style, which found expression in a large number and variety of splendid buildings, in which, although many European artists assisted in producing them, there is no trace of Italian or classic influence in the style; but Western ideas seem to be observable in the planning. The Sefi dynasty was ended by the Afghans in 1696, and there was no further architectural revival of importance until the beginning of the nineteenth century, when the Shah Feti Ali built several palaces and mosques that, while showing less purity of taste and altogether less nobility of character than the buildings of the Sefi period, are still magnificent. They include the celebrated Mirror Palace at Ispahan, the great mosque at Koum, and the Kasr-i-Khadjar Palace at Teheran. Characteristic details of Persian architecture are the arch resembling that of the Tudor period; the ingeniously executed brickwork vaulting; the peculiar "stalactite" vaults; and the many-coloured ceramic tiles that are used for exterior decoration instead of mouldings, which are rarely seen. The buildings that have just been destroyed were both erected about fifty years ago, by Hussein Khan. The mosque contained mosaic work of remarkable interest.

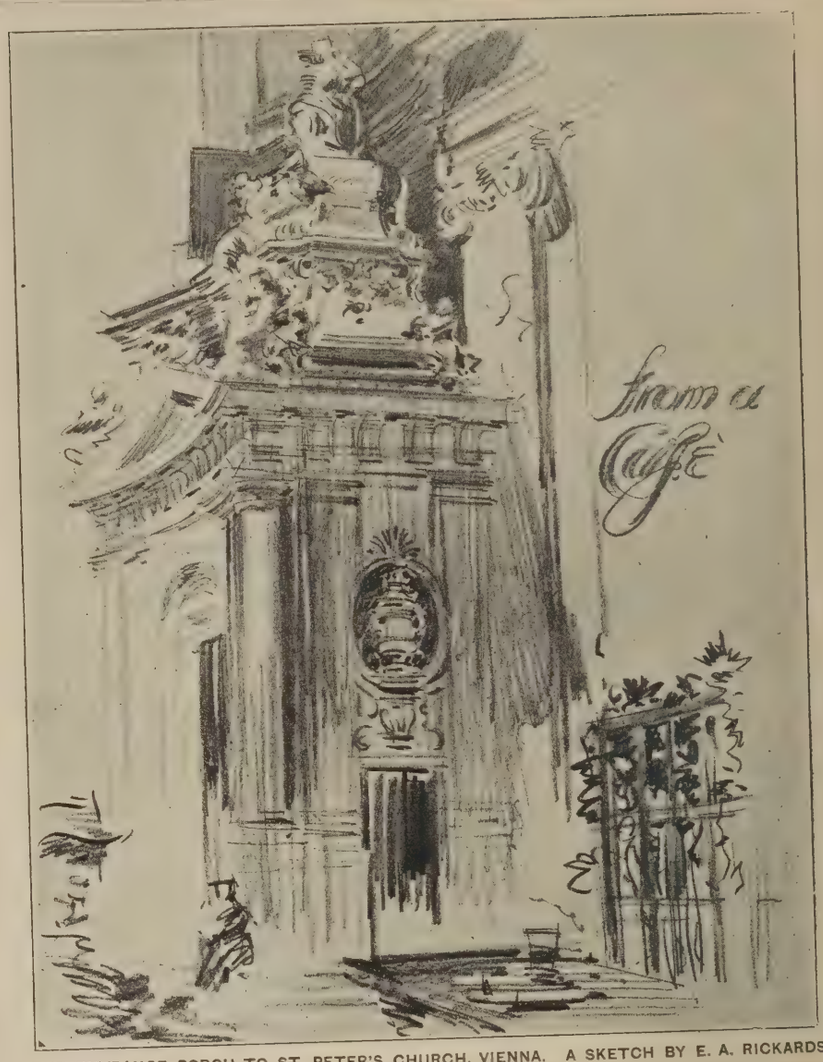
Haddon Hall Americanized.

The Society for the Protection of Ancient Buildings should be watchfully jealous of enterprising and wealthy Americans who are showing a disposition to deprive the Society of its reason for existence. This end they would achieve by buying up all our ancient buildings and deporting them across the Atlantic. What they would do with them when they got them is probably a syndicate secret. Possibly they might re-erect them and run trips to them; or it is just conceivable that they might dispose of them piecemeal to the keen relic hunters of the country. In this connection we may refer to the statement made in public by the Duke of Rutland recently to the effect that he has been "approached by a syndicate from that extremely pushful country, America, who had offered to remove Haddon Hall, stone by stone, and replace it in America, just as it now stood." The duke did not indicate the character of his reply; and beyond employing the somewhat injurious word "pushful"

(which, however, those to whom he applied it will probably regard as a compliment), he did not say anything in condemnation of the project. Perhaps he unburdened his mind in private, and was only restrained from repeating the operation in public by the awkward consideration that the transference from Attica to Bloomsbury of the Elgin marbles, which were mostly wrenched from the walls of the Parthenon at the instigation of a British ambassador, may afford us the physical means, but not the moral right, to throw stones at the vandals of other nations. Still, the Duke's revelation can certainly be classed as an item of useful knowledge; and, in the circumstances, it is reassuring to read, in the Parliamentary reports, that Mr. Asquith, replying to a question in the House last Wednesday, said that he had received several communications asking for the appointment of a Royal Commission on Historical Monuments in England, and there seemed to him to be an equally strong case with regard to Scotland and Wales. Judging from the trend of events, it may yet become necessary to pass an Act for the Prevention of the Exportation of Historical Buildings!

The Shakespeare Memorial.

At a meeting of the General Committee of what has come to be known as the "Portland Place" promoters of the movement to erect a memorial worthy of our national poet, it was decided to adopt the report of their executive, which recommended that the "two general committees (*i.e.*, those in favour of the erection of a statue and those who support the scheme for a National Theatre) as they stand at present shall be amalgamated, and that an executive committee shall be elected from the general committee thus formed." But although there now appears to be a reasonable prospect that the two monuments will merge into one scheme for the establishment of a National Memorial Theatre, it is notable that the "Portland Place" committee has only consented to the amalgamation on condition that the National Theatre shall take the form of a "building which shall be a symbol of the world's tribute to Shakespeare"—whatever that may mean. Meanwhile, as the "Daily Chronicle" points out, the problem of the Shakespeare Memorial has been satisfactorily solved, "at least for the many North London residents who haunt it on Sunday mornings and week-day evenings," by the formation, in a portion of the beautiful grounds of Waterloo Park, Highgate, of a garden of "blossoming herbs and plants redolent of the spirit of Shakespeare." Here, enclosed by a screen of old trees, without a trace of artificial culture or planning to spoil the whole, and set in quaint box borders, are many of the old-fashioned flowers and herbs that Shakespeare loved and mentions in his works. And Waterlow Park is sufficiently rich in historical associations to make it a fitting surrounding for such a garden, although it is now difficult to imagine that its gravel paths and grass lawns have been traced on what was formerly the hunting and hawking ground of Henry VIII. A small brass tablet alone marks the site of the former cottage of Andrew Marvell, the colleague of John Milton in 1657, in the Secretaryship for Foreign Affairs; but there is a fine old house still existent in Waterlow Park which formerly belonged to Lord Lauderdale, and it was here he was visited by Pepys, who duly records the fact in the famous Diary which has thrown so much sidelight upon the Court of Charles II. Here, too, for a time, lived Nell Gwyn, for whom the King purchased the house from Lord Lauderdale.



THE ENTRANCE PORCH TO ST. PETER'S CHURCH, VIENNA. A SKETCH BY E. A. RICKARDS.

The New Hotels and Theatres of London.

If the popularity and general prosperity of the Metropolis may be safely gauged by the ever-increasing number of its new hotels and theatres, London would appear to be in a very flourishing condition, for during the past twelve years the hotel accommodation has been more than doubled, either by the enlargement of existing establishments, or by the erection of new buildings. This increased accommodation may be summarised as follows: The Savoy (extension), the Cecil (extension), the Ritz, the Carlton, the Hotel Russell, the Piccadilly, the Waldorf, Princes Restaurant, the Kenilworth, the Trocadero Restaurant, the Gaiety, St. Ermin's Hotel, the Royal Palace Hotel, Kensington, the Imperial Hotel, and the Tudor, Oxford Street. There has been a corresponding increase in the number of theatres, as within the period named the following have either been erected or rebuilt on a more elaborate scale: the Aldwych, the Apollo, the Coliseum, the Coronet, the Gaiety, the Hippodrome, His Majesty's, Hicks', the New, the Pavilion, the Queen's, the Playhouse, the Scala, the Kingsway, Wyndham's, and the Waldorf. It is much to be regretted that of the buildings scheduled in the above list, only the Waldorf and the Ritz hotels add materially to the architectural beauty of the streets in which they are placed.

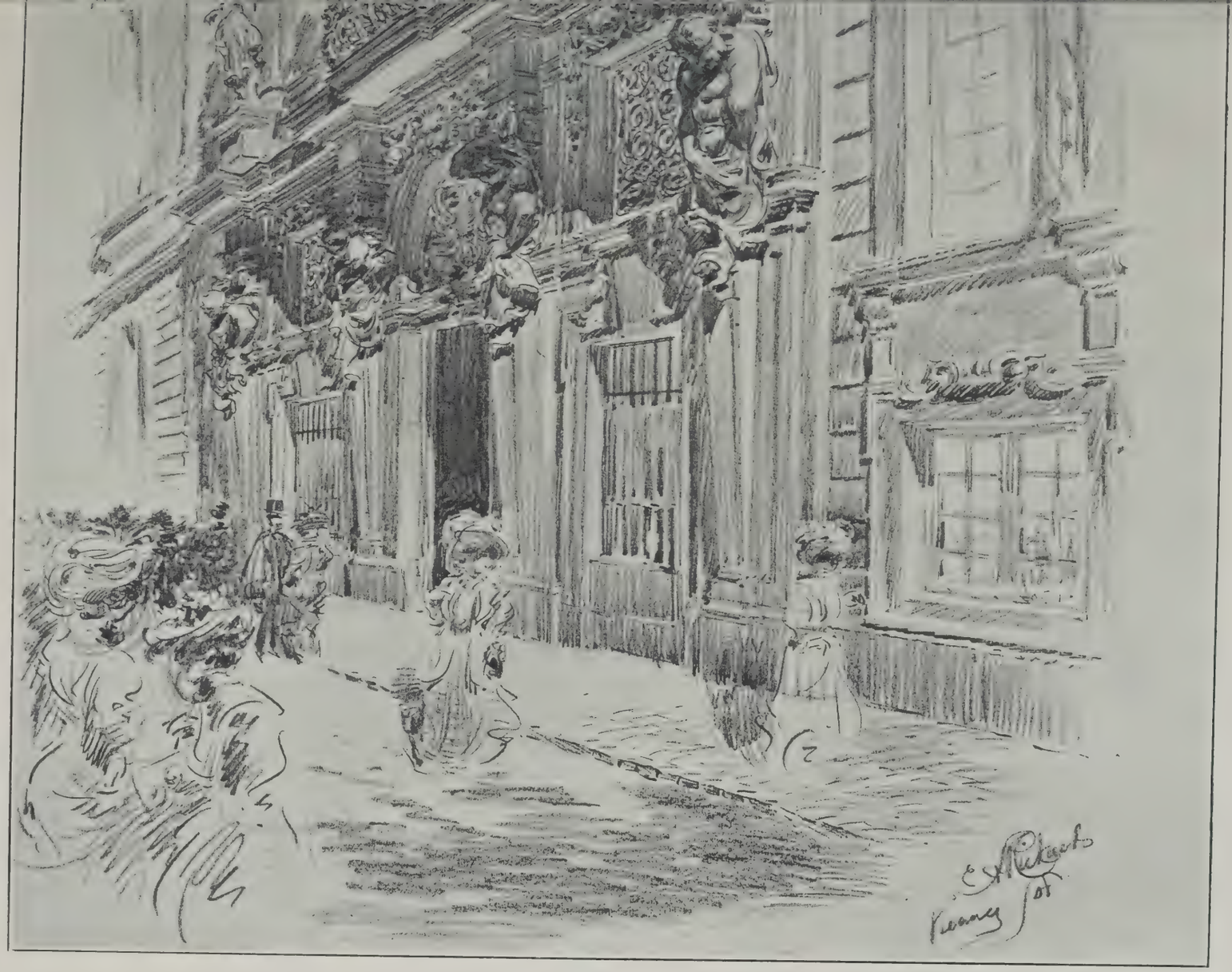
The Architects' Technical Bureau.

We understand that the Catalogue and General Information Department of the Architects' Technical Bureau has been opened, and that an "up-to-date" index of manufacturers' catalogues is now in course of completion, to enable any information required by subscribers to be immediately supplied. Numbers of enquiries relative to the cost of the materials and specialities of various firms are received daily, and the replies, consisting of the pamphlets or loose pages of the various manufacturers' catalogues, which have been filed for this purpose, are despatched to the Bureau's subscribers with the utmost promptitude. To save time and trouble, subscribing architects have been provided with a small packet of enquiry cards, one of which can be readily filled in and posted to the secretary of the Bureau when information is required.

CHANGE OF ADDRESS.—Mr. W. H Ansell, A.R.I.B.A., is moving his office from 18, Guildford Street, Russell Square W.C., to 10, New Square, Lincoln's Inn W.C. (Telephone: 3,730, Central.)

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THE MINISTRY OF THE INTERIOR, VIENNA: A SKETCH OF THE MAIN ENTRANCE, BY E. A. RICKARDS.

SOME IMPRESSIONS OF VIENNA.—II.

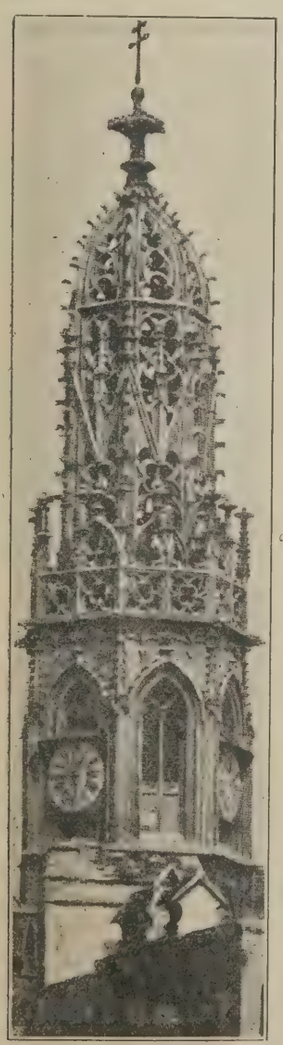
By Alfred W. S. Cross and E. A. Rickards.

(Continued from p. 521, No. 698.)

The Cathedral of St. Stephen.

In the heart of the narrow and irregular streets of the inner city stands the cathedral of St. Stephen—the most imposing of the few mediæval buildings still to be seen in Vienna. It dates, in its present form, chiefly from the 14th and 15th centuries, but it possesses a few remains of the earlier structure, of which the Riesentor, or Giants' doorway (embellished with Romanesque sculpture) of the west façade has been much mutilated by the insertion, in the 14th century, of the large window placed immediately above it, but the two towers known as the Heidentürme (heathen towers) still retain many Romanesque features. In 1340 the original polygonal choir and other portions of the church were destroyed, to make way for the erection of the present nave and aisles. The south tower, nearly 450ft. in height, dating from 1359-1433, was built in 1860-1864 to replace the former tower (which was in a dangerous condition), whilst the still unfinished north tower received its upper stage in 1579.

The huge interior, 354ft. long and 105ft. broad, is insufficiently lighted, and, consequently, presents a rather gloomy appearance. But the richness of the 15th-century nave vaulting (which is supported by massive pillars adorned with more than 100 statues), the marble high altar, the side chapels and monuments, the numerous baroque altars, and the brilliant colour of some old stained glass, all serve to improve its appearance, and to render it of great interest to the architect.



THE TOWER OF THE CHURCH OF MARIA AM GESTADE.



THE CHURCH OF ST. PETER.

Maria am Gestade.

The 14th and 15th century church of Maria-Stiegen (*Maria am Gestade*) consists of a narrow and lofty nave, without aisles. Its late 15th-century heptagonal tower, 195ft. in height, is terminated by a delicately-carved open-work turret.

The Spinnerin-am-Kreuz.

Another interesting example of 14th-century architecture is the ancient memorial cross, 65ft. high, which stands in the Triester-Strasse, and is known as the Spinnerin-am-Kreuz. But whether the conclusion be based upon the evidence afforded by these few examples of the work of mediæval builders, to which we have briefly alluded, or upon that presented by the designs of modern architects, there can be no doubt that Gothic art, at its best, is not worthily represented in any building, ancient or modern, in Vienna. Indeed, of the many styles of architecture observable in that city, the baroque is the one alone whose full significance appears to have been realised and properly appreciated by Viennese architects. Within a few minutes' walk of St. Stephen's, there is to be seen, in the neighbouring church of St. Peter, a fine example of that style as it was understood by one of its earliest exponents in Vienna—the great architect Fischer von Erlach.

The Church of St. Peter.

The oval plan of this building is expressed, quite consistently, by a large, similarly shaped dome, and the varying contours of its walling, formed by the juxtaposition of convex, concave and straight surfaces very skilfully treated at their intersections, unite in producing an effect that is extremely picturesque and attractive. The west wall, which is slightly curved on plan, and thus forms a suitable seating for the domed porch, is flanked by well-designed twin towers. The leaden figures of the richly ornamented porch roof are by Kohl. The south front has recently been embellished by the insertion of a large panel, with figures in relief by R. Weyr, the subject being "Charlemagne in the Ostmark." The interior of the church has a finely painted ceiling (by Rottmayr and Bibbiena), and some beautiful altar-pieces.

The Hofburg.

At the south extremity of the Kohlmarkt, facing the Michaeler-Platz, is the Hofburg—the residence, since the 13th century, of the Imperial family. It consists of an extensive irregular group of buildings, of various epochs and styles, enclosing several courtyards. The north block, known as the Reichskanzlei-Palast, was erected in 1728, after the designs of Fischer von Erlach, to whom Vienna owes so many fine examples of 18th century art, including the recently completed (1890-1893) curved north-east facade, which was carried out by Ferd. Kirschner, in accordance with the plans left by the original architect of the palace. The scholarly architectural treatment of this portion of the buildings at once arrests attention. The façade



THE "SPINNERIN AM KREUZ."



THE HOFBURG: ENTRANCE DOORWAY ON INNER FACADE OF REICHSKANZLEI-PALAST.

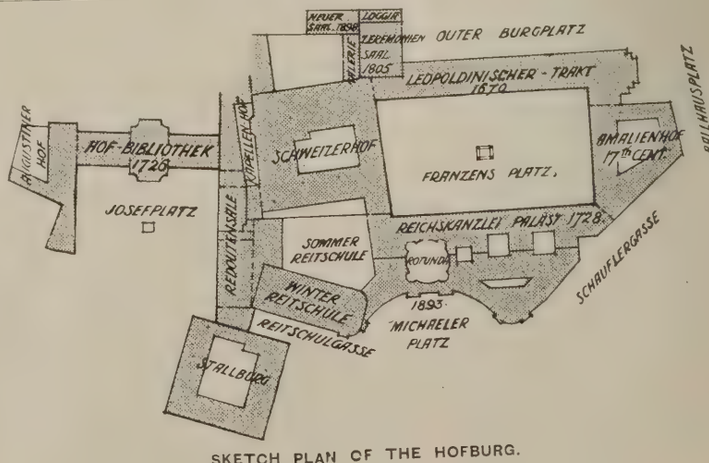
consists of a stately structure four storeys in height, of which the two lower ones are rusticated, and the upper ones grouped together by columns and pilasters supporting an unbroken entablature. The central portion is emphasised by a square projection, enclosing the large central archway which forms the main carriage drive. Over it is the following inscription:—"Franciscus Josephus I. vetus platatii opus a Carolo VI. inchoatum, a Maria Theresia et Josepho II. continuatum perfecit, A.D. MDCCCXCIII." Above is a freely treated attic pediment enriched with sculptured groups of Justice, Wisdom, and Strength, and immediately behind rises the graceful outline of the plainly treated done. The flank walls, circular on plan, are terminated by smaller domes springing from square projections, which also serve as stops to the concave wall surfaces of the main portions of the façade. Centrally placed in rustic niches, formed in the convex portions of the flank walls, are some wonderfully conceived and executed colossal fountain groups sculptured in white marble, that to the east (or left) symbolising Naval Power (R. Weyer, 1895), and that to the west (or right) Military Power (E. Hellmer, 1896). If any other evidence were not forthcoming (and this is by no means the case), these two great efforts of modern artists would, in themselves, be amply sufficient to prove the fact that in Vienna the sculptor's art still exists at its best, and that the methods and traditions of old-time masters, such as Raphael Donner (1693-1741), said to be the first Viennese sculptor of any great eminence, of J. W. Beyer (1725-1806), of Hagenauer (1732-1810), of Fischer (1740-1820), and of Franz Zauner (1746-1822), are being continued with surprising success by men of our own time. For not only do the great epics in marble which adorn the Michaeler-Platz exhibit immense power of design, but their wonderful modelling displays an amount of anatomical knowledge that is usually only to be found, to a similar extent, in the products of the mighty genius of Michel Angelo and other great masters of the Italian Renaissance.

In addition to the two large fountains, four Hercules groups, similar in scale to the older groups in the Franzens-Platz, and representing the Fight with the Hydra (H. von. Aspernburg), the Rescue of Hesione (Joh. Scherpe), the Deliverance of Prometheus (Jos. Lax), and the Fight with Cerberus (A. P. Wagner), are placed on either side of the central archway, where they form a most effective contrast with the plain and massive rustications of the adjoining wall surface.

The large Rotunda, which connects the Michaeler-Platz with the Innere-Burghof, or Franzens-Platz, has a finely treated plaster domed ceiling, and is appropriately decorated with reliefs and large allegorical figures set in niches. The inner courtyard (the Franzens-Platz), architecturally one of the most attractive of the many places of interest to be found in Vienna, is surrounded on four sides by extremely picturesque groups of buildings of various periods of design. In the centre stands the bronze monument of Francis I., of which the inscription consists of an extract from the Emperor's will, namely: *Amorem meum populis meis.*

The inner façade of the Reichskanzlei-Palast, designed by Fischer von Erlach, was completed in 1728. Of the window openings of its five storeys, two are contained in the rusticated lower portion of the structure, two are grouped together within the vertical limits of the pilastered order with which the front is embellished, and those of the fifth storey are placed in the deep frieze of the main entablature. The entrances from the Franzens-Platz are adorned by four Hercules groups (by Matthielli), representing Antaeus, Busiris, the Nemean Lion, and the Cretan Bull.

Opposite the Reichskanzlei-Palast, and occupying the south-west side of the Franzens-Platz, is the Leopoldinische-Trakt, built by Leopold I. in 1670, containing the State apartments of His Majesty, including the splendid "Rittersaal," once occupied by Maria Theresa and Joseph II., and the military office of the Emperor.



SKETCH PLAN OF THE HOFBURG.

Adjoining the Franzens-Platz, on the north-west side, is the Amalienhof, erected at the end of the 17th century, containing the crown equerry department. A passage in the south-east corner of the Franzens-Platz, conspicuous by coloured and gilded armorial bearings, leads across the drawbridge to the 16th-century Schweizerhof, the oldest part of the Burg now left, and near it is the Burgkapelle, of which the end of the choir is the only relic of the original Gothic building of 1449. In the left-hand corner of the Schweizerhof is the entrance to the Schatzkammer (Imperial Treasury), containing the family treasures of the house of Hapsburg, and consisting of some finely panelled rooms of the 18th century.



THE HOFBURG (OR IMPERIAL PALACE), VIENNA: FACADE TO THE MICHAELER-PLATZ. FISCHER VON ERLACH, ARCHITECT.

On the right, the Augustine corridor leads to the Josefs-Platz and the Augustine Church. The Josefs-Platz is adorned with an equestrian statue of the Emperor Joseph II., and contains on its north-east side the *Palais Pallavacini*, erected in 1784, noticeable for the colossal double caryatides placed at the principal entrance, and on the north-west side the Redoutensäle, or ball-rooms, and the Winter Riding School, designed by Fischer von Erlach. The Stallburg, which dates from 1529, is connected with the Hofburg by an arcade, and provides the requisite accommodation for the military officials.

The Imperial Library, occupying the south-west side of the Josefs-Platz, is another of the numerous Viennese buildings which owe their being to the creative genius of Fischer von Erlach. Erected in 1722, its richly decorated great hall, 255ft. by 54ft., contains statues of Charles VI. and other princes of the house of Hapsburg, and its fine dome is embellished with frescoes by Daniel Gran. This library is said to contain 800,000 volumes, including 7,000 *incunabula* (among which are the only complete copy of the Psalter of Fust and Schöffer (1457), Gutenberg's 42-line Bible, and some books printed by Caxton and Wynken de Worde, 24,000 manuscripts, 400,000 engravings, and the celebrated papyrus of the Archduke Rainer, consisting of a large collection of documents, in ten languages, discovered in 1877 in the Fayûm in Egypt.

The new wing of the Hofburg, designed in the Renaissance style by G. Semper, under whose scheme it was originally proposed to erect a corresponding building on the outer Burg-Platz skirting the Volksgarten, consists of a four storeyed structure with a long curved frontage, flanked by square wings. The building is divided vertically into two almost equal parts, the lower of which is heavily rusticated, and the upper treated as an open colonnade with coupled columns supporting a balustraded entablature. It is most unfortunate that the continuity of this fine design should have been destroyed, to the great detriment of the composition, by the introduction of the central projecting part, which not only ruins the effect of the sweeping lines of the colonnade, but is, in itself, so much out of scale with the surrounding portions of the front that the main entablature of the structure has had to be broken to obtain the necessary height for the larger order employed in this the central feature of the elevation design. This violation of one of the first rules of classical architecture is a great blot on what would otherwise be a very successful effort of design.

The Old University Building.

The old building, erected in 1755, which stands in the small Universitäts-Platz, formerly formed part of the University, but it is now occupied by the Academy of Sciences. It is a finely designed symmetrical structure, containing two storeys and an attic, and the composition of the front façade, which consists of slightly projecting pedimented wings adorned with pilasters and a recessed central portion forming an open arcaded loggia at the first floor-level, is clever and attractive. In the lower storey, which is rusticated throughout, the central circular-headed opening forms the principal entrance doorway; the two adjoining openings are filled in with windows, and in the corresponding circular-headed arch-

ways in the wings there are some exceedingly well-designed mural fountains enriched with sculptured groups of boys and dolphins. Above the loggia the attic storey is set back to the line of the recessed wall below it, the entablature in front being completed by iron balustrading, broken by groups of statuary. The central portion of the attic is carried up to sustain a well-designed coat-of-arms surmounted by the Imperial crown, and supported by eagles, beneath which is an inscription recording the fact that the building was erected by Francis I. and Maria Theresa in 1753.

Adjoining this most interesting and beautifully designed structure is the University Church, a very early and rather crude example of the baroque style.

Platz-am-Hof.

The Platz-am-Hof, formerly the site of the old castle of the ducal house of Babenberg, is the largest and most interesting square in the interior of the city. Here there are many buildings of architectural and historical interest, including the Civic Arsenal, built in 1562, but having a façade of 1732, and the Church-am-Hof, formerly belonging to the Jesuits, the front of which dates from 1662. The Column of the Virgin, erected by Leopold I. in 1667, and the equestrian statue of Field-Marshal Radetzky by Zumbusch), stand in the centre of this square.

The Ministry of the Interior and the Old Rathaus.

Placed between the small Juden-Platz and the Wipplinger-Strasse is the attractive building now used for the purposes of the Ministry of the Interior, which was formerly the Bohemian Hofkanzlei. It was erected in 1716, after the designs of Fischer von Erlach, and immediately fronting it, on the opposite side of the street, is the old Rathaus, or Magistrats-Gebäude, of which the street front dates from 1706. In the internal courtyard of the last-named building is the charming mural fountain, by Donner, with its well-known relief of Perseus and Andromeda.



THE KARLSKIRCHE. FISCHER VON ERLACH, ARCHITECT.



THE OLD UNIVERSITY (NOW THE ACADEMY OF SCIENCES).

In the front façades of these two examples of early 18th-century architecture (for in the back and side elevations there is some very objectionable rococo work) all the essential elements of the best phase of the baroque style may be seen and studied, and it is apparent that their designer has directed his efforts to the attainment of something more than the usual stately architectural effect resulting from the application, in a scholarly manner, of well-worn mouldings and enrichments culled from the best period of the Italian Renaissance. But his determination to disregard precedent in the arrangement and treatment of the details themselves has led to no general distortion of the orders and their attributes—to no attempt to destroy the pristine beauty of proportion and outline in which they were handed down to later architects by their old-time originators—to no effort to disturb the regularity and continuity of the main entablatures. In other words, it is clear that the architect did not strive to simulate originality by the production of burlesque imitations of the works of ancient artists. And yet, whilst in the general simplicity of their "setting-out" and proportions these buildings are architecturally as correctly arranged as a Greek temple, whilst the contours of their mouldings do not vary, to any appreciable extent, from those of their Italian prototypes, they undoubtedly *appear* to be remarkably free from the limitations imposed by architectural conventionalisation and pedantry. For this reason there can be no doubt that their æsthetic success is due to that happy combination, so rarely met with among modern architects, of scholarship and genius.



THE RATHAUS.

The Karlskirche.

This well-known building, which, with its lofty copper dome and twin belfries, modelled on Trajan's column at Rome, forms a conspicuous landmark on the Karls-Platz, was erected in 1716-36. Although it presents many features of striking originality, it is not, on the whole, one of the best examples of the work of Fischer von Erlach. Its plan bears a considerable general resemblance to the smaller church of St. Peter, already described.

The Rathaus.

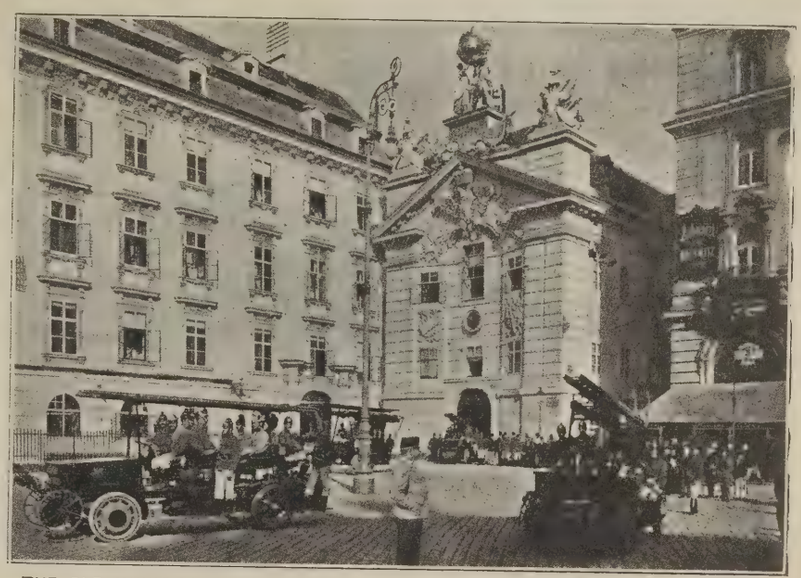
The Rathaus, or Town Hall, an imposing late Gothic structure, profusely decorated with statues, and reminiscent, at least in its outline, of some well-known civic buildings in Belgium, was erected in 1873-83 after the designs of the Viennese architect, Fried Schmidt, whose statue, by Ed. von Hofmann, was placed in the gardens in the rear of the Rathaus in 1896. The lofty tower, 320ft. in height, is enriched with reliefs of Francis Joseph I., Rudolph of Hapsburg and Duke Rudolf ("the Founder"). The plan, which is very symmetrically arranged, has a large central arcaded quadrangle and six smaller courtyards, and the magistrates' court, the council chamber (adorned with frescoes by Ludw. Mayer), the "Volkshalle," the two main staircases of marble, the reception hall, and many other rooms possess attractive and interesting features of design.

Imperial Museums.

The Imperial Museums, two large Italian Renaissance buildings exactly corresponding in design—each having a central dome and slight wing projection—are placed on the east and west sides of the Maria-Theresien-Platz in the Burg Ring. These structures were erected in 1872-89 to contain the natural history (W) and the art history (E) collections belonging to the Imperial family, but they are not very successful examples of the architectural powers of their designers, Semper and Hasenauer.

The Houses of Parliament.

In the imposing Reichstats-Gebäude, or Houses of Parliament, built in 1883 after the designs of Hansen, the Chamber of Deputies and the Upper House form practically two independent buildings connected by a magnificent central hall,

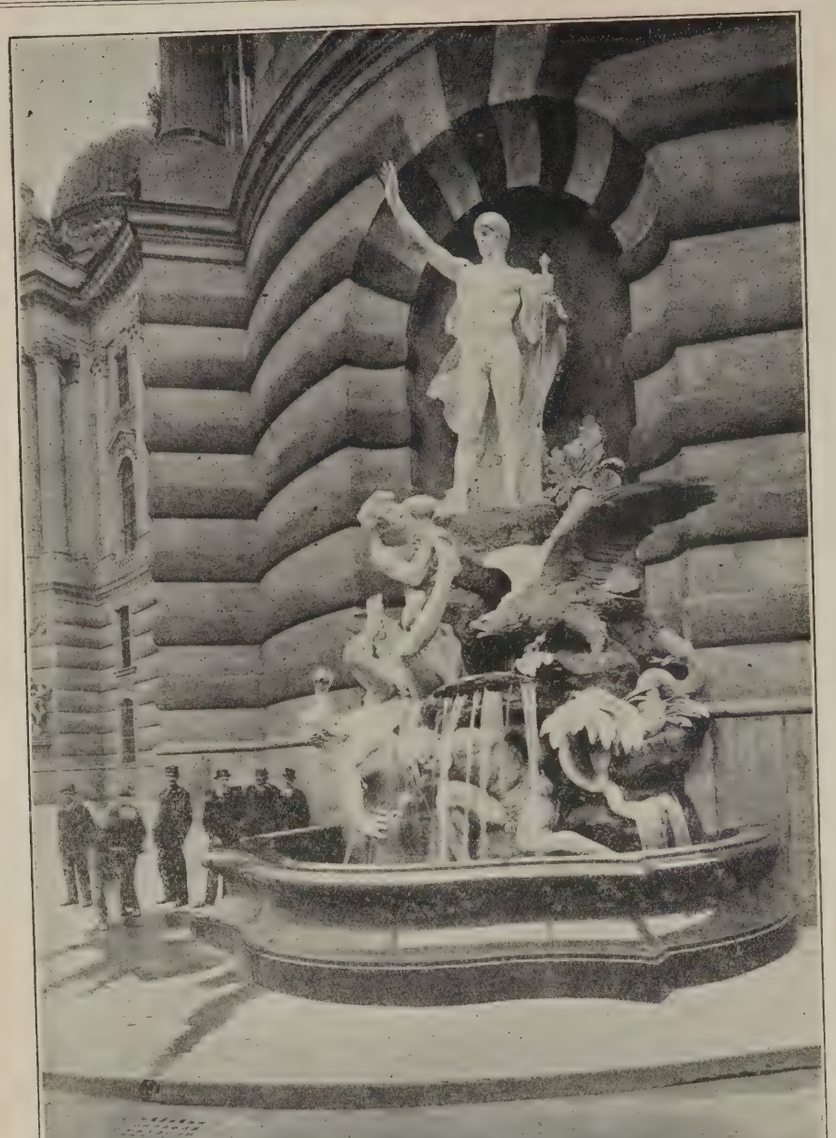


THE OLD MUNICIPAL ARMOURY (NOW THE CENTRAL DEPOT OF THE FIRE BRIGADE).



THE HOUSES OF PARLIAMENT.

about 135ft. long and 75ft. wide, which is enriched with 24 monolithic marble columns and a fresco frieze representing historical events. The central feature of the façade consists of an octastyle portico, raised one storey in height above the ground level, and approached by cleverly devised winding roadways placed round the lofty Minerva fountain, which has a colossal statue of Pallas Athene, by Kundmann, and female allegorical figures and groups of children by H. Hardtl, R. Weyr, and J. Tautenhayn. The roadway approaches are flanked by bronze groups of horse-tamers by Jos. Lax, and are further embellished with statues of eight Greek and Roman historians—to the left Xenophon, Thucydides, Herodotus, and Polybius; to the right, Sallust, Julius Cæsar, Livy, and Tacitus. But, although extremely well detailed in the Greek style, and, in itself, presenting a very scholarly and pleasing appearance, yet this fine portico entrance is entirely out of scale with the two-wing buildings it is intended to unite. And this unfortunate want of scale is quite unnecessarily emphasised by the repetition in the wing



THE HOFBURG: MONUMENTAL FOUNTAIN REPRESENTING "MILITARY POWER." E. HELLMER, SCULPTOR.

buildings of the same (Corinthian) order designed to a much smaller scale—a fatal mistake which no Greek artist could possibly have made.

The Opera House.

The Imperial Opera House occupies an isolated site bounded on the south by the Opera-Ring. Its plan possesses many admirable features, such as the spacious front and side colonnades and the numerous and well-arranged staircases. Externally, although the design is marred by the introduction of three-centred arches over the ground floor openings, it is, on the whole, a fine example of the early Renaissance style of architecture.

The Hofburg Theatre.

Opposite the Rathaus, on the east side of the King-Strasse, is the Hofburg-Theatre, completed in 1889, after the designs of Semper and Hasenauer. The building possesses much originality, and is admirably planned, but, like some other examples of Semper's work, it is spoilt, as an architectural monument, by a want of proportion in the scale of some of the orders employed—as, for example, in the wing buildings containing the grand staircases—which do not harmonise with those of the central feature of the façade.

(To be concluded.)

SURVEYORS' INSTITUTION EXAMINATIONS.—In connection with these examinations, Mr. H. Stanton Webber, F.S.I., building and quantity surveyor, of 47, Queen Street, Maidenhead, gives tuition by correspondence. At the Professional examinations of the Institution held in March last, more than two-thirds of the pupils coached by Mr. Webber were successful in passing.

"A REASONABLE POLICY FOR PROTECTING ANCIENT BUILDINGS" was the subject of a paper read by Sir John Stirling Maxwell before last week's meeting of the Society for the Protection of Ancient Buildings. Sir John outlined a scheme for the creation of a central monument commission for each of the three kingdoms (with £20,000 a year to administer for England, and the other kingdoms in proportion), and monument commissions for each county in addition.

Law Cases.

CLAIM IN RESPECT OF A HEATING INSTALLATION.—In the High Court of Justice, King's Bench Division, on Saturday last, Mr. Edward Pollock, one of the Official Referees, gave judgment in the case of *Edward Parker Milne* v. *Frank Arthur and Henry Arthur*, trading as Frederick Arthur. The claim was for £390 3s. for providing, fixing, and installing a boiler, heating apparatus, and hot water service at Barrow Hills, Virginia Water, and it was resisted on the ground that the installation was unsatisfactory. Defendants counterclaimed the sum of £655 7s. 11d., the cost of rendering the installation efficient. The reply to the counterclaim was that plaintiff, who had been always ready and willing to fulfil the terms of his contract by making good any fault or failure notified within twelve months of completion, had not been afforded a reasonable opportunity of fulfilling these conditions, another firm having been called in within a few days of the final testing of the apparatus. The trial lasted eighteen days, and the Official Referee, in delivering judgment, said it appeared to him that the inefficiency of the system did not arise, as the plaintiff contended, from some defects in the brickwork flue. Judgment would therefore be given for the defendants on the claim; judgment on the counter-claim to be deferred for ten days in order to give the parties an opportunity of coming to terms.

AN ALDWYCH THEATRE SITE CLAIM.—In the King's Bench Division, before Mr. Justice Channell, on June 24th, Mr. Wm. George Robert Sprague, theatrical architect, sued Mr. Murray Carson, actor and dramatic author, for £2,006 for professional services, which included the procuring of a site for a theatre (now occupied by the Aldwych Theatre), and the preparation of plans for the proposed building. Defendant pleaded that the work was of a speculative character, and denied there was a promise to pay unless a certain sum of money was raised.—Plaintiff stated that Mr. Carson, as far back as 1902, asked him to find a good site for a theatre. He introduced defendant to the surveyors of the Duke of Bedford's estate, and finally defendant agreed to take the Aldwych site for £3,500 per annum. Witness prepared plans for a theatre, but the project was abandoned.—In cross-examination, witness denied the suggestion that Mr. Seymour Hicks had bought the plans for the building of his theatre.—Defendant said plaintiff told him there was to be an hotel built in Aldwych, and that the site was also suitable for a theatre. Witness gave no instructions to find a site, but he said he should like to have a theatre, and if an attractive scheme was prepared he could probably raise £9,000 amongst his personal friends. He however, failed to raise the money, and he told the plaintiff so.—Mr. Low: Did you promise to pay £500 on account?—The effect of what I said was that if I got the money I would let him have a cheque, but I made no promise to pay £500.—Eventually it was arranged that there should be judgment for the plaintiff on terms agreed upon between the parties.—His Lordship: I think that is very satisfactory. It is quite obvious plaintiff is entitled to a substantial sum. and it is equally obvious whatever his legal rights are, he ought to make an abatement to the defendant.

IN PARLIAMENT.

(By our Press Gallery Representative.)

The Borstal System.

In the House of Commons last week, Mr. Ernest Lamb asked the Home Secretary whether convict labour was competing with, and to some extent displacing, free labour in the construction of the new prison at Borstal; and, if so, whether he would take any steps to remedy this state of things.

Mr. Gladstone replied :—"No, sir. There is no such competition or displacement. One new wing of the prison will be built entirely by outside labour. On the others, one of which is now being commenced, the labour of the inmates will be utilised as far as possible. It is the traditional and accepted policy of the Department to utilise prison labour for building purposes whenever it is practicable to do so. To deprive prisoners of this work would be to take away from them the opportunity of useful employment and trade instruction which, in accordance with the prison rules, must be provided for them as far as possible. This rule applies with special force to Borstal, where young prisoners are sent expressly for such practical training. The special treatment known as the 'Borstal System' would not exist at all if such training could not be given."

An M.P.'s Joke.

Mr. Watson Rutherford, the Liverpool member, who has been watching closely the First Commissioner's designs upon Delahay Street and the Institution of Civil Engineers in Great George Street, which are about to be demolished under the Public Offices extension scheme, has, in his waggish way, put down the following question with regard to the Trafalgar Square works :—"To ask the First Commissioner of Works, what is the object or utility of the three parallel tunnels now in course of construction at the proposed entrance to the park from Trafalgar Square; what is the length of each tunnel and the width; whether artificial light is proposed to be used in each tunnel; whether the centre tunnel is intended to be a reserved tunnel, and, if so, under what conditions; who is responsible for the design, and what style of architecture, if any, it is supposed to be; whether the buildings will eventually take the form of a semi-circus on each side; what is the estimated total cost of buildings constituting the circus and the tunnels; what the buildings are proposed to be used for; and whether he would be willing to give reasonable notice to Parliament before undertaking any works of a similar type."

Mr. Harcourt may be expected to deal with the question in a humorous and pointed manner.

Historical Monuments.

Mr. Horniman asked the Prime Minister whether he had received any letters or petitions asking for the appointment of a Royal Commission for England and Wales, such as that recently appointed for Scotland, to prepare a list of ancient and historical monuments and constructions; whether he could give the names of the more important bodies which had so approached him; and whether he would recommend that such a Royal Commission be now appointed.

Mr. Asquith, in reply, stated that he had received communications on the subject mentioned in the question from the Royal Historical Society, the Society for the Protection of Ancient Buildings, the Society of Architects, the Royal Institute of British Architects, and the Photographic Survey of Warwickshire, and he was considering the representations made by these bodies.

The Law Courts Extension.

Mr. Harcourt, in the recent debates in Committee of Supply, and in reply to questions, has intimated the determination of the Office of Works to build the Law Courts extension upon the garden ground lying to the west of the existing buildings, stating at the same time that the ground was always intended to be used for this purpose. A good many members have expressed their regret at the clearing away of the open space, and Mr. Alden asked the First Commissioner whether he would consider the question of appointing a Select Committee to enquire into the existing accommodation of the Law Courts, with a view to ascertaining how far a rearrangement of courts and rooms might be made which would obviate the necessity of building upon the existing garden and open space.

Mr. Harcourt in reply said : I regret that I am unable to adopt the proposal of my honourable friend. The question of accommodation has been considered very fully with the judicial authorities, and no rearrangement such as he suggests is possible.

VULCANITE ROOFING.

This well-known roofing material is being more and more used as its excellent qualities come to be appreciated. Despite the imitations which have been put on the market, "Vulcanite" is extensively adopted not only as a covering for wooden roofs (for which it was first chiefly used), but also in place of asphalt for roofs of steel and concrete construction; the reason being that "Vulcanite" will not fracture by reason of settlement, vibration of machinery, or heavy traffic, or the expansion and contraction of steel and concrete. We understand that the manufacturers—Vulcanite, Ltd., of 118, Cannon Street, London, E.C. —have had an exceedingly good year; among the work executed by them being the new Humber works at Coventry, where about 15,000 super. yards of "Vulcanite" have been laid; while a still larger contract, namely, the roofing of new works of the Wallpaper Manufacturers, Ltd., at Greenhithe, requiring approximately 20,000 super. yards, is now being executed by them.

BRITISH v. FOREIGN GRANITE.

At the recent annual general meeting of the United Kingdom Granite and Whinstone Quarrymasters' Association, held in Glasgow, attention was directed to the use of foreign setts, kerb, and channel for street and road work, the Association strongly expressing the view that the home quarry owners have a distinct grievance in respect that a number of public bodies throughout the Kingdom, when inviting tenders for setts, kerb and channel, specify that the material to be used shall be either Norwegian, Swedish, or other foreign stone. They feel that by such a stipulation they, as British quarry owners, are practically shut out from competing. Reference was also made to the large quantity of stone which would be required in the execution of the naval base at Rosyth, and the Association agreed to make every endeavour to secure that the stone to be used should be of British production. The question of workmen's compensation insurance and the exorbitant premiums demanded by insurance companies was also discussed, and it was remitted to the committee of the Association to consider the whole matter, and report to a further general meeting. Mr. H. J. Grace, of the Enderby and Stoney Stanton Granite Co., Leicester, was appointed president of the Association for the ensuing year, and Mr. John Faill, of Messrs. A. and J. Faill, Glasgow, vice-president. The retiring members of committee were re-elected, and a special vote of thanks was accorded to Mr. Cousin for his services as president during the past year.

THE CONDITION OF THE BUILDING TRADE.

The condition of the building trade was very truly recorded at the recent meeting of the shareholders of Messrs. Spencer, Santo and Co., Ltd., when the chairman (Mr. H. W. R. Crowle) remarked upon the reluctance of building owners to embark upon new ventures, so that fresh speculations and contract work, especially of a profitable nature, have been exceedingly scarce during the past year or two; and this scarcity of work has meant keen competition for all kinds of public undertakings. So great, indeed, has been the anxiety to obtain business that in many instances works have been undertaken at prices which cannot by any means show profit to the contractor. Mr. Crowle said his company had appreciated the keenness of this competition and had considered it advisable to extend the area of their operations. They had, therefore, opened a building department at Yarmouth, and had succeeded in obtaining a very fair share of the work in that neighbourhood, and this extension in the provinces was a policy which they proposed to continue as suitable opportunities occurred. The new public offices at Westminster, which had been in course of erection by the company during the past six years, had now been practically completed.

Notes and News.

FIRST AID AND NATIONAL DEFENCE.—An ambulance corps and a rifle club have just been started by the employees of the Saxon and Norman Cement Companies at Cambridge.

* * *

A MEMORIAL TABLET to the late Rev. W. J. Scarlin was unveiled last week in St. Anne's Church, Stanley, Liverpool. The tablet, which is placed in the choir, is cast in bronze, and was executed by the Rea Metal Casements, Ltd., of Knowsley Works, Stanley, Liverpool.

* * *

A ROOF PLAYGROUND is a noteworthy feature of the new St. Clement Danes Schools, in Drury Lane, W.C. The accommodation is for 114 infants, 116 boys and 116 girls. Mr. C. W. Reeves was the architect.

* * *

THE REPAIRS TO BARRINGTON COURT, near Ilminster, which, as a beautiful example of domestic architecture of the Tudor period, has been acquired by the National Trust, have been chiefly directed to the strengthening of the roof. The ends of forty-one tie beams and principal rafters which had been built into the walls without space for ventilation, and consequently rotted away, have been repaired and strengthened. One point requiring serious and immediate attention arises from the very limited projection of the eaves and the absence of any guttering to carry off rainwater. This has long collected at the foot of the walls,

to which the consequent damp has done much damage. It is proposed to fix lead heads and down pipes on the front of the house and iron guttering at the back, and some of the lead valleys are not watertight and require renewal. In addition to this work, much remains that it is desirable to do, such as the renewal of floors, or the opening and glazing of some of the many bricked-up windows, and it is hoped that some of this work may be undertaken.

* * *

STATUE OF THE KING FOR OXFORD.—A movement is on foot to erect a statue to the King at Oxford. The site suggested is a piece of ground belonging to St. John's College in St. Giles's.

* * *

THE "FOUR D'S" OF THE TYPICAL SLUM as enumerated by Dr. Arthur Shadwell in a discussion on housing at the Pan-Anglican Congress are dirt, darkness, damp, and dilapidation. The specification is neat, but defective.

* * *

THE STATE PROVISION OF SANATORIA is advocated by the Grimsby Guardians, who are circularising other Boards with a view to the organisation of a united appeal for legislation on these lines.

* * *

THE RECONSTRUCTED BRITISH URALITE CO., LTD., is, we are informed, in course of registration, and is resuming business at 16, St. Helen's Place, London, E.C., where full information may be obtained concerning the firm's fire-resisting building slabs for walls, roofs, and partitions. We wish the new company every success in its enterprise.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Regulations as to Theatres and Music Halls

SIDCUP.—W. writes: "(a) What are the usual powers of the Lord Chamberlain in licensing theatres? (b) What is the official difference between a theatre and a music-hall? (c) What are the requirements of the Lord Chamberlain for the prevention of fire in such buildings apart from those in the London County Council area? These latter, which were published in the BUILDERS' JOURNAL recently, decidedly savour of those of the L.C.C."

In reply to enquiries (a) and (b), the somewhat complex condition of the Lord Chamberlain's power as to theatres, and the official differences between theatres and music-halls, can best be ascertained from the Blue Book issued on the occasion of the Select Committee on Theatres in 1892. Regarding enquiry (c), the information desired can be obtained by applying to the Secretary of the Lord Chamberlain's Department, St. James's Palace, S.W.

Construction of Small Observatory.

PLYMOUTH. — OBSERVATION writes: "Kindly advise as to the chief points that should govern the construction of a small private observatory."

The building should be designed with regard to the size of telescope, circular in plan, with, say, 9in. walls if under 12ft. high, and a rectangular annexe for any subsidiary accommodation. The roof should be domed and self-contained, supported on rollers at the eaves so that it can be easily rotated. One segment of the roof should be free to open to permit the telescope to be elevated. The foundations for the telescope should be separate from the building, and very solid. Illustrations for small observatories have been published from time to time, and possibly the Secretary of the Royal Astronomical Society, Burlington House, Piccadilly, London, W., would be willing to give information with regard to any literature on the subject. The client might also know a friend having such an observatory which the architect might inspect. HENRY ADAMS.

Liability for Dilapidations.

LEEDS. — W.L.V. writes: "On the expiration of a six years' lease, which provides that a house is to be kept and left in good repair, can the landlord claim for a new lavatory basin in place of one that has been cracked, or can he only claim for the depreciation by reason of the crack?"

The landlord can claim merely for indemnification for any damage which has occurred during the late occupation of his premises, whether it has occurred by accident or by improper treatment. The outgoing tenant is therefore only liable for the depreciation in value of the lavatory basin, unless it is so badly cracked that a new fitting is obligatory; either by reason of leakage, or because it is now so unsightly as to render it unacceptable to a reasonably-minded tenant when entering. F.S.I.

Combined Drainage.

ESSEX writes: "Plans for cottages on the combined drainage system have been deposited with an urban district council. It is proposed to collect the rainwater into butts. The council's by-laws do not require same to be excluded from the sewer, although they themselves are very anxious that it should not go to the sewage farm, and fearing that at some future date the rainwater may be diverted to the gully they have refused to accept the combined drainage covenant unless my client undertakes to carry the rainwater to the surface-water drain in the roadway. My client, if he wishes to build, must now provide a separate connection to sewer from each cottage. Have the council power to refuse to accept a combined drainage covenant and thereby force my client's hand?"

An urban district council cannot compel a building owner to provide separate drains for the conveyance of sewage and the rainwater unless they have by-laws to that effect. At the same time they can compel a building owner to put in a separate drain to each house, and they are not therefore obliged to accept a combined drainage covenant unless they please. With the difficulties councils have had to encounter in the past we are not surprised that they view irregularities—or the possibility of future irregularities—in the drainage system with grave concern.

Obituary.

MR. A. E. RHODES, architect, of Lees, near Oldham, died last week.

MR. WILLIAM PERKINS, architect and surveyor, Bishop Auckland, died on June 16th, aged 38.

MR. THOMAS SIMPSON, senior partner in the firm of Thomas Simpson and Son, architects and surveyors, of Brighton, died on June 24th, aged 83. He was largely associated with school work.

Notes on Competitions.

New Schools, Bridlington.

In this competition, limited to local architects, the design submitted by Mr. J. Earnshaw has been selected.

New Hostel, Bangor College.

The design of Mr. Henry T. Hare, V.P.R.I.B.A., has been selected for this building, which is to be erected at a cost of £25,000.

Homœopathic Cottage Hospital, Southport

Mr. R. Norman Shaw, R.A., the assessor in the competition for this hospital, has made the following awards, which have been adopted by the committee: 1st, Messrs. H. Percy Adams and C. Holden, London; 2nd, Messrs. Briggs and Wolstenholme and Arnold Thornely, Liverpool; 3rd, Messrs. Haigh and Thompson, Liverpool.

For Architectural Students & Apprentices.

In connection with the Midland Counties Building Trades' Exhibition, to be held in Bingley Hall, Birmingham, from October 12th to October 21st next, competitions for students and apprentices have been arranged, with money prizes. For architectural students the subjects set are: "Design for workman's house," "Design for ornamental enriched plaster ceiling," "Design for wall decoration," "Example of ornamental art metal work"; while for apprentices there will be competitions in brickwork, plumbing, roofing, clay modelling, and masonry. In connection with the exhibition there will also be a series of lectures, the syllabus of which is now in course of preparation.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
July 4	BRISTOL ROYAL INFIRMARY EXTENSION.—Premiums 200, 150, and 100 guineas. Limited to Bristol architects and to 12 outside architects. (Mr. Edwin T. Hall, assessor.) Architects desirous of competing must send in their names by this date, together with list of works carried out from their designs. Conditions from W. E. Budgett, Secretary and House Governor, Royal Infirmary, Bristol. Deposit, £2 2s.
July 13	EXTENSIONS TO WORKHOUSE BUILDINGS, DUDLEY.—Limited to architects practising within 35 miles of Dudley. Conditions from G. W. Coster, Clerk, Union Offices, St. James's Road, Dudley.
July 31	ELEMENTARY SCHOOL AT BANBURY.—Conditions from Oliver J. Stockton, Town Clerk, Banbury. Deposit £1.
Aug. 1	COUNTRY HOSPITAL, GUERNSEY.—Conditions from Thomas Robin, President of Directors of Country Hospital, Castel, Guernsey.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. H. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
No date.	SITE PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909.—Gold, silver and bronze medals, with prizes of £25, £15 and £10. Particulars from Henry R. Aldridge, 7, Gower Street, Swansea.
No date.	NATIONAL LIBRARY BUILDINGS, ABERYSTWYTH. — Architects desirous of competing should send designs and photographs of libraries, or similar buildings erected under their direction, to J. E. Davies, Hon. Secretary, National Library of Wales, Aberystwyth.

FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY).

Fire Risks and Exits in Public Elementary Schools.

The Board of Education have issued the following circular to the local education authorities:—

"The Board of Education have recently had their attention called to the practice which prevails at certain schools of locking the external doors during school hours. In view of the loss of life which has occurred in several cases of panic in public buildings, and which has been caused or increased by the inability of the occupants of the buildings to obtain a ready exit, the Board desire to urge that the following principles should be adopted in all public elementary schools at the earliest possible date:—(1) External doors of schools should never be locked while children are in the building. Any protection that may be considered necessary in populous districts for the contents of cloakrooms, etc., should be provided by means of separate locked doors to those rooms. If it is necessary that the external doors should be closed against intruders, this can be done in the majority of cases by the adoption of some form of 'panic-bolt.' (2) External doors which swing only inwards should be altered to swing outwards as well if possible. This measure must be regarded as absolutely necessary in the case of a door at the foot of a flight of stairs or at the end of a long passage. The Board of Education will instruct their inspectors to pay special regard to the observance of these principles in reporting on public elementary schools."

The Fire Insurance Business of British Companies.

A most interesting statement appeared recently in the "Post Magazine" giving the fire-insurance business done by British companies during 1907, and the extraordinary turnover in insurance premiums obtained throughout the world. Unfortunately, in dealing with the subject no discrimination is made between the premiums obtained in Great Britain and abroad, or the losses paid in Great Britain and abroad. If such statements were made, as they should be, by legislative requirement (as they are in all other civilised countries), it would soon be seen that, generally speaking, the insurance premiums charged in Great Britain are excessive, except in respect to certain special risks and certain dangerous areas. As a matter of fact, the British insurer resident in Great Britain has to pay in his premium a very substantial amount towards the expenses and losses incurred by British companies insuring British and foreign property abroad. Fortunately in this country we do not have such conflagrations as those of Baltimore, Toronto, and San Francisco; nevertheless, it is the British insurer who contributes substantially towards the losses incurred in countries prone to such large fires. Insurance rates abroad may be high, but they would be materially higher if the amounts which ought to be paid were levied in those countries instead of being extracted from the insurer resident in the better protected areas of Great Britain.

Fire prevention and the fire service in this country have done a great deal to reduce fire loss throughout the Kingdom. Authorities state that the actual reduction of loss during the last ten years has been millions sterling. It is quite time that British insurers should awake to this fact, and demand from the insurance companies a substantial reduction in the rate of premiums; in other words, they should refuse to contribute towards the loss incurred by the foreigner abroad. It is hoped, however, that the good sense of the British insurance companies will lead them, voluntarily, to make some reductions in their charges at home, otherwise they will only be inviting the competition of newly-formed companies, who announce that they will not do business in such dangerous areas as those of the United States. It is also time for the British companies to discriminate in a more liberal manner between buildings that have really the attributes of a fire-resisting character, and those of no fire-resisting pretensions, even if the former do not comply precisely with the letter of the private regulations laid down by the Fire Offices' Committee.

Powder Fire Extinguishers.

The British Fire Prevention Committee are now undertaking certain systematic tests with powder extinguishers, and we look forward to these tests as at least providing us with reliable data. In our opinion, powder fire extinguishers should be regarded as supplementary appliances to those in which water is used: their primary utility is in connection with small spirit fires. They should not be specified as *sole* first-aid appliances. Where hand-pumps and buckets are available, or where fire extinguishers using either pure water or chemically-treated water are used, there is no reason why powder extinguishers should not also be supplied as an additional safeguard in the case of these spirit fires, which are on the increase since the advent of the motor-car; but it is entirely wrong to rely solely on powder extinguishers without having made provision for first-aid water-extinguishing gear.

Roof Fires.

One of the most remarkable series of incendiary fires which, we believe, have ever occurred is taking place in the roofs of tenement houses in Berlin. An official report on the subject shows that from February 10th to April 30th this year there have been no fewer than 153 roof fires in the German capital, as against 21 in 1907, and in more than 120 of these cases the fire has been due to incendiarism. Since April 30th the series has continued, and only last week the daily Press reported that one person had been arrested on suspicion of being connected with 29 of them. Yet even such incendiary fires as these have their uses, for we understand that a publication will be issued in regard to the effect of fire in roofs as taught by this very extraordinary series.

Gas and Water Cocks.

The Berlin Police have issued a circular requesting all householders to paint up in a conspicuous position inside their front doors, a notice (or, in the better class of houses, to put up brass plates with an illustration or diagram) indicating the position of the principal gas and water cocks in the building, and the quickest way to get at them. This is certainly most useful in houses which are locked up at night, such as offices, office blocks, shops, etc., and it is a matter that deserves attention in this country.

THE FIRE DANGERS OF THE TALL STEEL-FRAME BUILDING.*

By A. Pordage, Firemaster of Edinburgh.

The subject to which I now direct attention is one which does not receive from communities that consideration which its importance would seemingly justify, but is one, nevertheless, which does seriously concern the officials of the fire brigades in most large cities. I refer to the decided tendency which exists for increased elevations of new buildings, and more particularly the introduction into this country during the past few years of the steel-frame buildings to which the mythical legend "fireproof" is specially dedicated.

I trust the meeting will agree that the springing up of the new steel-frame building of mushroom growth during recent years renders the time opportune for this Association to issue a warning note to municipalities of the dangers to which cities are exposed where the construction of such buildings of abnormal heights is encouraged.

The First Query

for us to consider is: "Are these fireproof buildings fireproof?"

We have no need to revert to an hypothesis for our answer. The calamitous fires in large American cities during the past few years have provided the world with the most complete object-lesson on the behaviour of the various buildings and building materials when exposed to the ravages of a conflagration, and I propose to take the fire at Baltimore in 1904 as the one from which we can find circumstances which more closely resemble those we should find in our own cities, namely, a city consisting of many large and important and substantially-built structures of varying dimensions and altitudes, of various composition, comprising the stone building, the brick building, and steel-frame building of moderst dimensions, and that kuown as the sky-scrape:

We know that building materials which are not of a combustible nature do not alone render the structure one which will resist the ravages of a fire.

*A paper read at the meeting of Professional Fire Brigade Chiefs held at Birmingham on June 18th, 1908

The Important Matter of Contents.

An important factor which is almost entirely ignored by the building community is that, no matter of what material the structure may consist, its contents cannot be of the same incombustible nature as the building material. One often hears it said of a building that "the floors are of concrete, the stairs are of stone, and there is therefore nothing to burn." It is quite impossible to "fireproof" all the necessities of life with which buildings are more or less stored, the housing of which is the chief function of every building. It is also not necessary that the building should be of non-combustible construction alone to prevent the stock taking fire. The stock of almost every description has an unhappy knack of taking fire under whatever conditions it may be stored. We have no desire to disparage the construction of buildings with non-inflammable materials, but what we do desire is that all buildings should be within a reasonable distance from the ground. The danger of extremely high buildings lies in the fact that fires in the upper floors are quickly communicated from one building to another, and, owing to their great height, are out of reach of the ordinary equipment of our fire brigades.

Limit of Height.

The Chief of the New York Fire Department has declared that his department cannot deal with a fire higher than 150ft. from the ground. In this country we do not claim to deal even with such modest proportions. It is apparent to everybody that if a fire is to be stopped, it must be got at as quickly as possible. This can only be accomplished if the fire is within reasonable reach of the fire-brigade's resources. I have no hesitation in saying that the limit of our immediate resources is 60ft.; and even with the aid of modern mechanical ladders 80ft. may be considered to be the extreme limit of the immediate possibilities of the best-equipped fire brigade; the reason being that the first appliances to be brought up and got into operation could not reach the seat of a fire beyond those limits without the assistance of heavier and more complicated appliances which require a longer time to bring up and several men to manipulate them; during these heavier operations the fire has time to increase in intensity in the building, rendering it unapproachable to the firemen, who consequently have to attack it either from the street or adjoining buildings, to which the fire has every opportunity of spreading through windows and other unavoidable openings.

The lessons to be learnt from some of the more recent American fires are that whilst the Fire Department were successful in extinguishing the fires in the older and less pretentious buildings, and in the lower floors of the sky-scrapers, they were quite unable to reach the fires in the top floors of the latter buildings.

From the investigations made at the instance of the United States Government it was proved that the wave of flame travelling with the direction of the wind entered the one side of the taller buildings, passing out at the other, jumped the space over the lower or normal-sized building, and thus travelled unimpeded from one tall block to another, in many instances the smaller buildings escaping with but slight damage.

It is thus shown that the so-called "fireproof" frame building is not only not "fireproof," but while it is used for storing goods, or as the receptacle for office and domestic furnishings, it really becomes a fire conductor. The important contributing factors to the spread of the fire were the large wall openings filled with glass, and the internal floor openings.

Openings.

The buildings being skeleton in form, every advantage is usually taken of the extensive openings for light. This is a most important factor, because it is one which is being largely taken advantage of in this country. I have seen frame buildings with absolutely nothing but glass between the piers supporting the upper floors, which it is quite impossible to protect by shutters or any portable covering. There have always been high buildings in most towns, but the same liberties in the way of openings and glass roofs have not been indulged in with the older brick building as with the new construction.

We have no desire to disparage the value and use of fire-preventive materials in building construction; on the contrary it is our duty to encourage them; but it is also our duty to prevent an over-estimation of the value of such construction from becoming an abuse. What we as a fire-brigade congress have now to consider is "How to prevent the destruction of firerpoof buildings by fire."

Hotel Buildings.

As applied to hotel buildings and habitations, these lofty structures are a distinct source of danger to life, as it is quite impossible for any brigade to bring up life-saving appliances to deal effectively with a large number of people on the top or upper floors. With all the precautions in the way of fixed fire escapes which the American building laws insist must be introduced in hotel and other such buildings, and with the splendid resources of the American fire brigades, there is seldom a serious fire in American hotel buildings which is not accompanied by serious loss of life upon the upper floors, owing to the inability of the firemen to reach such extreme elevations. Consequently, we can only view with much concern the introduction into this country of such conditions as are inseparable from this class of building. And the consequences with us would be even more disastrous, because the resources at the disposal of our fire brigades are not nearly so elaborate as those of the American cities.

Taking the structures apart from the contents at the Baltimore fire in 1904, most of the frame buildings which were burned out, in so far as the contents and fixtures were concerned, and whose skeleton frames remained, cannot be said to have behaved satisfactorily. The top floors which were inaccessible to the fire-fighting appliances acted as fire conductors, and their stone and ornamental dressings were stripped by the effects of the heat, making the work of the firemen below extremely hazardous. An extract from the report of the Chief of Engineers of the United States of America says:

"The exterior walls of many of the so-called fireproof buildings ought to be taken down; all of them are more seriously damaged than appears.

"Of materials used in exterior walls, properly bonded brickwork was the only thing that was really successful.

"The only successful partitions were brick walls which lost the plaster, but were otherwise undamaged."

Nothing can convey more clearly the value of the fireproof construction in a fire than one of the quotations contained in the conclusions of the Special Committee of the National Fire Protection Association of the United States of America, which says:—

"It may be expected that in fires of great severity the steel frame, its protective covering, the walls and floor arches alone will remain, and even these will be more or less damaged according to the character of the construction and materials used.

"The contents of a fire-resisting building, without proper sub-division and no adequate protection against exposing fires, are scarcely any safer as regards destruction by fire than if contained in a building of ordinary construction."

These conclusions, arrived at after careful and exhaustive enquiry into the results of the various building constructions, prove conclusively that the tall frame-built fireproof building is

a Menace

to the commercial centre of any city.

This particular frame construction has received considerable favour from the architectural and building communities in this country because of its having withstood certain tests in the recent great American fires. That is to say, the frames of the structures were not consumed, but those which did not collapse in many instances buckled out of the plumb, whilst only the structure of others was intact. But what became of the contents? The American reports say that in every instance they were wholly destroyed.

Considering these facts, it is remarkable for this congress to note that it is only since the great American fires that this class of structure has been pushed ahead in this country. What has already happened in the American cities may happen again in the next conflagration, and may also happen in similarly built areas in this country.

If there is one fact that condemns this particular class of building more than another it is the rapidity with which the fires have spread in the modern-built American cities. In former years the destruction of American towns was due to the timber construction of its buildings; but the remedy, in so far as it has been applied to the "fireproof" building, has proved to be worse than the disease.

One disadvantage which the frame building usually suffers is that of being run up against time, which gives great scope for faulty construction and the introduction of defects which, owing to the delay the undoing and remedying would occasion, are allowed to pass consequently the building fails in the test which otherwise it would have withstood safely.

The report of the National Fire Protection Association says, in respect to the checking of the fire at one particular part of the City:—

"The firemen were assisted by a comparatively wide street and by the fact that a solid brick wall as well as fire shutters on windows, which enabled them to save about half of this block.

"A dry goods store at the corner of Lexington and Charles Streets was seriously exposed, but was protected

against the worst attack by a solid brick wall on the south."

I think I have shown that the introduction of the steel frame building into this country is a matter which should not be ignored by the building committees of the various municipalities. When they exceed the normal dimensions they must be considered as a fire risk, whether the contents be of ordinary or extraordinary combustible stock.

Where several high-frame buildings, with open sides, are in close proximity to one another they must be considered as an extraordinary fire risk.

A discussion followed the reading of the foregoing paper, and a resolution was adopted directing the attention of building committees of municipalities to the danger of lightly-constructed lofty steel-frame buildings with large openings in congested areas.

THE DESIGN OF BUILDINGS IN REGARD TO LOSS OF LIFE BY FIRE.

At the recent Life-Saving International Congress held at Frankfort, a considerable debate took place as to the precautions which should be adopted in buildings, and the facilities that should be afforded to the fire service, for the saving of life in case of fire.

We present in full the resolutions on this subject that were passed.

The Congress was of exceptional standing, and it is gratifying to record that Great Britain was not, as at the International Congress of Architects at Vienna, conspicuous by the emptiness of its official chair. No fewer than three public departments and practically every institution and society concerned were formally represented, and the British spokesman at the official opening was an Assistant Under-Secretary of State.

The resolutions set out below recall the grievance of the fire-brigade officer that building regulations do not fully accord with the requirements of rescue work at fires. We observe that these resolutions perhaps have greater bearing on the condition of affairs in capital cities, and particularly in big Continental cities; but nevertheless, they should serve as a useful guide to those who have the framing of by-laws and building Acts in all countries, for they point to the direction in which there is weakness in our legislative enactments from the practical fire point of view.

The tall building is with us, and in Liverpool, for instance, it would appear that it will practically become the sky-scraper. The value of ground in cities is so rapidly increasing that every available inch is utilised for building purposes, and the courtyard or area is limited to the minimum of hygienic requirements.

Difficulties of all kinds beset the fire brigade when a fire breaks out in buildings of the height of, for example, certain buildings in Holborn, or in the congested areas of the West End and the City of London.

New conditions of building make life-saving work more difficult every day than it has hitherto been, and facilities will have to be gradually accorded in order to make life-saving and rescue work possible. Courtyards in which no fire-escape or ladder can be raised, and no jumping-sheet spread, are death-traps; courtyards with no exit to the public thoroughfare are veritable prisons; courtyards with glazed roofs covering some palm-court or similar decorative feature of the building are becoming a serious menace; and altogether the problem of the courtyard and the area have become matters of moment where life-saving is concerned.

We will not deal with these points in detail, for they explain themselves to a very great extent. The only thing we should add is that architects in their work should endeavour to be in advance of building regulations, and should give thought to the possibility of dangers arising from fire when planning their buildings, even if the local by-laws or regulations do not specifically demand such safeguards.

Resolutions Passed at the Frankfort Congress.

I. In the drafting of new building regulations, suggestions from the Fire Service should be invited and considered, and in sanctioning of new structures for the carrying-on of manufactures, etc., such buildings must be planned and erected according to the risks they are to contain, especially if they are to serve the purpose of a manufacture specially dangerous from a fire point of view, or to serve as structures in which a number of persons are to work or dwell.

II. The following points call for special attention in the interests of public safety from a structural and fire point of view:—

(a). The entrances or thoroughfares into courts and yards of buildings should accord with the requirements of the local fire brigade, and vary according to the depth and height of the buildings facing on to such courts and open spaces.

Size of Courts and Internal Areas.

(b). All open spaces to buildings (such as courts) on to which windows of rooms on upper floors face should be of such dimensions as to give ample room below the windows for spreading a jumping sheet and to enable fire-escapes to be put up. These dimensions should be in accordance with the requirements of the local fire brigade.

(c). In so far as the courtyard of a building is to serve the above-mentioned purpose in case of fire, nothing which would be an impediment to the application of fire-escapes should be permitted. The following should be considered obstructions in case of fire, *i.e.*, unprotected openings in the ground of more than 30 cm., in depth, excavations, enclosures, and the like, of a greater height than 30 cm., even though they may be erected at right angles to the fronts, pipes, or wire running across the court or area.

Size of Windows.

(d). All rooms to be used as permanent dwellings should have at least one window, of which the actual window pane is 50 cm. wide and 80 cm. high. This window should be easy of access. Gratings should only be allowed if special sanction has been obtained by the local authorities controlling the erection of buildings. Skylights should only be allowed where they are required for a special purpose. Where skylights alone are used, proper means of escape must be provided for the persons employed in the room in question, and proper ventilating devices should be fixed.

Balconies.

(e). The use of balconies outside windows of rooms on upper storeys which serve as dwelling rooms should be advocated, as they form a means of retreat in case of fire, but they should not project more than 50 cm. beyond the front of the building (including mouldings). These balconies must, however, be so constructed as not to be a hindrance to the fire brigade in its work of saving life.

Staircase Walls.

(f). Endeavours should be made to advocate that all walls of staircases going up to roof level be brought over the roof to act as fire-resisting walls. Walls serving as containing walls to staircases should not have any other openings beyond those which serve as means of ingress and egress to the rooms at the different levels, and the windows which light the staircase.

Stairs leading to basements, cellars, etc., should be divided from the main stairs in a fire-resisting manner. All main staircases should be provided with efficient means of ventilation which can be brought into play on all floors, or closed off if desired.

In the case of staircase walls, a height of 2 to 3 m. in excess of other parts of a structure should be permissible where efficient ventilation arrangements are provided, and where they include such openings on to roofs as will serve as a means of emergency exit in case of fire.

(g). From the sanitary as well as from the fire-protective point of view, it should be endeavoured, when erecting new buildings, to avoid shaft-like areas or courts, which in the event of fire retain the smoke, and thus all open spaces in a building block should communicate with one another by means of passages of not less than 4 m.

ESCAPE FROM FIRE.

Report on Plymouth Buildings.

The Plymouth Watch Committee recently held a special meeting to consider the desirability of making by-laws under Section 15 of the Factory and Workshops Act, 1901, with reference to the provision of means of escape in case of fire from factories and workshops in which fewer than 40 persons are engaged; and also to consider the report of the Chief Constable dealing with the inhabited business premises in Plymouth, the upper portions of which could not be reached by the existing fire escapes. In regard to the former matter, copies of the Model By-laws issued by the Local Government Board had been circulated among the members, and it was stated in respect to premises where more than 40 persons are employed that the Council already have power to deal with them under the Factory Act. The committee directed the Chief Constable to enquire and report at the next meeting as to the number of factories and workshops which would be affected by the proposed by-laws, and adjourned the further consideration of the question until then.

The Chief Constable's report referred to showed there were six business premises in Plymouth, occupied by twenty-nine persons, with upper storeys which could not be reached by the fire escapes. In regard to five of those cases, the committee decided that, having regard to the condition of the premises, no action on their part was necessary, except to call the attention of the owners of the properties to the matter, so that they might make such special provision as they should deem expedient. In the case of the other property, Mr. Sowerby was instructed to interview the owners and report again at an early date.

FIRE PROTECTION IN SCHOOLS.

By Chief Officer Westphalen
(Vice-President, International Fire Service Council).

During the first quarter of this year no fewer than 42 schools have been damaged or totally destroyed by fire in the United States. Of these, and the lessons to be learnt from them, I desire to draw attention particularly to the fire which occurred in March at the school house in Collinwood, near Cleveland, Ohio, when more than 100 children lost their lives.

The building was a comparatively modern one, with well-built external walls and interior partitions, but the floors were of wood joists, with wood laths, and plaster soffits. There were class-rooms on the ground floor, first floor, and top floor, access being given by a staircase with a landing on each floor. The ground floor was 14 steps above street level. The lobby (or hall) had a main entrance door (double), and also a single door to the playground, both opening inwards; and at the time of the fire the playground door was locked, while one wing of the double (entrance) door was bolted. In the basement were heating apparatus, cloak-rooms, lavatories, etc. The fire broke out in the basement and the smoke and flames rising up through the building caused a panic. The children in the ground-floor class-rooms were got safely away, but those on the upper floors crowded on to the staircase, and fell over one another, blocking the exits, with the terrible result recorded above.

This catastrophe in America caused the authorities in many towns in Germany to investigate matters; Hamburg especially considered the matter in detail. Naturally, in addition to the more modern State schools, we have a number of older school buildings and private (voluntary) schools (especially those schools intended for girls) in which the upper floors are also used as living rooms, and there is no doubt that in the event of fire a number of these schools would be extremely dangerous. Where such buildings are still in use in Hamburg, the following rules have been laid down:—

The Hamburg Rules.

1. The building shall be fire-resisting as far as possible.

2. All doors of rooms in which a number of pupils are gathered together for school festivities, etc., and all external doors, as well as the doors of physics and chemistry class-rooms, shall open outwards. In the event of any of these doors being two-winged doors, the closed wing shall be fastened by means of the theatre safety bolt (panic bolt). The doors of the classrooms shall, as a rule, open inwards. Doors with glass panes are to be avoided as much as possible, and in rooms used for physics and chemistry glass panes shall be absolutely forbidden. In these last-named rooms there must further be at least one exit in such a position that in the event of a fire breaking out through an experiment at the experimenting table this exit shall be available.

3. The exit stairs and corridors must have a width according to the number of people in the building; as a rule, 1m. width should suffice for every 120 pupils.

4. It should be the endeavour to have at least two safe routes of exit from every floor. In schools where there are more than 250 pupils on the upper floors a second staircase should be provided.

5. The stairs shall be of fire-resisting material, wherever possible. Where wooden staircases are still tolerated, these should be treated on their under side with some fire-resisting material to the satisfaction of the fire brigade.

6. The stairs are to have balusters on both sides, which, in the case of winding staircases, shall be continuous as far as possible. Where staircases exceed 2.50m. in width a centre rail is to be provided.

7. Store cupboards shall not be permissible under staircases.

8. Corridors shall not be blocked by children's clothes. Hat pegs and umbrella stands must be fixed and immovable. Stairs and newels are not to be used for the hanging-up of clothes.

9. All cellars or basement rooms, in so far as they contain fire risks, must be closed off in a fire-resisting manner from the staircase walls.

10. For the storing of all waste paper, rubbish, etc., specially fire-resisting rooms should be provided.

11. A good system of heating should be provided, and should be worked from a smoke-proof heating chamber shut off from the other parts of the building. This is preferable to heating with the aid of stoves or fireplaces.

12. For lighting purposes, gas and electricity should be given preference.



FIRE AT DUBLIN. *Photo: Lafayette.*

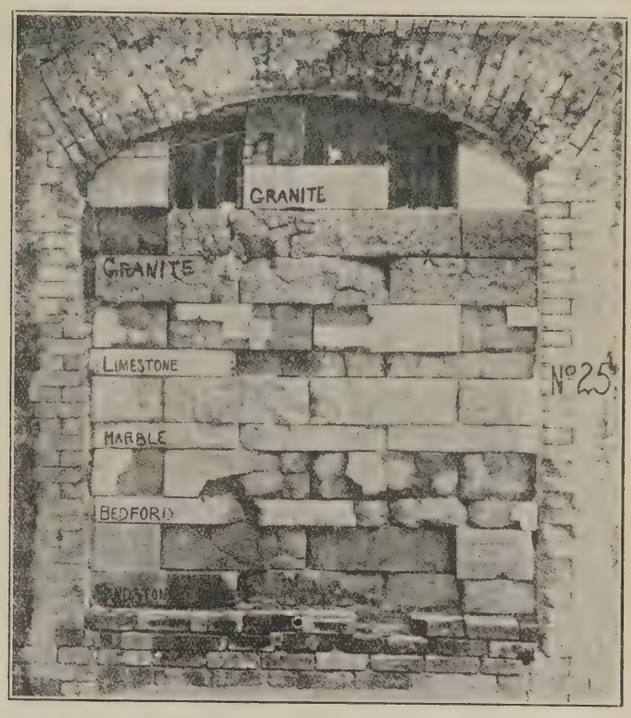
Dublin has been subject to a series of serious fires of late, among which the one illustrated above was an object-lesson as to the fire-resistance of timber baulks, as will be seen from this view, showing the charred beams carrying brickwork.

THE FIRE-RESISTANCE OF CONCRETE.

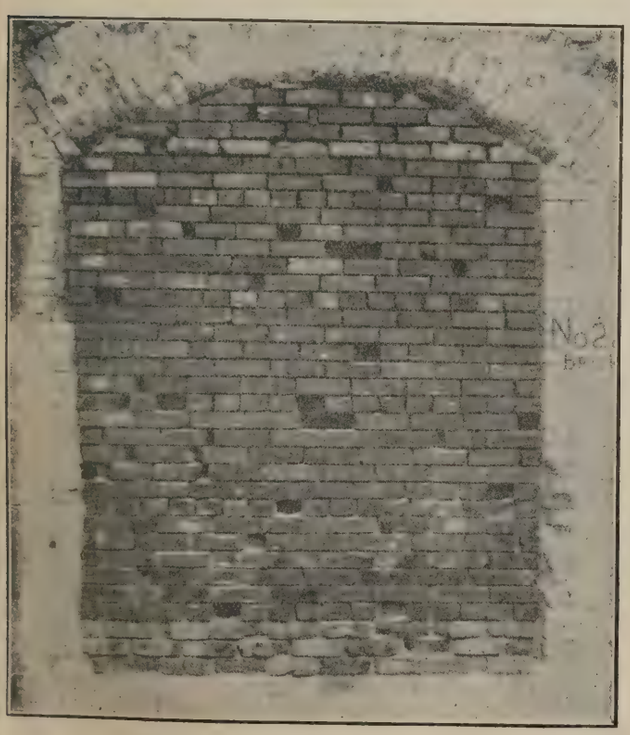
"The Cement Age" for June—one of our American exchanges—is devoted to the consideration of concrete as a fire-resistant. We are quite aware that our contemporary has its interest centered on concrete, and views concrete successes with every favour. At the same time, one cannot disregard the many proofs of the excellent fire-resisting character both of concrete and reinforced concrete, and we think it interesting, therefore, to give a summary of the chief contents of the issue in question. We reproduce also four illustrations of some most interesting tests which were conducted under the direction of the United States Geological Survey at St. Louis. These speak for themselves. It will be seen that the opening was filled with blocks of different materials—granite, limestone, marble, brick, sandstone, hollow tile, and concrete, and each was subjected to the same conditions, namely, a fire of two hours' duration at a temperature of 1,700 degs. Fahr., followed by the application of water. It is well known that marble and stone generally are liable to burst under fierce heat followed by water, and the accompanying illustrations simply emphasise that fact. The brick, it will be seen, has stood the test very well, and the concrete especially well. The hollow-tile blocks which are shown appear to have suffered very badly, but in connection with them it should be mentioned that these were of hard tile, which, as regards fire-resistance, is very different from porous tile, the latter being a better fire-resistant.



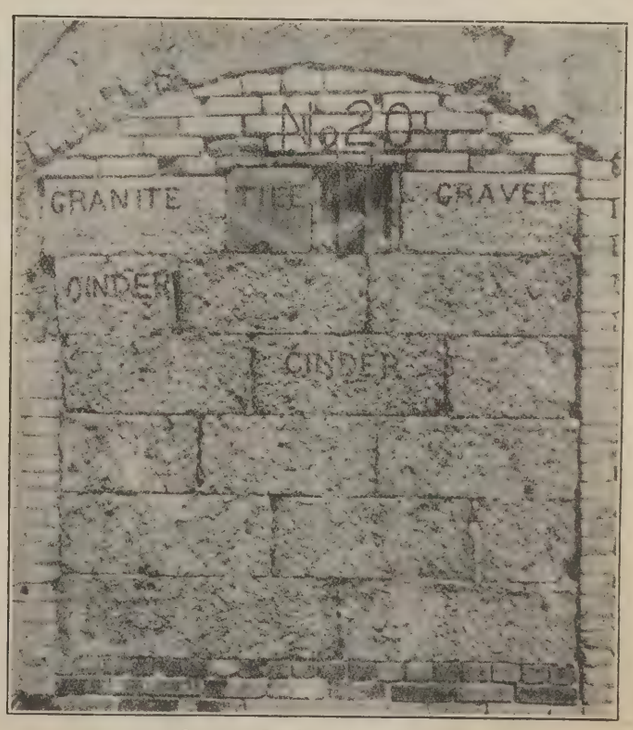
Granite.



Various Building Stones and Hard Tile.



Brick.



Concrete, Granite and Hard Tile.

In each case the temperature was 1,700 degs. Fahr., maintained for two hours, and followed by the application of water.

FIRE TESTS ON BUILDING MATERIALS CARRIED OUT IN THE ST. LOUIS LABORATORIES OF THE UNITED STATES GEOLOGICAL SURVEY.

Before a scientific body a year ago, Prof. Woolson read a paper dealing with **the low thermal conductivity of Concrete,** which, in plain terms, means that it requires a long time for heat to penetrate concrete. His experiments upset the conclusions of the opponents of concrete and revived the enthusiasm of its advocates.

The extreme importance of the announcement made by Professor Woolson was scarcely realised at the time. What it really meant may be made clear when it is stated that while a small concrete cube may disintegrate in the laboratory furnace when entirely surrounded with heat, a concrete block or thick coating of concrete may be subjected to a fire of 1,700 degs. Fahr. for two hours and will remain comparatively cool on the side not exposed to fire. This also means that the application of water is followed by a mere surface disintegration.

Thus it was suddenly realised that here, after all, was the ideal, the perfect fireproof material. It meant a protection to columns which would be maintained for hours under stress of both fire and water, at least a sufficient length of time for the ordinary fire to burn out before the concrete would become heated throughout. It also meant extreme economy in the application of fireproofing as to first cost. It meant conservation of space in column construction and cheap and quick restoration of the fireproof coating in case of surface disintegration.

Moreover, concrete has proved to be not only an admirable fire-resistant, so far as heat penetration is concerned, but possesses a most fortunate and remarkable quality making for the preservation of buildings, namely, equal expansion with iron and steel.

Concrete Partitions.

Prof. Woolson contributes the following in regard to concrete partitions :—

One of the important features of a really fireproof building as constructed according to the best building regulations at present is the character of the partitions built. Next to abolishment of all unnecessary vertical openings between the floors of a large building and the proper protection of such openings as are strictly necessary, there is probably no one feature of a building which will contribute as much to arresting the spread of flames and preventing complete destruction of the building as strictly fireproof partitions.

Such partitions to be effective fire stops must be so constructed that they will stand two or three hours of fierce fire without collapse from expansion or calcination, and at the same time be able to withstand the shock of a stream of water from a fireman's hose shot through some street window or doorway. A solid party wall between buildings is the best possible barrier against the spread of a fire from building to building, and a properly constructed partition should be just as effective a barrier to the spread of a fire from room to room on the floor of a single building.

It is the rankest kind of folly to put carefully constructed fire-resisting floors in a building, and then allow the use of partitions that are fireproof in name only, or at least will offer only small resistance.

A Question Frequently Asked

is whether a strictly fireproof partition can be built which will be comparatively inexpensive and not exceed three or four inches in thickness. My answer is emphatically, Yes. I have the proof of my positiveness in the end walls and roof of one of my fire test buildings, which has been used for testing partitions about three years. This building is approximately 10ft. by 10ft. by 14ft. in size. It has four large chimney flues—one in each corner of the flat roof, and is supplied with draught openings at the bottom and a grate floor upon which the fire is built. The building has a steel frame and the side walls are removable. They are built for each test and are constructed of the partition-material under investigation. These test partitions are therefore 10ft. by 14ft. in size and constitute the temporary side walls. A test for such partitions consists in building a dry cord-wood fire on the grate and bringing the temperature gradually up to 1700 degs. Fahr. in half-an-hour; then maintaining an average temperature in the building of 1700 degs. Fahr. for half-an-hour longer, after which a stream of water under 30lbs. pressure is applied to the walls through a 1⅛in. nozzle for five minutes. During the time this building has been in use, ten 1-hour tests have been made, and one 2-hour test, or an equivalent of 11 hours of fire, half of which time the temperature has averaged above 1700 degs. Fahr. and the water has been applied at the end of each test as described. During all that time the end walls and roof of the building have never been removed or repaired, except occasional patches of the surface have been given a light coat of cement plaster where roughened by the force of the water.

The walls are 4ins. thick and the roof 5ins. They are still in most excellent condition, and apparently able to withstand a large number of similar tests. They are cracked somewhat, but no flame or smoke has ever gone through them, and they are so firm, it would be difficult to break them down. These walls and roof are really nothing but partitions, and no one can gainsay the assertion that they fulfil the definition of being *strictly fireproof*.

The composition used, was a 1-2-2 mixture of Portland cement, bag plaster, and fine boiler cinders, put on as a thick scratch coat on each side of a coarse sheet metal lath, and finished with a 1-3 coat of cement and bag plaster. No studding or braces were left in the finished partitions. The roof was reinforced with deformed bars.

What Concrete Partitions would stand.

Partitions can be built in this way 3ins. thick, and even 2ins. in less exposed places, and I have no doubt that they would confine any ordinary fire to the room in which it started, without being injured to any serious degree.

I have seen cinder concrete block partitions stand a single hour test very creditably indeed, but it is doubtful if they would withstand repeated tests without repair, or a continuous fire of two or three hours. Their method of construction is not as stable as the monolithic type.

A stone concrete partition would make a good fire resistant; but it would not stand the heat as well as the construction described, besides being heavier and more difficult to erect.

It is probably true that the very remarkable showing made by the partitions in the test house above described was controlled more or less by the fact that, with a single exception, the tests occupied one hour only. It has been conclusively demonstrated that the virtue of concrete as a fire resistant results from its low thermal conductivity. A fire of one hour's duration would penetrate such a partition very slightly. A repetition of the fire for a like period would probably penetrate little if any further, and succeeding tests would have similar effect. It is doubtful if the same walls would stand a continuous fire of such intensity for ten hours; on the other hand, no building would have inflammable materials enough in it to maintain such a fire for that time. It is quite certain they would give efficient service for the length of time it would take to burn out any ordinary building.

GLAZING AND ROOFING SUBSTITUTES.

The disadvantages arising from the employment of glass for windows, its liability to break, its dangerous condition when broken, and its utter rigidity, have long been recognised. The problem, however, has been to devise a substitute which, while being translucent, is unbreakable and flexible. Up to the present no such material, possessing all the advantages of glass with none of its disadvantages, has been discovered, but a very near approach to that ideal has been secured by the introduction of "Duroline," which is again being pushed by the reconstituted company concerned with its manufacture, namely, the New Wire-Wove Roofing Co. (1907), Ltd., of Imperial Road, Fulham, S.W. "Duroline" consists essentially of a web of fine iron wire covered on both sides with a thick varnish, made in various shades of amber and green. It is perfectly waterproof and is unaffected by heat, cold, or steam; it can be bent to any angle without cracking; and it can be easily cut with big scissors, and fixed with nails. It is supplied in sheets (maximum size 10ft. by 4ft.) and weighs only 6½ozs. to the square foot, so that it is very much lighter than glass. It seems to be especially suitable for skylights, for roofs of verandahs, and for windows in huts, factories, and store-houses. When dirty it can be cleaned with soap and water. The cost of "Duroline" is 6½d. per sq ft. The General Post Office are considerable users of this material for their collapsible shelters, so much seen in the streets, and at the Franco-British Exhibition visitors can see "Durolite" fixed in position: it has also been fairly extensively used at the Scottish National Exhibition at Edinburgh. Of a similar character to "Duroline," but an opaque material, is "Carboline." This is a serviceable roofing material which can be used as a substitute for slates, galvanised iron tiles, etc., weighing only 8 ozs. to the sq. ft. It is supplied in lengths 2 ft. and 4 ft., and it costs 3½d. per sq. ft. Other roofing specialities of the New Wire-Wove Roofing Co. are "Karboline"—a special felt which is claimed to be cheaper, stronger, and more durable than ordinary felt (supplied in widths 3 ft. wide and up to 25 yds. in length, price 10d. per sq. yd.), and "Malrine"—a special canvas felt for damp-proofing, slate roofs, etc., also supplied in rolls of the same width and length as "Karboline," and costing 7d. per sq. yd.

THE Association of Municipal and County Engineers held their annual Congress last Thursday and Friday, at Nottingham, under the presidency of Mr. E. P. Hooley, Notts County Surveyor.

ELECTRICITY IN BUILDINGS. II.

By Harold Hastings, M.I.E.E., A.M.Inst.C.E.

(*Continued from page 452, No. 694.*)

The scope of this series of articles does not admit an extensive description of the methods of generating electricity, but it will be of useful purpose to outline the principle employed, since it will render the subject more familiar.

There are three simple experiments which introduce the phenomena utilised, and they can be performed by the reader with great benefit. The first two need simple apparatus costing but a shilling or two, and well worth the outlay. The third requires a sensitive instrument called a galvanometer, which detects the flow of a minute current.

Experiment I.

The apparatus required for this experiment is a bichromate cell of half-pint size, a small mariner's compass (pocket size), a length of 12yds. of No. 18 or No. 20 S.W.G. copper wire lightly insulated (electric-bell wire will do), and a piece of mill-board.

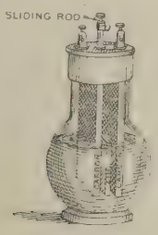


FIG. 4.

The battery will be found to consist of two plates in a glass jar, each plate having a brass terminal to which the wires can be attached. A ¼lb. of chromic acid will be enough for one charge. This should be thoroughly dissolved, and enough poured into the jar to half fill it. It will be noticed that the zinc plate is held at the end of a sliding rod. This is provided so that it may be easily withdrawn from the liquid when not actually in use. It is important to observe this, as the cell is wasting its strength all the time that the zinc is submerged. Chemical action takes place between the zinc and the acid, and sets up an electric current, which flows through the liquid from the zinc plate to the carbon. When the exterior circuit is broken—*i.e.*, when the two terminals are not metallically connected—the return path for the current is through the liquid itself; but when the exterior circuit is complete, the return current flows from the carbon terminal to the zinc one.

To proceed with the experiment, pass the copper wire through the centre of the mill-board and place the latter on the edge of the table, in such a manner that it half overhangs. Rest the cell on the floor under the mill-board and connect the two ends of the wire to the terminals, first clearing them of insulation and making them bright and clean. The mill-board can be held in its overhanging position by placing books upon it, but the success of the experiment would be jeopardised if anything containing iron were used as a weight, or, indeed, placed near the scene of operations.

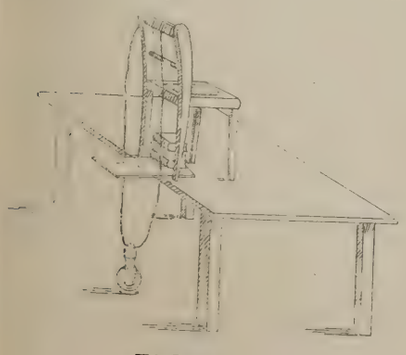


FIG. 5.

The wire must be arranged so that it forms a straight line from the coil to the mill-board, which line is continued for at least 2ft. higher. The top of the loop can be held in position by placing a chair upon the table. The other side of the loop must be opened out, so as to be at some distance from the part passing through the board. Let the compass be placed upon the board close to the wire, and note its position before and after lowering the zinc into the liquid. Move the compass to various positions about the board. It will be found that the current in the wire exercises an influence over the compass which is superior to the magnetic influence of the earth. When the circuit is broken, either by raising the zinc or by disconnecting one of the terminals, the compass resumes its normal north and south position; but during the time that the current is flowing the position taken up is invariably one at right angles to the straight line drawn between its own pivot and the wire which is influencing it.

Not only does the compass hold to the position defined, but, if the position of the north-seeking pole be observed, it will be found to point always in one direction round the circle.

When the current is flowing upwards through the board the north-seeking pole points in a counter-clockwise direction. When the connections are reversed, and the wire passing through the board comes direct from the zinc terminal, the compass

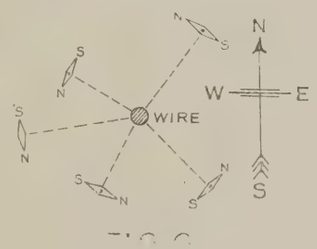


FIG. 6.

also reverses its position, and the north-seeking pole points in a clockwise direction round the wire.

The effect of the current may be increased by adding to the number of wires passing through the mill-board. This is best done by doubling the wire upon itself in such a manner that it passes through the board twice in the same direction. The circles of force which affect the compass exist all along the wire. This is obvious, since we did not choose any particular spot upon the wire at which to carry out the foregoing experiment. If, therefore, two parts of the same wire can be combined to both react upon the compass the total force exerted will be double that of one wire. Care must be taken that the current flows in each in the same direction, otherwise the force exerted by the one would cancel that by the other.

The apparatus should now be arranged as shown in the diagram, and the effects noted. It will be found that the compass responds more readily to the controlling wire.

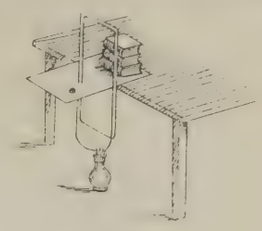


FIG 7.

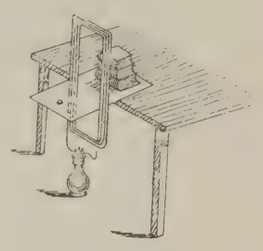
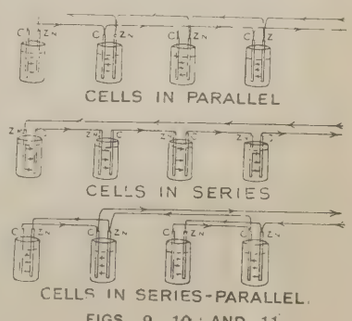


FIG. 8.

By continuing to turn the wire upon itself a number of times, the effect upon the compass may be increased in strict proportion to the number of turns. As the current flowing along the circuit must be of the same amount at all parts of the wire, the effect upon the compass may be said to be in direct proportion to the number of "ampère-turns." This is a term frequently encountered in electrical literature. The area upon which the current reacts is called the "magnetic field" surrounding the wire.

If we had left the single wire passing through the mill-board, we could have magnified the effect equally well by increasing the number of cells and thereby obtaining increased current. Thus, the strength of the magnetic-field, due to any wire conveying a current, varies as its ampères, as well as its turns, and, therefore, depends upon its ampère-turns.

In case the reader would like to obtain further cells and prove that the effect is as we state, we have given diagrams showing how the connections should be made. By connecting all the carbons together, and all the zincs, the output of each cell is added to that of all the rest (Fig. 9), but it must be remembered that an increase in the number of ampères will need a corresponding increase in the number of volts, or else a wire of greater section, and consequently less resistance. Placing the cells, as shown in Fig. 9, is termed connecting them "in parallel," or by some "in quantity," which is perhaps more expressive. By this means the voltage is unaltered, but the current capacity of the cells is multiplied. By placing the cells as shown in Fig. 10 the current capacity remains unaltered, but the voltage is multiplied. A method of increasing both current capacity and voltage is shown in Fig. 11. The coupling together of carbon to zinc, as in Fig. 10, is called



FIGS. 9, 10, AND 11.

connecting the cells "in series," or "in tension." The third method is "series-parallel."

We will now proceed to examine the effect of a wire which passes through the mill-board and returns through it some two inches away. If a compass be placed midway between them, we have seen that the effect of that wire in which the current is travelling upwards is to turn the north-seeking pole in the counter-clockwise direction with regard to its own centre. The effect of the other wire will be to turn it in a clockwise direction. If these two effects be examined with the aid of a diagram (Fig. 12) it will be seen that they re-act upon

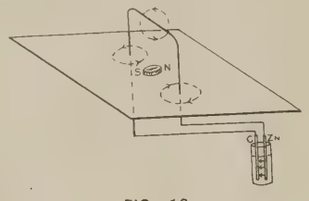


FIG. 12.

the compass in the same sense. As the compass is on the right of one wire and on the left of the other, and the effect of one is the opposite to the effect of the other, it is obvious that the two opposites cancel one another, and the two wires have a combined effect upon the compass.

Examination will show that the horizontal wire connecting the two vertical portions will combine with the rest of the circuit in influencing the compass.

If the number of turns be increased the effect will be increased. By an increase in effect we mean that the influence of the wires will turn a heavier compass, or one having greater resistance to turning. The difference in strength of magnetic field will be evident to the experimenter by the more rapid and decisive movement.

The first experiment has taught us that (1) the space enclosed by a coil of wire exhibits the properties of magnetism, and may be termed a magnetic field; (2) the polarity of the magnetic field is dependent upon the direction of the current through the wires that compose the coil; (3) the strength of the magnetic field is proportional to the number of ampère-turns in the coil.

Experiment 2.

The apparatus required for this experiment will be the bichromate cell and copper wire from the last, and in addition two test tubes (costing about a penny each at the chemist's), some iron filings, a set of cheap photographer's scales, and a few shot.

To set up this apparatus for use, we remove one scale-pan, and, in its place, hang a test tube by a piece of thread. The copper wire is cut into two equal

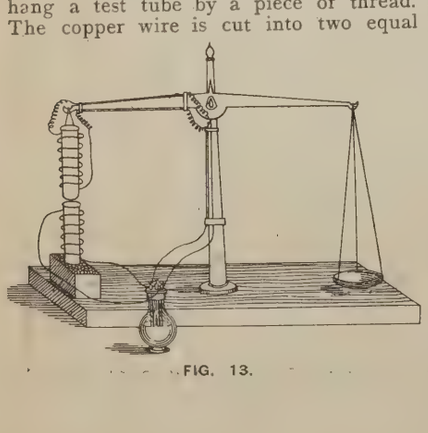


FIG. 13.

lengths, and one piece is coiled closely round the swinging test tube, leaving about one foot of slack wire at each end. The ends are tied along the balance arm and down the centre standard with thread, care being taken to arrange the wires so that they do not impede the freedom of the arm to move, nor the test tube to swing. (In this and all future diagrams only a few turns are shown in the coils for the sake of clearness.) The cell is now stood at the base of the scales and the wires connected to the terminals, the zinc being left out of the liquid for the present. Shot are inserted in the scale pan to just counterbalance the test tube and wire.

The second test tube is now prepared in the same manner as the first—*i.e.*, with the wire coiled round it, and it is fixed immediately below the other. It can be held in position conveniently by standing it in a box of bran, or sawdust.

The wires of this coil are inserted with the others in the terminals of the cell.

The zinc is lowered into the liquid and the effect closely watched. As the current flows round both the coils they create a magnetic field inside the test tubes. These fields either repel or attract one another. By reversing the connections of one coil, the flow of current in that coil will be reversed, and the magnetic fields will exert the opposite force to the former case.

Leave the coils connected in such a manner that they attract one another, and add weights to the scale pan until they just draw apart. Make a note of the amount added, as this is the force of mutual attraction.

Withdraw the zinc from the liquid and fill both the tubes with iron filings. Take the weights from the scale pan, and add more shot until the balance is again adjusted. Re-insert the zinc and measure the force of attraction again. It has increased enormously. Compare the two results.

The only alteration that has been made is the addition of iron filings.

Reverse one of the battery connections as before explained and obtain repulsion instead of attraction. Remove the weights from the scale pan and add them to the swinging test tube. It will be found that balance is regained.

From this experiment we have learnt that (1) magnetic fields attract or repel one another according to their mutual polarity, (2) the force of attraction is equal in strength to the force of repulsion, when the rest of the conditions are unchanged, (3) the value of iron as a magnetic medium is immensely greater than that of air.

Experiment 3.

The apparatus required for this experiment consists of a bar of soft iron, ½in. sq. by 4ins. long, ½lb. (nearly a mile) of No. 38 S.W.G. double cotton covered copper wire, a needle, a piece of cork, some cardboard, some liquid glue, black tape, and a shallow dish of water.

The bar of soft iron must be magnetised. This can be done by coiling round it the wire discarded from the last experiment, connecting the cell to the ends and leaving it for a quarter of an hour. After this it must always be handled gently, as it would become demagnetised if dropped or subjected to any sharp blow.

The needle has also to be magnetised, which can be done by stroking it with the magnetised bar, always using one end of the bar and stroking only in the one direction, from the eye to the point. The needle should be treated in this manner for at least five minutes. When it has been magnetised, it should be passed through a thin wafer of cork, just enough to keep it clear of the water in a horizontal position. The dish should be just large enough to allow the needle, as carried by the floating cork, to turn freely in any direction. The needle will, of course, point north and south, and is now a compass with a delicate form of suspension.

Take the No. 38 wire and wind nearly half the amount from the reel on the hand. It should be wound somewhat loosely so that it can be easily slipped off. When a neat coil has been thus formed it should be taped over with narrow black tape to hold the convolutions in position. A cardboard stand has to be made, so that the coil may stand in a vertical position, with the dish of water, containing the needle, inside it.

The complete apparatus thus formed is called a "galvanometer." It is used in such a position that the needle when at rest, pointing north and south, lies parallel with the convolutions of the coil. The magnetic field produced by a current flowing through the wire will set up an influence at right angles to the magnetic

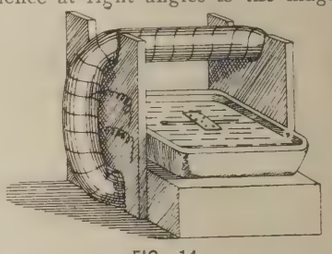


FIG. 14.

field of the earth. The number of turns is so great that even a minute current will represent a large amount, if expressed in ampère-turns. It serves, therefore, to detect any very small currents that may be obtained. The principle of its construction is of great interest, as most measuring instruments in electrical work are adaptations and variations thereof.

To proceed with our experiment, the galvanometer must be connected to the remainder of the wire on the reel. In making any electrical connections it is most important to see that the ends of the connecting wires are bare of insulation, perfectly clean, and tightly twisted together in such a manner that they touch over as much surface as possible.

When the two ends of the galvanometer coil have been joined to those of the reel, take the magnetised iron bar and place it inside the hole in the reel. Withdraw it sharply and watch the needle while doing so. It swings violently, indicating the flow of a momentary current. When the needle is again at rest, bring the bar quickly back to the end of the reel. The needle again swings. Place the galvanometer at one end of the room and the reel at the other, and the same

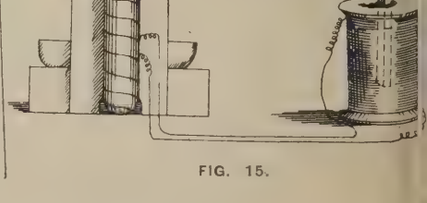


FIG. 15.

:sults will be obtained. Someone will ave to assist in this, but it will prove iat the swing is not due to an attraction etween the bar and the needle. It will e found that a quick movement of the iagnet produces a greater deflection of ie needle than a slow movement.

If the needle be closely watched it will e found to swing in one direction when ie north-seeking pole of the bar magnet withdrawn, and in the other direction hen the opposite end is used. It will ving in one direction when one end of e magnet is withdrawn, and in the her when the same end is approached. will also be noticed that the current ows only while the magnet is in motion.

To summarise the facts learnt from is experiment, they are that (1) any iteration in the strength of a magnetic ld enclosed by a coil of wire produces flow of electricity in that wire; (2); the irection of the current depends upon the plarity of the magnetic field and upon le nature of the alteration, whether in- ease or decrease; (3) the current only ows during the period of alteration; (4) le strength of the current depends upon le speed of the alteration.

(To be continued.)

EINFORCED CONCRETE AND ITS PRACTICAL APPLICATION.*

Various engineers in Great Britain ve already used reinforced concrete to great an extent that it would seem unecessary to dwell upon any lengthy arument advising the use of this material buildings and other constructions.

Its efficiency has been thoroughly denstrated, and it is now recognised as permanent method of construction, oof against the deteriorations to which ner materials are subject. The fire at ltimore gave evidence of its being fireoof; the earthquake at San Francisco owed it, to a great extent, to be proof ainst earthquake; innumerable inances have convinced users that it is st-proof; and the Pantheon at Rome oves it to be practically everlasting.

A reinforced concrete structure, cast as monolith, is more rigid than steel, ere rigid connections can only be seired at great cost. The corresponding ength obtained from this cause is one the reasons for the economy secured in use, and in the hands of capable deners, girders and other structures can made as strong in reinforced concrete in structural steel. Finally, what is st advantageous about it is that its ength continually increases with age.

The Question of Cost.

An engineer, in deciding upon the use any building material, after satisfying mself as to its suitability and efficiency, quires as to its probable cost. In all portant structures, and in all buildings ere steel framing might be used, reinced concrete will prove an economical uctural material. In this country, wever, there are many places where it uld be of no advantage whatever to ve a steel or concrete frame building, far as the external walls are concerned, account of the thickness of the walls quired by the building by-laws. If ernal walls of the building are to be ilt in a structural frame, the fillingshould be made of thin panels, and ere reinforced concrete is used, these panels need not be more than 5ins. thick. If, on the other hand, brick panels are used, a 9in. thickness will suffice. As a rule, it is necessary to secure permission from the local authorities whenever it is desired to erect a construction as outlined.

*Extracts from a paper by Mr. Moritz Kahn read (Glasgow on Feb- ruary 18th, 1908, before the Institution of Engineers and Shipbuilders in Scotland (corporated).

Reinforced Concrete not always the Cheapest Method of Construction.

It is erroneous to say that reinforced concrete will always prove the cheapest method of construction. As already stated, there are instances where it is not so cheap, and engineers soon recognise such cases. Middle-sized and small residential buildings, small manufacturing buildings, and the ordinary one-storey type of building will show very little saving when reinforced concrete is used in their construction. A low retaining wall 6ft. high would be cheaper in brick than in reinforced concrete, inasmuch as it would require a comparatively thin brick wall to withstand the strain, but a retaining wall over 10ft. high could easily be constructed in reinforced concrete cheaper than in brick. Isolated girders and roof trusses high in the air will invariably prove cheaper in steel than in reinforced concrete; but a steel structure, after having been built, will always require a certain amount of upkeep, and the maintenance charges thus entailed will have considerable influence on the total cost. In brief, though the material under discussion may not always be the cheapest form of construction, it is generally the most economical when all things are taken into consideration, such as the additional safeguard against fires, with a corresponding efficiency in one's plant, the reduction in fire insurance premiums, and also the reduction in maintenance charges.

Availability of Materials.

One of the reasons for the popularity of reinforced concrete lies in the fact that the constituents from which it is made can easily be obtained in almost any locality. In every part of England there are cement mills, and it is never necessary to look far for sand and crushed stone or ballast. These materials being found near the site produce a considerable decrease in the freight charges of building materials. The only remaining constituent which need be brought any distance is the reinforcing steel, but such steel will only be about 20 per cent. of the weight of the material which would be used in an ordinary steel structure, and consequently the freight is reduced in accordance therewith.

The Use of Crushed Stone or Ballast.

In the selection of materials, the question is often asked whether preference should be given to either crushed stone or ballast. Engineers are wont to object to the use of the latter, on the ground that the surfaces are generally round and too smooth. It has often been demonstrated that round smooth ballast give just as strong a concrete as crushed stone. This statement might be limited by the fact that in the early stages, say at the end of two weeks, crushed stone concrete will be found to be a little stronger than ballast concrete, but at the end of 30 days ballast concrete is just as strong as stone concrete, and from that time on its strength begins to surpass it.

Ballast is often considered unsatisfactory as a fire-resisting material. At a fire test made recently it was found that ballast concrete would not go through the ordeal; but the ballast used in that test was uncrushed, and portions of it were of considerable size.

Large stones when heated to a certain temperature will fly apart, owing to the internal strains existing therein, but small stones heated to the same degree will not disintegrate. If the ballast used in that test had either been crushed or screened to pass a ¾in. mesh, the floor slab in question would have successfully withstood the test. A similar test was made by myself for the New York City Fire Department in 1904, using crushed ballast concrete with satisfactory results.

Sand in Concrete.

With reference to sand used in concrete, some engineers specify that it shall be sharp and coarse. It is however very probable that these specifications will soon be eliminated. It has been recently proved that a moderately fine sand will give a stronger concrete than sharp coarse sand. In the selection of this material, however, it is necessary to discover whether it contains chemicals which might act on the cement. Sand taken from beds in contact with impure water kills the action of the cement, and should be condemned. Pit or bank sand is a very satisfactory kind to use. The cement should be of the very best grade, and should be subjected to many mechanical tests during the progress of the work. There is no necessity to dwell upon this material, as the products now being turned out by the various leading English mills are of such excellent grades that very little difficulty should be experienced in securing a proper quality. In this respect English cements are probably the best in the world.

Mixing and Hoisting.

The handling and mixing of concrete is a feature which to a great extent governs its cost. Many engineers object to the use of machine mixers. The use of a good batch machine mixer is advisable, however, on every large construction. When the concrete is mixed by hand it is turned from six to eight times, but when a machine mixer is used the concrete is turned at least twenty times in a much shorter period, and at a considerable saving in expense. In truth, a good machine mixer should actually be specified, provided the size of the construction and the amount of concrete to be mixed warrants the expense of installing such a plant. In general it will be found that in all constructions involving a quantity less than 400 or 500 yards, the concrete will be more economically mixed by hand than by machine, but in larger constructions the reverse is true.

As regards hoisting concrete, probably the best arrangement is that in which a self-dumping bucket is raised up a tower and automatically tipped at the required level. The cost of such an arrangement is about £150, and the saving over other methods of hoisting is about 5d. per cubic yard.

Inspection.

One of the most important matters in connection with reinforced concrete is that concerning its inspection or supervision. An inspector who is too fastidious can do quite as much harm by over-inspection as one who does not sufficiently perform his duties. An inspector should be the intermediary between the owner and the contractor, and it should be his duty to see that everything runs smoothly, his main object being to keep the interests of the contractor in line with those of the owner, thereby securing the best results An over-anxious inspector is apt to disgust the contractor, causing him to lose interest in the construction, with the result that poor work must follow. It is

assumed, of course, that good materials and workmanship are always to be demanded.

An Example.

The following instructions for inspecting reinforced concrete construction, written for the benefit of our inspectors, may be of interest:—

"Centering and supports must be properly braced and cross-braced in two directions. False work or centering should be removed with great care, and without injuring the construction by droping heavy sections thereon. No centering should be removed in less than three weeks. A good rule governing the length of time for the centering to remain in position is two days for each foot of span, that is, a span of 12ft. should remain centered for 24 days, and a span of 16ft. should remain centered for 32 days. The supports should under no consideration be removed in less than three weeks. No centering need remain in position longer than 45 days, no matter how great the span. Temporary shores should be placed under all main girders which might be subjected to heavy loads during the course of construction. Where centering supports come on soft ground, a heavy plank or timber should be placed underneath them to prevent their being forced into the earth. Reinforcing steel should be free from oil and paint. A slight film of rust is not objectionable, but all loose scales should be cleaned off with a stiff wire brush. Where Kahn bars are used as reinforcement the diagonals should be bent up to an angle of 45 degrees with the main tension bar.

"Samples of materials used should be subjected to mechanical tests. Only clean water, free from acids and strong alkali, should be used in the mixing. The resultant should be that known as a wet mixture rather than that termed a dry mixture. No concrete which has once begun to set should be deposited thereafter in the forms. Sections which have recently been concreted should not be travelled over. Concreting should never be carried on in freezing weather. In case the concrete, after having been deposited, should become frozen, the centering should never be removed until it is absolutely certain that all the frost has disappeared."

Lack of time prevents the consideration of these instructions in more detail, but a similar set of instructions can be drawn up by any engineer in charge of this form of construction. Probably one-half of the responsibility of a reinforced concrete structure depends upon the inspector in charge, and it is important that he should be as familiar with the class of work as the foreman who is to carry it out, and, at the same time, he should bear in mind the objections to his being too theoretical in his inspection; the practical man will secure better results.

Calculations and Empirical Formulæ.

Since the Royal Institute of British Architects thought that reinforced concrete, as a structural material, was of sufficient value to devote to it the attention and research of a special committee, which committee summarised the general principles for designing reinforced concrete, and published formulæ recommended by them, there is no necessity for me to burden this paper with any mathematical problems. Nor is it necessary to attack the methods of calculations employed by the patentees of the various systems, unless such calculations are based purely upon empirical formulæ. Empirical formulæ should not now be used, for sufficient progress has been made in scientific research to establish definite results, and though various authors who do not employ empirical formulæ differ widely in their methods of calculation, it will usually be found that there is very little difference in the result, no matter what method is used.

Failures in Reinforced Concrete.

In view of the large number of structures which have been erected in reinforced concrete, it might be asked—What is the percentage of failures as compared to the number of successes? This would be a logical question, and it is proposed to deal with it accordingly. That failures do occur is more or less obvious, but one of the objects of this paper is to show (1) why they occur, and (2) the means of preventing them. As a general statement, most of the failures which have occurred have been due to carelessness or ignorance on the part of supervisors or workmen engaged on the particular construction referred to. This being so, it would appear a simple matter to provide means for obviating the same, more especially as failures due to faulty design are but rarely heard of.

The Danger of Removing Centering too soon.

An accident occurred at a building being erected for the Kodak Co., at Rochester, New York, and a brief statement of the causes governing the accident may be interesting. The building referred to was to be constructed of concrete in a limited time. The foreman in charge, being desirous of hastening the execution thereof, one rainy day instructed some outside workmen to remove the centering from under the floor, the concreting of which had been completed some 30 days previously. Instead of seeing that his instructions were carried out he allowed the men to remove the centering without paying the attention to them which the importance of the work required. The result was that centering was removed from work which had only been completed 10 days' before. The accident was solely attributable to this, and the foreman was to blame for improper attention to his duty.

The lessons to be drawn from this accident are (1) that the foreman must be capable of carrying out simple instructions implicitly; (2) that centering dare not be prematurely removed, or indeed removed at all under any circumstances, except under the personal supervision of the foreman; (3) that the removing of centering is just as important as the construction of the floors, and should be as carefully supervised.

A simple method of preventing such failures would be the attachment of a small label to the centre uprights supporting each girder form. On this label could appear a notice to the effect that the centering should not be removed until a certain date, the date, of course, being left blank, to be filled in by the foreman as required, but to be not less than 30 days after the concrete is laid. This simple precaution would add considerably to the safety of reinforced concrete structures, at no material increase in cost.

This particular accident is mentioned because it is illustrative of the majority of failures which have occurred. As previously stated, accidents due to faulty design are rare, but that they do occur is evident from the accident which occurred at the Madrid Reservoir, which had a capacity of 106,000,000 gallons. The roof of this reservoir was designed on the lines of parabolic arches of nearly 20ft. span, with a rise of 2ft., the thickness at the crown of the arches being only 2in. It was assumed that when the roof was uniformly loaded over the entire area the thrusts of the various arches would counteract each other, thus allowing the arches to carry their load. Theoretically the structure was correct, but in designing it the engineers appear to have forgotten that with an area such as this it would not be possible to place the entire load on at once. As a matter of fact, in order to place the load, it was necessary to start at one end and to work towards the other, loading some of the arches before the others, with the result that thrusts in the abutments were produced which were transmitted to the unloaded arches, thus causing them to buckle upwards, doubtless because of the thinness at the crown. No lateral stiffness could be depended upon from the columns, which were too small in diameter for their length.

In testing the structures the engineer used sand about 2ft. deep, on a strip 13ft wide over the entire width of the reservoir. This weight of sand was safely carried overnight, but the following day one of the bays collapsed, with the result that the thrust previously referred to caused the collapse of all the adjoining bays, until the whole structure fell in like a pack of cards.

The Lesson to be Learned

from this failure is that though a design may be theoretically correct, consideration should also be given to the method in which the structure is to perform its work.

An arch, when designed to carry a uniformly distributed load will do so if the load is placed upon the entire arch at the same time, but if, for one reason or another, the eccentric loading of an arch is necessitated, it should be designed to provide for contingencies of this sort.

However, the failures in reinforced concrete bear but a very small percentage to the number of successes, and even the small percentage of failures that do occur could be eliminated with the exercise of ordinary intelligence and supervision. For this reason, when an accident takes place care should be taken to avoid condemning any particular method of reinforcement before the actual circumstances are known. It is possible that the best design, and the best method of construction, when placed in the hands of careless workmen, will result in disaster. Hence the emphasis which has been laid upon the details of construction work.

The Contractor's Profit.

In brief, reinforced concrete is the best form of construction when properly handled, and the worst when improperly handled. Such being the case, it behoves the owner and the architect to ensure that only the best class of contractor is employed on his work. Reliable contractors can only afford to carry out work which will ensure them a fair amount of profit, and if, by the adoption of reinforced concrete, the owner is saved 10 per cent. of the cost of construction, it is advisable to grant the contractor any extra saving, so as to ensure his giving a construction which will prove satisfactory in every respect. When owners and engineers realise this point, and act according, reinforced concrete will then reach the position in the category of structural materials to which it is entitled.

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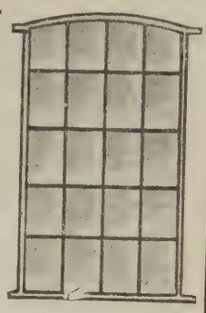
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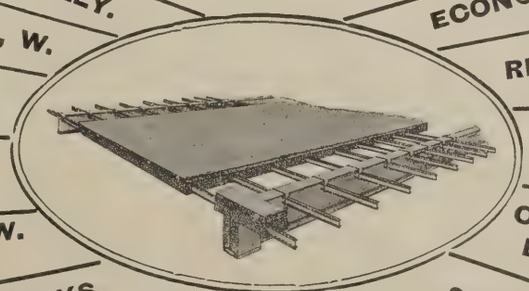
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Arran (Scotland).—For electrical installation at Arran for the Marquess of Graham. Messrs. Stevenson and McGuffie, consulting engineers, Glasgow:—

Johnson and Phillips	£6,475
Drake and Gorham	6,223
Watson and Co.	6,138
Allan, Arthur, and Ure	5,999
Cox-Walters	5,730
Anderson and Munro	5,489
Kennedy, Stark and Co.	5,302
Edmundson's Electricity Corporation	5,209
Lowdon Bros. and Co.*	5,184

*Accepted.

Bromley (Kent).—For putting up fencing, erecting wall, and preparing sites in Nightingale Lane, for Bromley Secondary School for Girls, for the Kent Education Committee. Mr. Wilfrid H. Robinson, M.S.A., architect:—

W. Nash	£1,189
Killby and Gayford	1,115
G. E. Wallis and Sons	1,087
A. S. Ingleton	1,077
C. E. Skinner	1,064
G. Browning	1,050
T. Crossley and Son	995
J. Podger and Sons	990
W. F. Blay,* Dartford	887

*Accepted.

Brynna (Wales).—For the erection of 30 houses at Brynna, near Llanaharn, for the Brynna Building Committee. Mr. James T. Jenkins, architect, and surveyor, Porth, Rhondda:—

T. Davies, Pencoed, near Bridgend	£5,700
I. Jones, Llanharan	5,460
W. David, Llanharan	5,355
T. W. Jones,* Oxford Street, Pontycymmer	5,280

*Accepted.

Corstorphine (Scotland).—For the erection of new police station at Corstorphine, for the Midlothian County Council. Mr. George Wilkie, Peebles, architect.

Accepted tenders.

J. Kinnear, Sons and Co., masons	£997 10 0
W. and J. R. Watson, Edinburgh, joiners	492 0 0
Wilson and Co., Edinburgh, smiths	41 8 0
T. W. Beach, Corstorphine, plumber	169 0 0
R. Dick and Son, Corstorphine, plasterers	158 19 9
R. Dick and Son, slaters	74 2 0
J. and T. Harvey, Edinburgh, painters	62 0 0

Gosport (Hants.).—For pulling down and rebuilding banking premises at Gosport, for the London and Provincial Banking Co. Mr. J. W. Walmsley, architect, 7, King's Terrace, Southsea:—

J. Croad	£3,469 0 0
J. Crockerell	3,447 0 0
C. M. Dash	3,269 0 0
S. Salter	3,153 0 0
C. J. Lear and Son	3,067 0 0
J. Hunt*	3,055 15 0

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London, N.W.—For the erection of an extension of the central library building at the corner of Finchley Road and Arkwright Road, Hampstead, for the Hampstead Borough Council. Mr. A. S. Taylor, A.R.I.B.A., architect:—

Wells, Morton and Co., Vauxhall	£2,175 0 0
A. N. Coles, Chelsea	2,011 0 0
Spencer, Santo, and Co., Kensington	1,995 0 0
A. J. Reynolds, West Hampstead	1,971 0 0
H. and G. Taylor, Lewisham	1,960 0 0
F. Troy and Co., Finchley Road	1,918 11 0
Gathercole Bros., Norbury	1,900 0 0
Harris and Wardrop, Limehouse	1,878 0 0
T. Bendon, Ltd., Hammersmith	1,865 0 0
McCormick and Sons, Essex Road	1,849 0 0
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J. Appleby and Sons, Southwark	1,778 0 0
J. Chessum and Sons, Shoreditch	1,771 0 0
Patman and Fotheringham, Theobald's Road	1,767 0 0
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F. Gough and Co., Hendon	1,754 0 0
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B. E. Nightingale, Lambeth	1,724 0 0
J. Allen and Sons, Kilburn	1,686 0 0
J. Stewart, Tottenham	£1,672 5 0
W. H. Hyde and Co., Norwood Junction	1,668 0 0
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J. W. Jerram, East Ham	1,658 0 0
J. and W. Drake, Willesden Green	1,615 0 0
H. L. Holloway, Deptford	1,581 0 0

London, W.—For alterations and extensions of sewage disposal works, for the Chiswick Urban District Council:—

H. C. Clifton, London, W.	£25,524 0 0
Edwards and Co., London, W.C.	24,989 7 5
G. Shellabear and Son, Plymouth	23,613 19 6
R. M. Parkinson, Peterborough	22,453 0 0
J. A. Ewart, London, S.W.	21,611 19 2
J. Mowlem and Co., London, S.W.	21,012 0 0
J. Moran and Sons, Kensington	21,000 0 0
R. H. B. Neal, Plymouth	20,633 5 4
R. C. Brebner and Co., Edinburgh	20,200 0 0
T. Adams, Wood Green	20,191 2 0
D. R. Paterson, Ltd., London, N.W.	19,936 2 2
A. T. Catley, London, W.C.	19,990 0 0
W. and C. French, Buckhurst Hill	18,828 0 0
H. V. Smith and Co., London, S.W.	18,812 12 6
T. W. Pedrette, Enfield, N.	18,748 14 2
G. Bells and Sons, London, N.	18,696 18 0
T. Pritchard and Co., London, E.C.	17,920 3 9
E. Wall, Tooting, S.W.	17,427 0 0
T. Watson, jun., Southall	17,270 0 0
W. Manders, Leyton	16,646 17 0
W. Muirhead and Co., London, E.C.	15,674 15 7

Rugeley (Staffs.).—For erecting new Rural Council elementary school. Mr. H. T. Sandy, Greengate, Stafford, architect. Quantities by the architect:—

G. Whittingham	£1,742 1 5
Cave and Son	1,610 11 0
E. Jones	1,588 13 4
C. Collett	1,570 10 10
H. Dorse	1,554 0 0
T. and S. Ham	1,553 0 0
W. Wistance	1,550 11 0
J. Hicken and Sons	1,520 0 0
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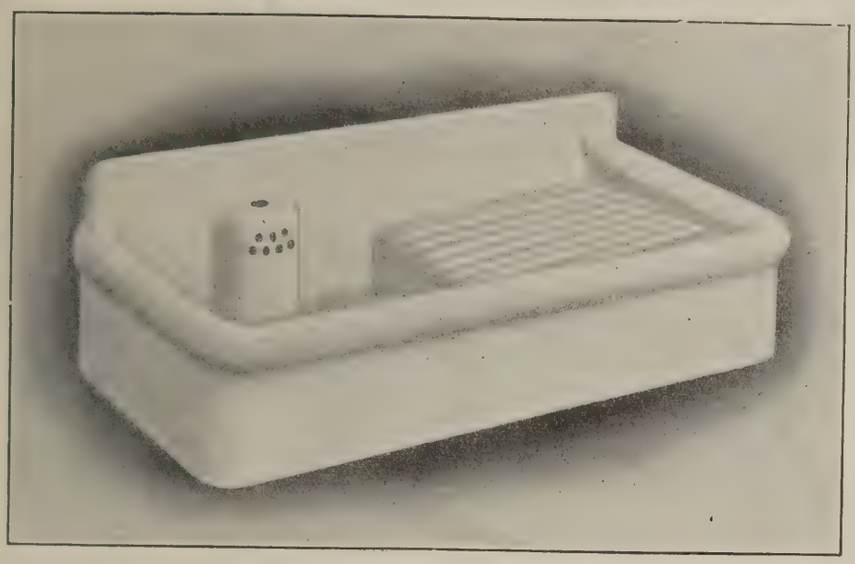


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Spencer, Santo and Co., Westminster	4,214
E. Lawrance and Sons, City Road, N.	4,083
Charles Wall, Limited, 4, Lloyd's Avenue, E.C.	4,080
F. and H. F. Higgs, Herne Hill ...	3,900
G. Munday and Sons, Trinity Square, E.C.	3,670
H. L. Holloway, Deptford	3,652

*Recommended for acceptance.
Architect's revised estimate, £3,700.

Portsmouth.—For the erection of new warehouse, depository, van sheds, etc., for Messrs. W. Boots and Co., carriers, of Portsmouth and Chatham. Plans, specifications and quantities prepared by Mr. W. Bates White, 173, Fawcett Road, Southsea:—

G. J. Davis	£3,400
J. Harding	3,195
E. and A. Spurgings	3,180
W. R. Light and Sons	3,177
H. Jones	3,174
J. Crockerell	2,995
H. Buckett	2,995
F. Privett	2,987
J. Croad	2,975
M. Colthemp*	2,900
J. Mitchell†	2,760

*Accepted. †Withdrawn.

Southend-on-Sea.—For the laying along Southchurch Beach Road of about 1,500 yds. of single tramway track with loops (rails and setts will be provided by the Corporation), for the Corporation. Mr. E. J. Elford, C.E., borough engineer:—

S. G. Smith, London, E.C. ...	£2,626 15 3
R. C. Brebner and Co., Edinburgh	2,621 11 6
R. Dykes, Bedford Park, Chiswick	2,192 14 4
W. Muirhead and Co., London, S.W.	2,045 8 9
Fry Bros., Greenwich, S.E. ...	2,010 19 5
J. Mowlem and Co., Westminster	1,969 0 0
W. Griffiths and Co., London, E.C.	£1,966 11 7
W. Ball and Co., Leyton ...	1,940 12 3
Scammell, Lawson and Co., London, E.C.	1,936 17 3
G. J. Anderson, Poplar, E. ...	1,901 10 11
G. Trentham, Birmingham ...	1,794 0 0
R. W. Blackwell and Co.,* Westminster	1,720 17 0

*Accepted.

Torquay (Devon).—For additions and alterations at the Grand Hotel, for Mr. J. B. Gilley. Messrs. Watson and Watson, architects, Torwood Street, Torquay:—

Parker Bros.	£14,586 9 6
Wakeham Bros.	13,218 0 0
F. A. A. Stacey	12,950 0 0
G. P. Turpin	12,729 0 0
Pearn Bros.	12,545 0 0
R. Wilkins and Son	12,446 0 0
Lapthorn and Co.	12,245 16 0
W. E. Blake	12,000 0 0
A. N. Coles	11,816 1 0
J. Smerdon	11,775 0 0
E. P. Bovery and Son	11,350 0 0
R. F. Yeo and Sons,* Torquay	10,950 0 0

*Accepted.

Truro.—For the execution of the works necessary for the sewerage and sewage disposal of Grampound Road, for the Truro Rural District Council. Mr. R. Hansford Worth, engineer, 42, George Street, Plymouth:—

J. Shaddock, Plymouth ...	£1,278 10 7
R. Hooper, St. Agnes	1,096 15 11
T. Doney, Plymouth	1,077 18 9
L. Pike, Lynton, Torquay ...	1,057 14 1
W. H. R. Hill, Abbey House, Plymouth	994 0 0
C. and J. Harris, Truro ...	973 13 8
W. E. Bennett,* Bodmin ...	868 15 10

*Accepted.

Bankruptcies.

During the week ending Monday, June 22nd, 16 failures in the building and timber trades of England and Wales were gazetted.

A. Dunn, builder, Gloucester. R.O., June 16.

G. G. Ash, builder, Alvaston. R.O., and Adj., June 19.

J. A. E. Burrows, builder and contractor, Droitwich. R.O. and Adj., June 18.

C. H. Burfitt, builder, Bourton. First meeting, O.R.'s, Salisbury, July 9, at 2.

D. W. Burrage, builder, Carshalton, late of Wallington and Surrey. Adj., June 2. (Amended notice.)

W. Eickhoff (late trading as E. M. Eickhoff), surveyor, Bethnal Green, and Hackney Road. Adj., June 17.

A. E. Pill, painter and decorator, Earlestown. R.O. and Adj., June 20.

W. J. T. Quiller, builder, Lostwithiel. First meeting, O.R.'s, Truro, July 3, at 12. P.E., Town Hall, Truro, July 11, at 11.45.

J. Morris, builder, Richmond. R.O., June 18. First meeting, 132, York Road, S.E., July 1, at 11.30. P.E., C.C., Wandsworth, July 2, at 12.

Spiers and Son, builders, St. John's Wood. R.O., June 18. First meeting, Bankruptcy Court, July 1, at 1. P.E., Bankruptcy Court, July 21, at 11.

E. J. S. Stokes, builder, Poole. First meeting, Curtis and Sons, 42, Station Road, Poole, June 27, at 12. P.E., Town Hall, Poole, July 10, at 11.30.

W. J. Payne, builder, Fobbing, Essex. First meeting, Shire Hall, Chelmsford, July 1, at 2.30. P.E., same at 10. Adj., June 19.

W. Stubbs, builder, Bayswater, and Southend-on-Sea. R.O., June 18. First meeting, Bankruptcy Court, July 1, at 12. P.E., Bankruptcy Court, July 21, at 11.

T. Cowen, (trading as T. Cowen and Co.), painter, decorator, and paperhanger, Workington. First meeting, C.C., Cockermouth, June 29, at 12.15. P.E., C.C., Cockermouth, July 6, at 2.45.

E. C. Doughty, carpenter and builder, Oulton Broad. R.O., June 19. First meeting, O.R.'s, Norwich, July 4, at 12. P.E., Town Hall Great Yarmouth, July 14, at 11. Adj., June 19.

F. Grover (trading as W. Johnson and Co.), timber merchant, Holloway, and Kentish Town Road. R.O., June 16. First meeting, Bankruptcy Court, July 1, at 12. P.E., Bankruptcy Court, July 22, at 11. Adj., June 16.

A meeting of the creditors of James Bromage, trading as Bromage and Evans, builders and contractors, Worcester, was held at the Star Hotel, Worcester, on June 22. Creditors were present representing about £11,000, including Lloyd's Bank, £6,749. The statement of affairs showed liabilities, £8,684 18s. 3d.; and it was estimated that there would be a surplus, subject to the cost of winding up, of £2,205 10s. 1d. The meeting decided that, to enable the estate to get the benefit of the work already done on contracts that are still in hand, the business must be carried on until the contracts are completed.

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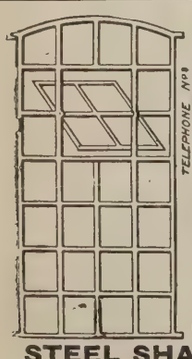
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, news of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 1—16. STICKFORD (Lincs.)—Erection of an elementary school and a master's house at Stickford, Lincs. Bills of quantities and form of tender with Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before July 1, on payment of two guineas. Tenders to be delivered before 10 a.m. on July 16 to S. Maudson Grant, secretary, 286, High Street, Lincoln.

July 2. RAWTENSTALL.—Erection of new Council school at Alder Grange, for the Corporation of Rawtenstall. Paatirculars from A. Brooklehurst, architect, St. James's Chambers, Waterfoot, on payment of £1, which will be returned after the receipt of a bona fide tender. Tenders, endorsed Rawtenstall. Particulars from A. Brooklehurst, architect, later than noon on July 2, to J. Whalley, town clerk, Municipal Offices, Rawtenstall.

July 3. LEALHOLM (Yorks.).—Alterations and improvements to Lealholm Council School, for the North Riding of Yorkshire County Council Education Committee. Particulars at the school during ordinary school hours. Tenders to be deivered not later than noon, July 3, endorsed "Tender, Alterations Lealholm School," to J. C. Wrigley, secretary, County Hall, Northallerton.

July 3. BELFAST.—Erection of a warehouse in Chichester Street, Belfast, in accordance with plans, specification, and conditions of contract, which may be seen at the office of W. J. Gilliland, F.R.I.B.A., 9, Howard Street, Belfast, with whom tenders are to be lodged not later than July 3. Quantities can be obtained from W. H. Stephens and Sons, Donegall Square North, Belfast.

July 3. ATHERTON.—Completion of tower of Hindford Church. Particulars at the church, and at the office of the architects. Bills of quantities with Messrs. Wright and Son, surveyors, Lancaster. Tenders to be delivered not later than noon, July 3, to Austin and Paley, architects, Lancaster.

July 3. WAKEFIELD.—Renovations and repairs (builder, painter), to the Registry of Deeds Offices, Wakefield. Plans with the architect, as below. Tenders to be forwarded not later than 10.30 a.m. July 3, to J. Vickers-Edwards, County Architect, County Hall, Wakefield.

July 3. LOW BENTHAM.—Erection of a school at Low Bentham, near Settle, for West Riding Education Committee. Plans with T. Benson P. Ford, Esq., J.P., County Councillor of the District. Specifications and bills of quantities with the County Architect. A deposit of £1 is required. Cheques, etc., must be made payable to the West Riding treasurer, and sent to him direct at the County Hall, Wakefield, otherwise applications will not be entertained. Tenders to be forwarded not later than 10.30 on July 3, to J. Vickers-Edwards, County Architect, County Hall, Wakefield.

July 4. REDCAR ZETLAND.—Alterations and additions to the Redcar Zetland Council School. Tenders to be delivered not later than July 4, endorsed "Tender, Alterations, Redcar Zetland Schools," to J. C. Wrigley, secretary, County Hall, Northallerton.

July 4. GREENOCK.—Rebuilding of Pacemuir Hill Bridge, near Kilmacolm. Plans on application to the undersigned, from whom copies of the specification, schedule of quantities, and form of tender may be obtained on payment of a fee of 7s. 6d. Tenders, marked "Tender for Pacemuir Hill Bridge," to be lodged not later than July 4, with W. McClure, clerk to the District Committee, Mansion House, Greenock.

July 4. BOWHILL.—Erection of a hall at Bowhill for the Bowhill Public-House Society, Ltd., Station Road, Bowhill. Particulars at the office of D. Swanstone and Syme, architects and chartered surveyors, Redburn Chambers, Kirkcaldy. Tenders, sealed and endorsed, "Tender for Hall," to be lodged with Mr. Andrew B. Simpson, Secretary to the above Society, not later than July 4.

July 4. COALVILLE.—Erection of new secondary school at Coalville, together with out-offices, drainage and other works connected therewith. Particulars with the architects, Messrs. Barrowcliff and Silcock, Town Hall Chambers, Loughborough, on deposite of two guineas. Tenders to be sent not later than noon on July 4, to "Chairman of the Buildings and Sites Committee," County Education Offices, 33, Bowling Green Street, Leicester.

July 4-27. IPSWICH.—Converting the St. Mark's Grant School, Bridge Road, Oulton Broad, into a special subjects centre. Builders who desire to tender should send in their names to the undersigned not later than July 4. Tenders, endorsed "Oulton Broad Special Subjects Centre," to be sent not later than July 27 to W. E. Watkins, secretary, Education office, County Hall, Ipswich.

July 6. WINSFORD.—Erection of a shop in Ways Green, Winsford. Particulars at the office, 21, High Street, Winsford Tenders, endorsed "New Branch," to be sent to Wm. Fryer, secretary, 21, High Street, Winsford, not later than 6 p.m. on July 6.

July 6. CARLISLE.—Erection of a fitters' shop and store at the waterworks, Castle Carrock. Particulars at the office of the undersigned, on deposit of half-a-guinea. Tenders, endorsed "Tender for Fitters' Shop, etc.," to be delivered not later than 10 a.m. on July 6, to Henry C. Marks, M.Inst.C.E., city surveyor and water engineer, 36, Fisher Street, Carlisle.

July 6. PRESTON.—Erection of new chancel and vestries to St. John's Church, Bretherton, near Preston. Plans and specification at the church and at the office of the architects. Bills of quantities with Messrs. Wright and Son, surveyors, Lancaster. Tenders to be delivered not later than noon July 6, to Austin and Paley, architects, Lancaster.

July 6. OUGHTERSIDE.—Alterations and additions to the Council School at Oughterside. Particulars with the architect, Mr. Joseph Forster, M.S.A., 13, Earl Street, Carlisle, or Mr. F. Richardson, solicitor, Aspatria. Tenders not later than July 6.

July 7. MASHAM.—Building a new corridor, cloakroom, and offices, and the execution of certain alterations, repairs, and painting, at Masham Elementary School. Particulars at the offices of Edmundson and Gowland, solicitors, Masham, Yorkshire. Estimates will be received by post only up to July 7, by Christopher Clarke, F.S.I., Charlcot, Bedale.

July 7. ABERYSTWYTH.—Building a police station at Drefach, Llanybyther. Plans and specification at the police station, Lampeter. Tenders to be sent not later than July 7, to F. R. Roberts, clerk of the peace, Aberystwyth.

July 7. PONTYPOOL.—Erection of a public hall and institute at Garndiffaith, near Pontypool, Plans and specification with the secretary, C. Winston, grocer, Garndiffaith, or at the office of W. Beddoe Rees, architect, 3, Dumfries Place, Cardiff, where bills of quantities may be obtained on deposit of one guinea. Tenders to be delivered to the secretary not later than July 7.

July 7. NEWRY.—Erection and completion of new premises at Hill Street, Newry, for Messrs. R. Foster, Ltd. Particulars from the architect as below. Bills of quantities, prepared by Mr. F. S. Hall, F.A.S.I., quantity surveyor, 8, Westmoreland Street, Dublin, copies of which, with form of tender, can be had on application to the architect, accompanied by a deposit of £2 2s. Tenders, endorsed "Tender for New Premises, Hill Street, Newry," accompanied by bills of quantities, fully priced, must be delivered not later than July 7, to S. Wilson Reside, architect, Margaret Square, Newry.

July 8. TREHERBERT.—Construction of a Workmen's Institute at Tynewydd, Treherbert. Plans and specifications may be seen and bills of quantities obtained on deposit of £2 2s from J. D. Walters, architect, Maesgwyn, Treherbert. Tenders, sealed and endorsed, and addressed to Hon. Secretary, W. H. Morgan, Hill Street, Treherbert, not later than July 8.

July 8. FROSTERLEY.—Erection of a parish hall at Frosterley. Plans and specifications on view at Rogerley Hall, Frosterley. Tenders to be sent to V. A. Rippon, at the same address, not later than July 8.

July 6. BAILDON.—Asphalting the playgrounds of Tong Park Provided School, for the Education Department of West Riding C.C. Tenders, endorsed "Tender, Tong Park." to be sent not later than noon on July 6, to Edward H. Steel, Penny Bank Chambers, Shipley.

July 8. DUBLIN.—Erection of new National schools, Lower Rutland Street, in the Marlborough Street Parish, Dublin, for the Very Rev. Father Flavin, according to the plans and specifications prepared by the architects, named below. Bills of quantities have been prepared by Messrs. Numby and O'Rourke, surveyors, 15, College Green, Dublin, and can be obtained from them. Plans and specification can be inspected at the architect's offices. Tenders to be delivered not later than 12 o'clock on July 8, to Ashlin and Coleman, architects, 7, Dawson Street, Dublin.

July 8-27. HORNCASTLE.—Erection of a grammar school at Horncastle, in the county of Lincoln. Particulars on application to Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before July 8, on payment to them of two guineas. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders to be delivered not later than 10 a.m., on July 27, to H. Tweed, clerk to the Governor 6, Lindsey Court, Horncastle.

July 9. CHIPPING CAMPDEN.—Alterations and additions to Chipping Campden Grammar School. Particulars from Mr. R. G. Phillips, architect, Midland Bank Chambers, Gloucester, upon depositing £2 2s.

July 9. WALTHAMSTOW.—Erection and completion of the Carnegie Central Library at High Street, Walthamstow. The drawings and specifications prepared by the architect, Mr. J. Williams Dunford, M.S.A., and the contract agreement may be inspected at No. 1000, Queen Victoria Street, E.C., between 11 a.m. and 4 p.m. (Saturdays excepted). Quantities in course of preparation by Mr. G. T. G. Wright, of No. 3, Great Winchester Street, E.C. Applications to tender to be forwarded not later than July 9, accompanied with a £5 Bank of England note, to C. Sydney Watson, clerk to the Council, Town Hall, Walthamstow. Fair wages clause.

July 10. NEATH. — Heating of St. Thomas' Parish Church, Neath, by the hot water system. Tenders, endorsed "Heating Apparatus," to be sent to Mr. J. E. Evans, 39, Alfred Street, Neath, not later than July 10.

July 11. ANERLEY.—Erection of classrooms with a central hall, at the North Surrey District School, Anerley. Particulars at the office of Mr. Cecil A. Sharp, architect, 11, Old Queen Street, Queen Anne's Gate, S.W. Tenders, endorsed "Tender for Class-rooms," to be sent not later than July 11, to the Managers, North Surrey District School, Anerley, S.E.

July 11. FOLKESTONE.—Enlargement of Acrise and Paddlesworth Council School, near Folkestone, Kent. Plans and specification, prepared by the Kent Education Committee's architect (Mr. Wilfrid H. Robinson, M.S.A.), with the School Correspondent, A. E. Watts, Esq., 51, Guildhall Street, Folkestone, Kent, or at the offices of the Committee. Tenders to be delivered to the School Correspondent, at the address above stated, not later than Saturday, July 11.

July 13. FINCHLEY.—Extension of buildings in connection with the Electricity Works, Finchley U.D.C. Particulars with Edward Calvert, Electrical Engineer, Electricity Works, Finchley, N. Deposit of two guineas required. Tenders to be sent, not later than six p.m. on July 13, to E. H. Lister, Clerk to the Council, Church End, Finchley, N.

July 13. YNYSDDU (Mon.)—Erection of 28 houses at Ynysddu, Monmouthshire, for the Brynscawen Building Club. Plans and specification can be seen either at the office of the architect, Mr. W. A. Griffiths, Pontllanfraith, or with the secretary, Mr. J. H. Davies, Queen's Square, Tylorstown. Tenders to be sent to the chairman, Mr. H. T. Richards, Scottish Legal Offices, Arcade Chambers, Pontypridd, not later than July 13.

July 13. SOWERBY BRIDGE.—Erecting a secondary school at Albert Road, Sowerby Bridge. Particulars with the architects, Messrs. Longbottom and Culpan, Somerset Chambers, George Street, Halifax. Deposit of one guinea for each bill of quantities. Tenders must be endorsed "Tender, Secondary School," and delivered not later than 12 o'clock noon on July 13, to R. W. Evans, solicitor and clerk to the Governors, Commercial Bank Chambers, Halifax.

July 14. BARKING.—Erection of a convalescence room to be constructed of framing, covered with corrugated iron, at the Upney Isolation Hospital. Plans and specifications can be seen, and form of tender obtained, upon application to Mr. C. S. Dawson, surveyor to the Council, Public Offices, Barking. Tenders marked on the outside "Tender for Convalescence Room," to be sent to the chairman of the Public Health Committee, Public Offices, Barking, before 4 p.m. on July 14.

July 15. WILLESDEN.—Erection of a telephone exchange at Willesden, N.W., for the Commissioners of H.M. Works and Public Buildings. Particulars on application to Mr. J. Wager, H.M. Office of Works Westminster. Bills of quantities and forms of tender at the undermentioned address on payment of one guinea. Tenders to be delivered before noon on July 15, addressed to the Secretary H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Willesden Telephone Exchange."

July 16. LONG STRATTON.—Constructing a bridge across the Waveney between Roydon and Wortham. Plans may be seen and specification obtained at the clerk's office, as below, or at the office of the clerk to the Hartismere Rural District Council at Eye. Tenders, marked "Tender for Bridge," to be sent not later than July 16, to A. E. Scarlett, Clerk, Depwade Rural District Council, Long Stratton.

July 20. PRESTON.—Alterations to Holme Slack Farm, Deepdale. Particulars with the borough surveyor, Town Hall, Preston, to whom sealed tenders, endorsed "Tender for Alterations, Holme Slack Farm, Deepdale," must be delivered not later than July 20.

July 29. COCKFIELD.—Alterations and additions to the two Church of England Schools at Cockfield. Names to Messrs. Clark and Moscrop, F.R.I.B.A., architects, Darlington, from whom particulars may be obtained. Tenders not later than July 29.

July 30. GLOUCESTER.—Erection of a mission-hall and Sunday-school in Seymour Road, Gloucester, for the Building Committee of the Bristol Road Wesleyan Mission Hall. Plans and specifications with the undersigned, from whom quantities may be obtained on or after July 13, on deposit of one guinea. Tenders to be endorsed "Tender for Wesley Hall and Schools," and delivered before noon on July 30, to J. Fletcher Trew, M.S.A., architect, County Chambers, Station Road Gloucester.

No date. MARKET RASEN.—Erection of new Liberal club at Market Rasen. Name and address to C. R. Herring, Market Rasen.

No date. MONEYMORE (Co. Derry).—Erection of a Curate's residence at the Loup, Moneymore, Co. Derry, for the Rev. Eugene McAleavey, P.P. Plans and specification at the Parochial House, Loup, or at the offices of J. V. Brennan, C.E., architect, Belfast Bank Chambers, Belfast.

No date. GLASGOW.—Erection of a church at Garnethill, Glasgow. Contractors wishing to tender for mason and brick work, carpenter and joiner work, concrete and plaster work, glazier work, plumber work, steel and iron work, are invited to apply (by letter) to Charles J. Menart, architect, 241, West George Street, Glasgow.

ENGINEERING.

July 6. SALFORD.—Heating and ventilating of the Halton Bank Council School, Pendleton. Particulars with the architect, Mr. John H. Woodhouse, F.R.I.B.A., 100, King Street, Manchester, on payment of a deposit of one guinea. Tenders, which must be separate for the heating and ventilating, and be endorsed "Tender for Heating (or Ventilating) Halton Bank School," to be addressed to the Chairman of the Works and Buildings Sub-Committee, and delivered not later than noon on July 6, to L. C. Evans, town clerk, Town Hall Salford.

July 6. MOTHERWELL.—Construction of a covered service reservoir at Waterloo, near Wishaw. Particulars at the Town Hall, Motherwell, or from the engineer, Mr. James McMillan, Culter Waterhead, Biggar, or from the address below, on payment of £1 sterling. Tenders to be delivered, endorsed "Motherwell Water—Tender for Covered Reservoir," not later than July 6 to James Burns, town clerk, Motherwell.

July 7. WELLFORD (FORFARSHIRE).—Taking down the existing bridge and erection of a new masonry bridge over the Noran Water at Wellford. Plans at the office of the undersigned and at the office of the engineers, Messrs. Crouch and Hogg, C.E., Blythswood Square, Glasgow. Copies of the specification, schedule of quantities, and form of tender may be obtained from the engineers on payment of one guinea. Tenders, marked "Wellford Bridge," to be lodged not later than 10 a.m. on July 7 with Alexr. Philip, district clerk, 11, Panmure Street, Brechin.

July 7. BRAINTREE.—Sinking a borehole and test pumping to obtain a supply of water for the parishes of Great and Little Coggeshall, Essex. Particulars from the engineers, Sands and Walker, Milton Chambers, Nottingham. Tenders, endorsed "Water Supply, Coggeshall," to be sent not later than July 7 to Alfred Hills, clerk to the Council, 1, New Street, Braintree.

July 8. CONGLETON.—Sinking a well 40 ft. deep, 8 ft. diameter, for Congleton R.D.C. Plans and specifications and bills of quantities from H. Ferrand, clerk to the Congleton Rural District Council, Sandbach, Cheshire. Tenders, endorsed "Odd Rode Water Supply," to be delivered not later than July 8.

July 13. DUBLIN.—Supply and erection of boiler plant, etc., at the Pigeon House Generating Station for Dublin Corporation. Particulars from the city electrical engineer, Fleet Street, Dublin, on payment of one guinea for each specification. Tenders, addressed "Chairman of the Lighting Committee," 3, Cork Hill, Dublin, and marked "Tender for Boiler Plant," to be received not later than noon on July 13.

July 15. GATESHEAD.—Construction of a bridge under the railway at Coulthard Lane, Gateshead, and approaches. Particulars at the office of Mr. C. A. Harrison, the company's engineer, Forth Banks, Newcastle-on-Tyne. Tenders, marked "Tender for Bridge under Railway at Coulthard's Lane, Gateshead, and Approaches," to be sent to the secretary, R. F. Dunnell, at York, not later than 9 a.m. on July 15.

IRON AND STEEL.

July 2. BELFAST.—Supply of iron castings—as bends, branches, tees, etc.—for a period of one year. Tenders, endorsed "Tender for Iron Castings," will be received by Sir Samuel Black, town clerk, not later than July 2.

July 2. HACKNEY.—Supply and delivery of gully gratings, manhole covers, and other ironwork required in connection with sewers, etc. Particulars with Mr. Norman Scorgie, M.Inst.C.E., borough engineer and surveyor, and on payment of 10s. Tenders, endorsed "Sewer Ironwork," must be delivered personally, or by authorised representative, at the meeting of the Borough Council to be held on July 2, at 7 o'clock p.m., at the Town Hall, Hackney, N.E. Fair wages clause.

July 14. LONDON, E.C.—Supply of: 1. Steel material; 2, spring and ferrule steel; 3, laminated springs, for Bombay, Baroda and Central India Railway. Specifications on payment of 21s. each (which will not be returned). Tenders not later than noon, July 14, to W. V. Constable, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C.

PAINTING AND PLUMBING.

July 2. BUCKNALL (Staffs.).—Painting, etc., at the Infectious Diseases Hospital, Bucknall, Stoke-on-Trent. Particulars from the architect to the Board, Mr. Elijah, Jones, M.S.A., 10, Albion Street, Hanley, not later than July 2.

July 2. BLACKBURN.—Tenders and designs for the internal and external decorations to All Saints' Church, Blackburn. Contractors willing to tender for this work are requested to submit their names to Mr. J. Ratcliffe, 273, Hollin Bank Terrace, Blackburn, not later than July 2, when specification will be forwarded.

July 3. GUILDFORD.—Painting and cleaning work at the Workhouse, Guildford. The specification of the proposed work can be seen and any other information obtained upon application to the Master at the Workhouse, Warren Road, Guildford. Tenders, endorsed "Tender for Painting," to be delivered not later than July 3, to W. S. V. Cullerne, clerk to the Guardians, Commercial Road, Guildford.

July 3. ASHFORD (MIDDLESEX).—External painting at schools at Ashford, Middlesex. Particulars on receipt of a stamped, addressed, brief-size envelope. Persons tendering must examine the buildings, and will be allowed to do so on application to the Superintendent at the schools, between 10 a.m. and 4 p.m. Tenders, marked "Tender for External Painting," addressed to the Managers, West London District Schools, Ashford, Middlesex, to be sent in not later than eleven a.m. on July 3.

July 7. LIVERPOOL.—Preparing, whitewashing and colouring walls, ceilings, etc., painting papering, etc., the Royal Southern Hospital. Copies of the specification may be obtained on application to the superintendent at the hospital. Tenders to be sent to the chairman of the Board of Economy, Royal Southern Hospital, Liverpool, not later than July 7.

July 7. SHIRLEY.—Painting and distempering work at the schools, Wickham Road, Shirley, near Croydon, according to the specification prepared by H. H. Newman, Esq., F.R.I.B.A., etc. Particulars at the office of the undersigned up to July 7, on depositing a £5 Bank of England Note (cheques and cash will not be accepted). Tenders, endorsed "Tender for Painting and Distempering Schools," to be delivered not later than 6.30 p.m., on July 9, 1908, to E. Pitts Fenton, Clerk, 283, Tooley Street, S.E. Fair wages clause.

July 7. EPSOM.—Whitewashing, painting, varnishing, etc., the Workhouse Infirmary, in accordance with a specification which can be seen at the workhouse. The buildings can be inspected and form of tender can be obtained, on application to Mr. J. T. White, the Master of the Workhouse. Tenders, inscribed "Tender for Painting," to be delivered at the Guardians' Offices, Waterloo Road, Epsom, before seven p.m., July 7, to Alick G. Ebbutt, Clerk, "Gynsdale," Waterloo Road, Epsom.

July 8. HOMERTON.—Cleansing certain wards, etc., at the Infirmary, High Street, Homerton, N.E., for Hackney Union. Tenders, endorsed "Cleansing Infirmary," to be delivered not later than two p.m. on July 8, to Frank R. Coles, Clerk to the Guardians, Clerk's Offices, Sidney Road Homerton, N.E.

July 8. GLAMORGAN. — Painting Council schools, etc., for Glamorgan County Council, and erecting a new school at Brynamman, and alterations at other schools. Particulars at the office (see below). Tenders to be delivered not later than July 8, to T. Mansel Franklen, clerk of the County Council, Glamorgan County Council Offices, Westgate Street, Cardiff. Fair wages clause.

July 8. SUTTON.—External and internal cleaning and painting works and tar-paving at the Downs School, Sutton, Surrey, in accordance with drawing, conditions of contract, and specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief, for the Metropolitan Asylums Board. Drawing, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment E.C., and can be obtained upon payment of a deposit of £1. Tenders, addressed as noted on the form, to be delivered at the office of the Board not later than ten a.m. on July 8.

July 9. KENSINGTON, W.—Decorative and sundry cleaning works at the Infirmary, Marloes Road Kensington, W. Tenders to be delivered not later than three p.m. on July 9, to W. R. Stephens Clerk to the Guardians, Guardians' Offices, Marloes Road, Kensington, W.

July 9. KING'S LANGLEY.—Distempering painting, and other internal and external repairs at the St. Pancras Schools, Leavesden, King's Langley, Herts, in accordance with specification which may be obtained at the office as below. Tenders to be sent not later than 10 a.m., on July 9, to Alfred A. Milward, Clerk to the Guardians, Town Hall, Pancras Road, N.W.

July 10. PORTLAND.—Repairs, cleaning, and painting the Ferry Bridge, Portland, for Dorset C.C. Particulars from Walter J. Fletcher, county surveyor's office, Wimborne. Tenders, endorsed "Ferry Bridge," to be sent in to the county surveyor, Shire Hall, Dorchester, not later than July 10.

July 13. BLACKBURN.—Painting etc., at various schools in the Borough of Blackburn. Tenders to be delivered at the Municipal Offices not later than 9 a.m. on July 13.

July 14. SWANSEA.—Painting with two coats of good oil colours all the outside wood and iron work of the wards of the Isolation Hospital, Garngoch, with the administrative block, and other buildings at the hospital. Particulars from the undersigned, or from Mr. T. Trevor Williams, engineer and surveyor, Council Offices, Alexandra Road, Swansea. Tenders, marked "Painting of Isolation Hospital," to be sent not later than July 14, to Edward Harris, clerk, District Council Offices, Alexandra Road, Swansea.

July 20. GATESHEAD.—Painting and cleaning various schools during the Midsummer vacation (August). Specifications and particulars are being prepared, and will be forwarded to such persons as send in their names and addresses not later than July 6 to the secretary, Education Offices, Gateshead. Tenders to be returned to the Education Offices before noon July 20.

July 24. PILNING (Glos.).—Alterations and additions to Pilning Council School, for the Gloucestershire Education Committee. Particulars upon depositing five guineas with R. S. Phillips, architect, Midland Bank Chambers, Gloucester, to whom tenders are to be delivered on or before July 24.

ROADS AND CARTAGE.

July 2. ALTON.—Supply of broken granite as may be required during the year ending March 31, 1909. Particulars from W. McIntosh, C.E. surveyor's office, Alton, Hants., at the undermentioned address, on receipt of a stamped and addressed envelope. Tenders, endorsed "Tender for Granite," to be sent to A. F. M. Downie, Esq. clerk to the Council, Alton, Hants., on or before July 2.

July 2. ENFIELD.—Making-up the following private streets: Salisbury Road (part of), Enfield Lock; Southfield Road (part of), Ponders End. Particulars from Mr. Richard Collins, the Council's surveyor, at the address below. Separate tender for each road to be sent not later than noon on July 2, endorsed "Tender for ——," to T. W. Scott, clerk to the Council, Public Offices, Enfield, Middlesex. Fair wages clause.

July 2. EAST BARNET.—Supply and cartage of road-metal, etc., for the year ending September 30, 1909, for East Barnet Valley U.D.C. Particulars to be sent to Mr. Henry York, C.E., surveyor to the Council. Tenders, addressed to the Chairman of the Council, to be sent not later than noon on July 2, to Geo. Dickinson Byfield, clerk offices of the Council, Station Road, New Barnet. Fair wages clause.

July 3. BIRSTALL.—Asphalting of playgrounds Birstall Central Provided School. Particulars with Mr. J. Vickers-Edwards, county architect County Hall, Wakefield, on deposit of £1. Cheques, etc., must be made payable to the West

Riding Treasurer, and sent to him direct at the County Hall, Wakefield. Tenders by July 3.

July 6. CASTLEFORD.—Asphalting about 170 yds. of the playground at Castleford, Wheldon Lane Provided School, for West Riding C.C. Education Department. Specifications from B. Leah, Education Office, Castleford, by whom all tenders must be received before July 6.

July 6. ALNWICK.—Supply of 2 in. broken whinstone road metal. Specifications, etc., can be obtained on application at U.D.C. Offices, Green Batt. Tenders not later than July 6.

July 6. TWICKENHAM.—Forming, levelling, kerbing, channelling, paving, metalling and making good Hartington Road, Twickenham, for the U.D.C. Particulars at the office of Mr. Fred W. Pearce, F.S.I., surveyor to the Council, Town Hall, Twickenham, on payment at the undermentioned office of a deposit of one guinea. Tenders endorsed "Tender for Street Improvement Works, Hartington Road," to be delivered not later than noon of July 6 to H. Jason Saunders, Clerk to the Council, Town Hall, Twickenham.

July 6. ROMFORD.—Supply of 400 tons of best quality Blue Guernsey granite broken to 1½in. cube, and 300 tons of best quality Blue Guernsey granite broken to 2in. cube; also 400 tons of Rhenish basalt stone broken to 2in. cube, for Romford U.D.C. Particulars from Mr. George Lapwood, highways surveyor, Victoria Chambers, Romford. Tenders, endorsed "Tender for Granite," with samples of granite and stone proposed to be supplied, which must be sent carriage paid, to be sent not later than July 6 to William Smith, clerk to the Council, 13, North Street, Romford.

July 7. WANDSWORTH.—Execution of wood and stone paving works in Clapham Park Road; High Street, Putney; Lower Richmond Road, Putney; and Putney Bridge Road, Wandsworth. Particulars at the borough engineer and surveyor's office, No. 215, Balham High Road, S.W., between 10 and 4 (Saturdays 10 till 1). Tenders, endorsed "Tender for Paving Works in —— Road," to be delivered at the Council House, East Hill, Wandsworth, S.W., not later than 3 o'clock in the afternoon of July 7. Fair wages clause.

July 7. WILLESDEN.—Road-making and paving works in Chatsworth Road, Brondesbury. The Avenue, Brondesbury, Outgate Road, and Hawsford, Willesden. Particulars from Mr. O. Claude Hobson, M.Inst.C.E., Engineer to the Council, Public Offices, Dyne Road, Kilburn, N.W. Tenders, endorsed "Private Streets," to be delivered at the offices of the Council, Dyne Road, Kilburn, N.W., not later than four p.m. on July 7. A £10 note to be deposited with each tender.

July 7. BRENTFORD.—Making-up (a) Ferry Lane, (b) footpath in same lane, for Brentford U.D.C. Particulars from Mr. J. W. Croxford, the surveyor, at his office, Clifden House, Boston Road, Brentford. Tenders to be delivered at the Clerk's office, New Brentford, on or before Tuesday, July 7, not later than noon, marked "Tender for Making-up Ferry Lane."

July 8. THAMES DITTON.—Making up River Avenue and part of Portsmouth Avenue, Thames Ditton, about 1,026 ft. run, including laying surface water drains, asphalt paving, channelling, and other works connected therewith, in accordance with plans and specification, which may be seen on payment of a deposit of 10s. Tenders, endorsed "Tender for Road Making," to be delivered by noon on July 8 to E. A. Everett, clerk, Council offices, Brabant Villa, Thames Ditton.

July 8. DARTFORD.—Road repairs at Darenth Valum, Dartford, Kent. Plan, specification, and conditions of contract at the office of Mr. W. Thurston, Surveyor, 8, Hythe Street, Dartford, or at the office of the Board, Embankment, London. Bills of quantities and Tender form may be inspected at the office of the Board on payment of deposit of £1. Tenders to be delivered at the office of the Board, not later than noon on July 8.

July 8. READING.—Making up parts of certain streets. Particulars from J. Bowen, A.M.I.C.E., Borough engineer and surveyor, Town Hall, Reading, to whom tenders, endorsed "Private Street Improvement Works," are to be delivered not later than noon on July 8.

July 9. SOUTHEND-ON-SEA.—Extension of the Southchurch Beach Road, Esplanade, and Apron from to the Halfway House. Particulars, on deposit of £1 1s., upon application to Mr. E. J. Reid, M.I.M.E., borough surveyor. Tenders, endorsed "Southchurch Beach Road Improvement," to be delivered not later than noon on July 9 to William H. Snow, town clerk, Southend-on-Sea.

July 11. NANTWICH.—Carting. — Nantwich U.D.C. invite tenders for the carting of road material and other team work. Particulars from the Council's Surveyors, Mr. J. R. Whittingham, Audley, and Mr. T. J. Peake, Willaston. Forms of tender with Mr. C. E. Speakman, Cerk to the Council, 152, Hospital Street, Nantwich, to whom tenders are to be sent not later than July 11.

July 11. ROTHERHAM.—Footpath improvements on the Doncaster and Saltersbrooke main road, Goldthorpe. The work includes about 146 cubic yards digging, 47 yds. 9in. potpipe drain, 36 yds. 6in. drain, 409 yds. 12 by 8 kerb, 410 yds. 12 by 4 lineal channel, one manhole, 683 yds. super. limestone tarpaving, setts, junctions, bends, surface water channels, etc., for Bolton-upon-Dearne U.D.C. Particulars from the surveyor upon a deposit of £1 1s. Tenders to be delivered not later than July 11, endorsed "Improvements," to J. Ledger Hawksworth, Council Offices, Station Road, Bolton-upon-Dearne, Rotherham.

July 15. WOOD GREEN.—Making up of the following streets:—Clyde Road, Tintern Road, Grasmere Road (Section II)., and Outram Road. Particulars with Mr. C. H. Croxford, the acting surveyor at the Town Hall, Wood Green, upon payment to the undersigned of a deposit of one guinea. Tenders to be delivered not later than 5 p.m., July 15, to Wm. P. Harding, clerk of the Council, Town Hall, Wood Green.

No date. BEESTON.—Construction of new roads and sewers at Beeston. Builders are invited to send in their names at an early date to Mr. Charles Carter, M.S.A., architect and surveyor, Parliament Buildings, Parliament Street, Nottingham.

SANITARY.

July 4. HASLINGDEN.—Construction of the following subsidiary (earthenware pipe) sewers within the Borough of Haslingden (labour only):—1, Holden, Wood, Helmshore, 2, Holcombe Road, Helmshore; 3, Gregory Lane, Helmshore; 4, Woolpack, Haslingden. Particulars from Mr. J. Singleton Green, borough surveyor, on payment of £1 1s. Tenders, endorsed with the contract number, to be delivered not later than July 4 to W. Musgrove, town clerk, Municipal Offices, Haslingden.

July 7. LYMINGTON.—Alternative tenders.—1. For the cleansing of the outfall sewer on the Mudlands outside Lymington, and supplemental works, and 2. For the shortening of the outfall sewer by about 240 ft., for the Borough of Lymington. Particulars with the borough surveyor, Mr. F. Hill Parr, 73, High Street, Lymington. It will be desirable for persons tendering to inspect the outfall. Tenders endorsed "Tender for Outfall Works." to be submitted not later than noon on July 7, to J. Davis Rawlins, town clerk, Lymington.

July 7. SWANSEA.—Construction of about 850 lineal yds. of stoneware pipe conduit, with junctions, manholes, etc., at Uplands. Particulars with the borough engineer, Guildhall, Swansea, from whom schedule of prices and form of tender can be obtained on payment of one guinea. Tenders endorsed "Tender for Contract No. 28," to be delivered to Jno. Thomas, Town Clerk, Guildhall, not later than 11 a.m. on July 7, accompanied by a cheque for £100 in favour of the Swansea Borough Accountant

July 8. LIVERSEDGE.—Land filtration works in connection with the scheme of sewage disposal, on a site about 22 acres, partly in the borough of Dewsbury, and partly in the urban district of Mirfield, together with a line of effluent sewer, 24 in. diam., about 372 yds. in length, for Liversedge R.D.C. Particulars with Chas. Gott and Sons, M.Inst.C.E., 8, Charles Street, Bradford, on deposit of one guinea. Sealed tenders, endorsed "Liversedge Sewage Works—Tender," are to be delivered to Thomas Mitcheson, Esq., the clerk to the Council, at the Public Offices, Liversedge, not later than noon on July 8. Fair wages clause.

July 9. CREWE.—Construction of the sewerage, and sewage disposal works within the borough of Crewe, in accordance with plans, sections, and specifications, which may be seen, and all other necessary information obtained upon application to Mr. G. Eaton-Shore, borough surveyor, Earle Street, Crewe. A deposit of £2 will be required. Tenders to be delivered not later than 9 a.m. on July 9, endorsed "Tender for Sewage Disposal Works," to Frederick Cooke, town clerk, Municipal Offices, Crewe.

July 13. WORKSOP.—Laying of about 6,600 yds. of 12in., 9in., and 6in. stoneware and cast-iron pipe sewers, and the construction of manholes, tanks, filters, pumping station, and other appurtenant works at Dinnington, for Kiveton Park R.D.C. Particulars at the offices of the engineers, Messrs. Berrington, Son, and Watney, Bank Buildings, Lichfield Street, Wolverhampton, and 28, Victoria Street, Westminster, S.W., on payment of five guineas. Tenders before noon on July 13, endorsed "Tender for Sewerage," to James Snow Wall, solicitor, clerk to the Council, Bridge Street, Worksop.

July 14. LONDON, W.—Construction of about 5,970 run of cast-iron sewer, 7ft. 6in. internal diameter, lined with concrete and blue bricks, with weir chambers, manholes, side entrances, etc., in tunnel between Trafalgar Square, Charing Cross and Wellington Place, Hyde Park Corner, for the London County Council. Particulars from the chief engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the cashier of the Council of £10. Tenders to be delivered at the County Hall, in a sealed cover, addressed to the clerk of the London County Council, Spring Gardens, S.W., and marked "Tender for Low-Level Sewer No. 2, North Side, Contract No. 4." No tender will be received after 11 a.m. on July 14. Fair wages clause.

July 3. WAKEFIELD.—Execution of various works at fourteen schools, for the West Riding Education Committee. Particulars on deposit of £1. Cheques, etc., must be made payable to the West Riding Treasurer and sent to him direct at the County Hall, Wakefield. Tenders, endorsed to be forwarded not later than 10.30 a.m. on July 3, to J. Vickers-Edwards, County Architect, County Hall, Wakefield.

MISCELLANEOUS.

July 8. ONGAR.—Decorative carpentering and paving works at the Children's Homes, at Ongar, Essex. Specification and conditions of contract, as prepared by Mr. W. A. Finch, architect, of 76, Finsbury Pavement, E.C., can be obtained from the Clerk, as below. Tenders, endorsed "Ongar Renovations, etc.," to be delivered not later than two p.m. on July 8, to Frank R. Coles, Clerk to the Guardians, Clerk's Offices, Sidney Road, Homerton, N.E.

July 11. WESTON-SUPER-MARE.—Supply and delivery of the undermentioned goods, for the period ending March 31, 1909, for Weston-super-Mare U.D.C.:—Ironmongery, tools, castings, iron, steel, oils, paints, tar, pitch, etc., stable utensils, disinfectants, lime, cement, bricks, drain pipes, etc. Samples of the goods may be inspected at the Town Depot, Oxford Street, Weston-super-Mare. Tenders, endorsed "Tender for ——," are to be sent not later than July 11, to Harold A. Brown, Surveyor, Town Hall, Weston-super-Mare.

July 13. WHITBY.—Construction of two sea piers and timber landing quay, and the dredging of a harbour, channel, and other works, at Whitby Harbour, for the Whitby U.D.C. Particulars from Messrs. J. Watt Sandeman and Son, C.E., 1, St. Nicholas Buildings, Newcastle-on-Tyne, on and after June 15, upon payment of a deposit of £5 5s. Tenders to be addressed to Mr. Wm. Seaton Gray, clerk, Council Offices, Whitby, by July 13.

October 16. CALCUTTA.—Construction of 9-million gallon raised steel tank or reservoir, for the Commissioners of the Corporation of Calcutta. Detailed plans, together with copies of specification and form of agreement, may be obtained at the office of the "Indian and Eastern Engineer," 50, Fenchurch Street, London E.C., on payment of £20, which will be returned on receipt of a bona-fide tender. Tenders in duplicate are to be submitted, the first or original of which must leave not later than by the registered mail leaving London on Friday, October 16, in order that tenders may be opened at Calcutta on November 4, when tenders received will be opened by the vice-chairman at 3 p.m. The duplicate copy of the tender should be despatched not later than by the mail leaving London on October 23, and will be used if the original is lost. Tenders, which may be made in sterling or rupees, are to be enclosed in sealed covers, addressed to the Vice-chairman, Corporation of Calcutta, and endorsed "Tender for Raised Steel Reservoir." The successful contractor will be required to find security approved by the Corporation to the extent of £10,000 for due performance of the work. Tenderers must undertake not to withdraw their tender within a period of less than three months dating from the last date for the receipt of tenders in Calcutta. It is not expected that the foundation for the tank will be completed and ready for superstructure before July 1, 1909, and contractors must arrange accordingly.—P. N. Mookerjee, secretary to the Corporation of Calcutta.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Accident Insurance Coupons have been sent to the following:—

G. P. D. S. (Plymouth), T. M. (Foulham), H. E. (Burton-on-Trent), J. R. P. (Edinburgh), J. R. S. (Edinburgh), E. J. B. (Hereford), J. H. (Llangollen), J. C. (Manchester), T. H. S. (York), S. T. (Bournemouth), A. H. S. (Harpenden), J. F. S. (Merthyr Tydfil), C. E. T. (Grimsby), A. H. W. (Leeds), W. C. (London, N.W.), P. B. (Long Eaton), C. O. G. (Wellingborough), W. H. W. (London, W.), D. M. S. (Glasgow), H. W. S. (Northampton), J. B. (Bristol), C. S. (London, S.E.), D. H. L. (Sheffield), G. A. W. C. (Shoreham), E. G. K. (Kentish Town), A. M. H-J. (Borth), F. C. W. (Aldershot), H. F. (New Wandsworth), F. M. (Keighley), G. O. (Norwich), D. A. F. (Chertsey), J. F. J. G. (Leicester), W. M. (Hindley), R. B. (Leamington Spa), E. G. B. (Bath), A. G. C. (Manchester), J. M. (Bolton), M. J. T. (Galway), H. F. C. (Hendon), W. G. B. (Charlton), J. R. A. (West Hartlepool), H. A. C. (Reading).

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

ACCURATE quantities prepared by London Surveyor of experience in shortest possible time. Reasonable terms. Provincial work undertaken. Jobs measured up and settled in town or country.—Surveyor, 441, Birkbeck Bank Chambers, Holborn, W.C. 3031

ADVERTISER (27), seeks re-engagement; ten years' first-class experience of estate building, management and repairs, etc.; qualified to prepare plans and estimates, including quantities for new works; ex. refs.—Y., 86, Coniston Road, Muswell Hill, N. 4407

A.R.I.B.A. (27), 13 yrs.' London and Prov. experience; 1st class testimonials; references; working drawings, details, specifications, perspectives, surveys; well up in management of office; salary 2 gs. per week.—Box 4379, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), desires engagement —seven years' varied experience; neat, expeditious draughtsman; honours construction and architectural certificates; excellent references; moderate salary.—Address, W. E. K., 34, Wingate Road, Hammersmith, W. 4375

ARCHITECT and surveyor's junior assistant (23), 5 years' London and Provincial experience; 4 years' articles; good draughtsman; neat tracer, etc.; excellent references; moderate salary.—C. C., Russell House, Ipswich. 4378

ARCHITECT'S and surveyor's assistant (23); 5½ years' experience, provincial domestic work; good draughtsman, surveying, quantities; experience desired rather than salary; excellent references; salary 21s.—Box 4356, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, 26, desires engagement, town or country; good designer, well up in detail, neat draughtsman, and good leveller.—J. B., 65, Archway House, Abbey Wood, Belvedere. 4371

ARCHITECT'S Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4406

ARCHITECT'S junior assistant (just completed articles with city architect) desires engagement; good draughtsman, and colourist, neat tracer, working drawings and perspectives.—H. F., 39, Victory Road, Wimbledon. 4351

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities, R.A. Exhibitor; expert perspectives.—Box 4409, BUILDERS' JOURNAL Office.

ARCHITECT or surveyor's assistant, 4½ years' experience; working drawings, details, quantities; land surveying, and levelling, excellent references; moderate salary.—A. N. C., 83, Grayshott Road, Southsea. 4311

ARCHITECT'S Assistant (21), disengaged; five years' London and Provincial experience; working drawings, specifications, details, levelling, assist with quantities; five first classes in construction; highest references, 25s.—C. D. H., 9, Dudley Road, Tunbridge Wells. 4412

ARCHITECT'S assistant, 23 last October, placed 3rd out of 37, open competition, by Civil Service Commissioners, for Government appointment as draughtsman, general routine, perspectives; specimens sent; moderate salary. — Box No. 4237, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (25), desires engagement; 7 years' experience; working drawings from rough sketches, details, measuring up, surveying, etc.; excellent references; salary 35s.—E. J. C., "Beaconsfield," Kew Green, Surrey. 4368

ARCHITECT'S Assistant, twelve years' experience, desires engagement; good draughtsman, designs, working and detail drawings, etc.; excellent references.—W. A. N., 17, Hugo Road, Tufnell Park, N. 4326

ARCHITECTURAL assistant, served articles, good draughtsman, details; testimonials and drawings if desired; salary 35s. weekly. — Box 4204, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, BUILDERS' JOURNAL Office.

ADVERTISER desires engagement in or near London; expert surveyor and leveller; just completed important survey in the North; plans, specifications, superintendence. — Box 4391, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24), passed P.A.S.I. exam.; six years' varied London experience —working drawings, dilapidations, surveying, levelling, measuring and usual office routine; good ref.; salary 30s.—Box 4387, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (21), 4½ years' London and Provincial experience; Student R.I.B.A.; excellent refs.; experience more an object than salary; country preferred.—E. H. H., 68, Newbridge Hill, Bath. 4386

ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, BUILDERS' JOURNAL Office.

BUILDER'S Clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4373

BUILDER'S Assistant (23), reliable, desires engagement, construction, surveying, sanitation, measuration, quantities; also accounts, costs, wages, etc.; good draughtsman; assist estimating and supervision; outside experience; moderate salary.—Box 4306, BUILDERS' JOURNAL Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

CARPENTER-JOINER (31), seeks situation; good all-round man, good draughtsman, etc. Three years present job, now finishing. Town, country, and teaching experience. Excellent references.—G. K., 8, Tudor Road, Upton Park. 4313

CLERK of Works, contractors' manager, or general foreman disengaged, carpenter and joiner, practical in all details; smart, energetic, trustworthy, recently concluded large industrial undertakings; accustomed to large jobs. — Box 4341, BUILDERS' JOURNAL Office.

ENTERPRISING qualified builder wants situation as foreman or clerk of works; thorough knowledge all trades and management; highest testimonials. —Box 4258, BUILDERS' JOURNAL Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN Painter, could take entire management of flats or estate. Good estimator. Well up in all trades connected with buildings. Age 35. Life abstainer.—B. Calverley, 20, Fernlea Road, Balham. 4325

FOREMAN painter, or leading hand, painter, grainer, paper-hanger, etc.; good general experience, abstainer; good references; permanency wanted.—H. North, Standon, near Ware, Herts. 4377

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GENERAL Assistant (30), fourteen years' excellent all round experience, good knowledge of construction, sanitary science, and everything in building estate development; Surveyors' Institution and Municipal and County exams. £4 4s. and prospects of betterment.—Apply Box 4318, BUILDERS' JOURNAL Office.

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

GENERAL Foreman wants job; town or country; carpenter; age 44; experienced new or alterations; good timekeeper and manager of men; highest references; moderate terms. — King, 4, Burgos Grove, Greenwich. 4225

IMPROVER or junior assistant (22), student R.I.B.A., excellent knowledge, practical building construction experience, supervising, neat draughtsman, surveying; assist quantities; small salary, specimens; good references.—Box 4090, BUILDERS' JOURNAL Office.

IMPROVER or junior assistant (21) desires position with architect or surveyor; working drawings, quantities, surveys, qualified P.A.S.I.; nominal salary.—R. R. F., 25, Queen Street, Hemel Hempstead. 4321

JUNIOR Draughtsman (19), desires re-engagement; assist generally; good refs.; town and country; shorthand; probationer; R.I.B.A. — C. Weston, The Laurels, Rotherfield, Tunbridge Wells. 4376

JUNIOR Assistant (20) requires situation in surveyor's or builder's office, 3 years' experience with London surveyor; can assist in abstracting, working up, variations, etc.; willing worker.—W. Cooke, 102, Faraday Road, Wimbledon, S.W. 4333

JUNIOR Assistant (19), desires engagement with architect, just completed 4 years' articles; probationer R.I.B.A., good draughtsman; tracer, colourist, etc.; assist quantities; salary required. —Jeffery, Hardinge Road, Ashford, Kent. 4268

PLUMBER (good registered.) Thoroughly practical in all branches of first-class sanitary work, lead-laying, gas and hot water fitting; new, alterations, or jobbing. Reference.—Plumber, 20, Sunnyside Road, Upper Teddington. 4364

PLUMBER, gas and hot water fitter, desires employment; good refs.; total abstainer; wages moderate.—P. A. J., "The Lodge," Bonner Hill Road, Kingston. 4390

PRACTICAL machinist (joiner), used to elephant, spindle, and first-class work; 10 years last place.—Cruse, Boxford, Newbury. 4405

QUANTITY Surveyor's assistant, just completing three years' articles, passed Intermediate of Surveyors' Institution; first class references, seeks billet in busy office; salary £7 per mensem.—Box 4346, BUILDERS' JOURNAL Office.

SURVEYOR'S Junior Assistant (19), Student S.I., served articles; good leveller, draughtsman and tracer; experienced in private street works, building, sewerage, water supply, etc.; excellent testimonials; small salary. — Box, 4284, BUILDERS' JOURNAL Office.

SURVEYOR, architect's junior assistant (24), familiar estate work, surveying, levelling, general building work; small specifications, and quantities; 4 exams. Inter. R.I.B.A., June next, 1½ guineas.—Box 4288, BUILDERS' JOURNAL Office.

THOROUGHLY competent builder's book-keeper and general assistant requires engagement, 12 years' experience in London with builders and shopfitters; good reasons for leaving present berth; excellent references. Age 32.—Apply Box 4334, JOURNAL BUILDERS' Office.

TEMPORARY assistance on working drawings, quantities, measuring up, surveys, levels, setting out and steelwork generally rendered at own or outside offices—F. B., 51, Hillfield Park, Muswell Hill. 434

THE ESTATES MANAGER AND AGENT to well known public institutions. London estates (comprising over 1,000 properties), holding appointment, over 11 years, desires similar appointment in town or provinces, with view to improving his position; exclusive knowledge and experience in management of leasehold and troublesome weekly properties; thoroughly qualified architect and surveyor; administrative ability and experience in rent collecting; highest references. — Apply Box 4331, BUILDERS' JOURNAL Office.

TO ARCHITECTS.—An experienced Civil Engineer will advise upon and assist on drainage disposal, water supply and estate development; roads, surveys, levels, etc.—Apply Box 4121, BUILDERS' JOURNAL Office.

TO Contractors and Builders.—Smart, energetic and experienced general foreman desires re-engagement (carpenter and joiner by trade). First-class refs.; moderate salary for good job.—Please write "London," Box 4392, BUILDERS' JOURNAL Office.

WANTED at once, position as builder's manager, assistant, or general foreman; disengaged; small, energetic; abstainer; references. — Box 452, Broadway, Wimbledon. 43

YOUNG architect, having completed engagement with well-known city surveyor, is at liberty to assist architects with the preparation of their designs; 7 years experience. Student R.A. School and R.I.B.A.—Box 4294, BUILDERS' JOURNAL Office.

July 8, 1908. Volume 28. No. 700.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Revised Design for London County Hall.

A revised design for the river front and Westminster Bridge elevation of the London County Hall has been prepared by the selected architect, Mr. Ralph Knott, and a perspective of it has been drawn for the inspection of members of the Council. We have not yet had the opportunity of seeing this perspective, but from a report by the Establishment Committee we learn that the elevation follows, generally, the main lines of the design selected by the assessors, and that the modifications suggested by the assessors in their report have been introduced. The central projecting features have been reduced and the large flight of steps leading from the embankment to the river in front of the central bay of the design has been omitted, while substituted therefor are the slightly projecting pedimental bay and flights of steps parallel to the embankment. An important feature has been introduced by the addition of an attic storey in the centre of the river front. "The selected architect is strongly of opinion that the introduction of this elevated block will very much enhance the appearance of the building on the river frontage. Another advantage is that additional room for the accommodation of staff can be provided at a moderate cost."

German Joinery.

The Derbyshire Education Committee has issued a statement in reference to the controversy regarding the purchase of German joinery for the new temporary schools which are being built at Long Eaton. The matter, it will remembered, was the subject of a question in Parliament the other day. Mr. Runciman's reply was as follows: — "I have no information as to where the joinery work for this school has been purchased. The function of the Board of Education in this connection is limited to securing that the buildings and equipment of public elementary schools are satisfactory from an educational point of view, and not unreasonably extravagant; and they have no power to direct from what sources the local education authority should make their purchases. I understand that the building in question is a 'Doecker' building which the Board regard as suitable for temporary purposes." From the committee's statement it seems clear that more has been made of the incident than is warranted by the facts of the case. Pending the erection of the new permanent school, the committee purchased a movable "Doecker" school from Hasserodt and Co., at a cost of £980, and in answer to the claim that Long Eaton contractors should have been allowed to tender for the building they say that whilst it happens that the building is required in the first instance at Long Eaton, it has been obtained for general county use, and it is not likely that Long Eaton will have to provide more than, say, one-tenth of its cost.

Protection and the Building Trade.

While referring to this matter, we may opportunely quote from an article by Mr. L. G. Chiozza Money, M.P. (whose "free trade" predilections of course colour his view) which appeared in the "Bristol Mercury" for Thursday last:—Mr. John Burns said recently:—"It is a curious fact that, although the building trade is not subject to foreign competition, it is always the most fluctuating, and has always the largest number of men out of work." Upon this the editor of the "Timber Trades Journal" commented as follows in the "Standard": "Such a statement could not have emanated from anyone in touch with the journeymen carpenters, manufacturing joiners, and saw-mill proprietors of this country, who find their trades year by year dwindling away owing to the annual importation of hundreds of thousands of ready-made doors, principally from Sweden and the United States, to say nothing of the shiploads of window-frames, mouldings, sawn laths, door-steps and other articles used in the building trade, which could be manufactured in this country at a slight increase on the cost of the imported article, and by that means find employment for some thousands of our idle workmen. Among other building materials subject to keen foreign competition may also be mentioned slates, which are sucessfully imported from America and the Continent in competition with the products of the Welsh quarries. The list might be added to by the inclusion of such materials as iron girders, glass, granite, etc." In reply, Mr. Chiozza Money says:—"Curiously, our Protectionist critic does not deal with the building trade as such, but with the trades which supply its materials. He speaks of mouldings, slates, iron, glass, granite, etc., and talks of foreign competition in the trades which supply them. He forgets, however, that the building of a house is done 'in situ,' and that houses are not, and cannot be, imported. Nothing can alter the fact that by far the greater part of the work of a house must be done in this country. . . . The case of the bricklayer is typical of the majority of British occupations. He cannot be provided with an import duty. Bricklaying cannot be done from abroad. The mason's work does not meet with foreign competition. The bricklayer has everything to lose and nothing to gain by Protection. For what does the 'Timber Trades Journal' hint at? Duties on joinery, iron, glass, granite, 'etce era,' the latter in this connection an ominous word, covering scores of different building materials. But if all these building materials are to be taxed, what is to become of the builder? You have only to raise the cost of building materials to depress the building trade. Fewer houses would be built, and consequently there would be less bricklaying. And the carpenter would suffer with the bricklayer, and with him also the tiler, slater, plumber, painter, and all other men in the building trades. The carpenter would not find more doors or mouldings to make, because there would be less building than in the days when doors and mouldings could be imported freely. It would be all very well for the carpenter if he could have doors or mouldings taxed while all other materials went free, but that would not happen. The taxation of ready-made doors would imply the taxation also of iron and glass, and even granite. So that the worst thing in the world for the carpenter would be the taxation of doors. It would hit him as badly as it hit the bricklayer or plumber. . . . And now as to the statement that trade in dwindling through the increased importation of joinery. Here are the facts:—

Importation of (1) Timber; (2) Furniture Woods and (3) Joinery.

	1887.	1907.
Timber (loads).	5,654,000	9,498,000
Furniture woods (tons)...	96,000	304,000
Joinery.....	£488,000	£223,000

These figures show beyond cavil that employment has not be destroyed by imports, but that, on the contrary, the amount of work done on wood has enormously increased. A most pleasing thing, also, is the very large growth of imports of furniture wood, pointing to the existence of more comfortable homes, as well as more employment. . . ."



THE FRANZ JOSEFS-KAI, VIENNA.

A Contract Matter.

The Tyne and Blyth District Conciliation Board for the Building Trades has circularised a letter in regard to the question of employers undertaking contracts to find the labour only, the material being found by the client or the owner, or ordered by the architect. The subject has cropped up frequently with the men, and with a view to avoiding further friction the following resolution was passed at a recent joint meeting of employers and operatives:—

"That representations be made to owners and architects, and others interested, that contracts based on goods being supplied by the owners and the labour only by the contractor are dertimental to the building trade."

It is pointed out that numerous contracts submitted to employers for consideration, owing to their containing so many prime-cost sums and other items, leave to the builder little more than the provision of the labour, which has caused much misunderstanding with the operatives, who complain that the working rules are being violated by the employers. The above Board draw attention to the terms of the resolution passed, and ask all concerned to support the spirit in which it is framed.

The Society of Engineers: Some New Proposals.

Several matters of general interest are announced in a circular which has been sent out to members of the Society of Engineers. First and foremost there is the proposal to amalgamate with the Civil and Mechanical Engineers' Society, a scheme which has been brought about by the intervention of Mr. A. S. E. Ackermann, A.M.I.C.E., as secretary of both societies. The terms of the amalgamation will shortly be expressed by a draft of new rules which will be submitted to members, and it is confidently believed that the amalgamated society will secure a large accession of new members. Another scheme aims at giving gratuitous advice both of a general and legal character to members in connection with their professional work, or their relationship with their clients or employers. For the former, a standing committee of the council has been appointed, while, for the latter, arrangements have been made with the Society's solicitors for a term covering up to December 31st, 1909. Members are invited to forward to the secretary full statements of any circumstances which may involve questions upon which general or legal advice may be of service. This arrangement is tentative, and it will be decided to continue or modify the arrangement according to the result of the first year's working. It is not at present possible to undertake legal action on behalf of individual members, nor to supply "counsel's opinion" free of charge, but obviously such an extension of the work is only a matter of finance, and directly depends upon the support accorded by the profession at large. Other points under consideration, in addition to the card-index "Employment Register" and "Business Directory" of members, recently inaugurated, affect larger questions involving the interests of the profession as a whole. While the council could not take any active steps in this direction without the co-operation of other kindred institutions, it seems very desirable that some attempt should be made to bring such matters forward for the purpose of discussion, and the council are considering the best means of carrying this into effect.

SOME IMPRESSIONS OF VIENNA.—III.

By Alfred W. S. Cross and E. A. Rickards.

(Concluded from page 3, No. 699.)

The most important of the many civic improvement schemes carried out in Vienna during the last decade of the 19th century was the construction of the suburban railway, with which was combined a very practical arrangement for the much-needed regulation of the River Wien. Previous to the formation of the railway, this river, at ordinary times little more than an evil-smelling brook slowly meandering along one of the sides of an



THE FRANZENS-RING.



KEY-PLAN OF THE RING-STRASSE, VIENNA.



THE SCHOTTEN-RING.

immense bed, was liable, on occasions, to be converted into a formidable and destructive torrent, but under the combined scheme which has now been realised, half of the bed of the river has been walled off for the purposes of the new railway, and the other half made sufficiently deep to receive the maximum flow of water. From time to time the main arteries of traffic, within the inner city, have been as far as possible widened and otherwise improved, with the result that, in recent years, the ancient part of Vienna has become more commodious, and far healthier.

The immense cost of the transformation of the area previously occupied by the fortifications into the stately boulevard or "ring" which now encircles the Innere Stadt, did not fall very heavily upon the population, as by far the greater part of this burden was borne by the fund realised by the sale to capitalists and speculators of the surplus land not required for public buildings and open spaces. The cost of the subsequent inclusion of the former suburbs into the city proper has also, to a large extent, covered its own expense through the acquisition, by the town, of the improved area thus obtainable. The activity displayed in the construction of the new streets was followed by the erection of the palatial tenement and business houses characteristic of the Vienna of to-day, in some of which the architects of the "secessionist" school have indulged in a liberal display of external mural decoration in relief.

To obtain a good idea of the planning of the city, a peregrination should be made, from end to end, of the Ring-Strasse (for which purpose there is no better starting point than the northern part of the Franz-Josef-Kai), proceeding thence through

the Schotten-Ring,

which extends from the river embankment to the Maximilians-Platz, fronting the Votive Church.

Commencing, then, at the Franz-Josef-Kai, the first public building of importance is the Exchange, built, in 1872-77, in the Renaissance style, after the designs of Hansen and Tietz, and containing a finely designed central hall.

A little beyond the Exchange, on the right at the corner of the Hessgasse, is



THE OPERN-RING.



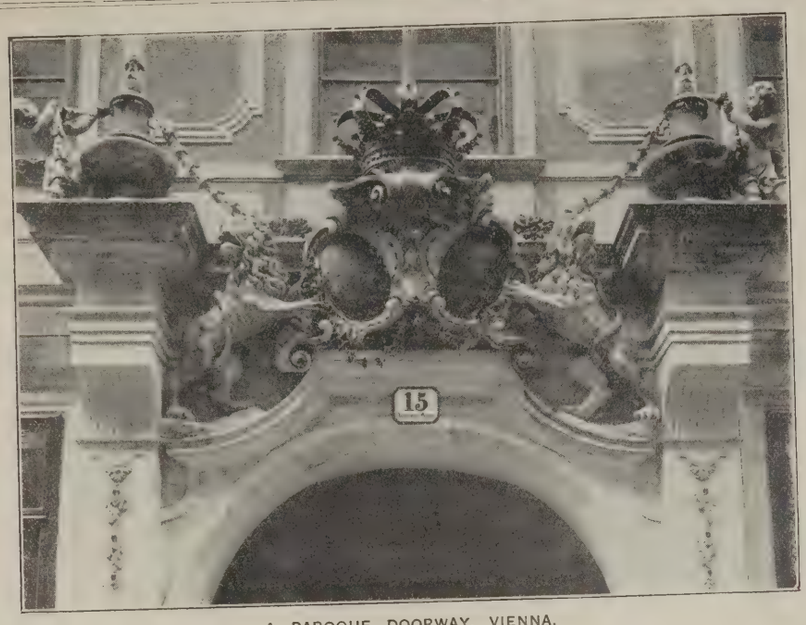
THE SCHWARZENBERGPLATZ.

the Stiftungshaus or Suhnhaus, a charitable institution designed by F. Schmidt, and built in 1885, at the cost of the Emperor, on the site of the Ring Theatre, which had been burned down a few years previously.

The Votive Church, designed in the Gothic style, by Baron von Ferstel, between the years 1856-79 to commemorate the Emperor's escape from assassination in 1853, has a richly decorated façade flanked by slender twin towers, 325 ft. high. It stands immediately behind the triangular-shaped open space formed at the crossing of the Schotten-Ring with the Alserstrasse and Wahringerstrasse, and known as the Maximilians-Platz, where there is always a large amount of street traffic.

The Franzens-Ring.

South of the Schotten-Ring is the Franzens-Ring, containing as its central feature the attractive and well-wooded Rathaus Park, in which are the Strauss-Lanner monument and eight marble statues of benefactors of Vienna, removed from the former Elisabeth-Brücke. Flanking the Rathaus-Park on the right, stands



A BAROQUE DOORWAY, VIENNA.

the University, a huge Renaissance structure, built after the designs of Ferstel, in 1873-84. On the left is the Reichsrats-Gebäude, designed in the Greek style, and set behind the Rathaus Park to form the central feature of the grouping rises the stately outline of Schmidt's Gothic Town Hall. Opposite the Rathaus, on the east side of the Ring Strasse, is the Hofburg Theatre.

The skill displayed in the architectural arrangement and setting-out of these buildings is admirable, but as they were all erected within a few years of one another it is possible that an even better æsthetic result would have been obtained had they all been designed in one and the same style of art.

The Volksgarten, opposite the façade of the Reichsrats-Gebäude, adjoins the Hofburg Theatre on the east side of the Franzens-Ring. Beyond the Reichsrats-Gebäude, to the left, is the Justizpalast, built in 1875-81—an example, by Alex Wielemans, of the German Wielemanster-Renaissance. To the south is the Deutsche Volkstheater, designed by Fellner and Helmer, in front of which is a monument to Ferd. Raimund, the Vienna dramatist.

The Burg-Ring.

The Burg-Ring is bounded on each side by fine pleasure grounds, those on the south-west being known as the Maria-Theresien-Platz. Here stands the grandiose monument to Maria Theresa, erected in 1888, after the designs of Hasenauer, and consisting of a colossal bronze figure of the Empress, enthroned on a marble pedestal 43 ft. in height. The panels of the pedestal are enriched with portrait groups of distinguished men of the period of the great Empress, and below the central feature there are equestrian figures and statues. The Maria-Theresien-Platz is further adorned by four fountains with marble figures by Schmidgruber, E. von Hofmann, and H. Hardtl, and by two colossal groups of Horse Tamers (by Friedl). The two Imperial Museums flank this Platz. On the opposite side of the Burg-Ring is the Outer-Burg-Platz (with its equestrian statues of Prince Eugene and the Archduke Charles), on the left of which is Semper's wing of the Hofburg.

On the south-west stands the Outer-Burgtor, erected by Nobile in 1821-24, on which is inscribed the motto of the Emperor Francis II.: "Justitia regnorum fundamentum."

The Hofgarten, or Kaisergarten, on the south-east side of the new wing of the palace contains an equestrian statue of Francis I. (1745-65), the husband of Maria Theresa.

The Opern-Ring.

The Burg-Ring is continued to the east by the Opern-Ring. To the left at the beginning of the Albrechtsgasse, which leads to the Albrechts-Platz, is a bronze statue of Goethe by Edm. Helmer and opposite, to the south of the Opern-Ring, is the Schiller-Platz, in which stands a bronze statue of Schiller, placed on a pedestal surrounded by allegorical figures. On the west side of this square is the Ministry of Justice, on the east side the Ministry of Railways, and on the south side the Imperial Academy of Art (a Renaissance building designed by Hansen and erected in 1872-76), the upper storeys of which are enriched with copies of statues after the antique.

The Imperial Opera House (left) and the Heinrichshof (right), designed by Hansen in 1861-63, and adorned with frescoes by Rahl, are at the end of the Opern-Ring.

The Kartner-Ring.

The Kartner-Ring, the fashionable residential quarter of the city, contains a number of fine houses and hotels, and from the Schwarzenberg-Platz, which is placed between it and the Kolowrat-Ring, rises the equestrian statue of Prince Charles Schwarzenberg, the victorious leader of the Allies in the wars of 1813-14. On the left is the Palace of Archduke Ludwig Victor, and on the right Baron Wertheim's palace, both designed by Ferstel. Further south, beyond the Wein, is the Palace of Prince Schwarzenberg, in front of which stands the Hochstrahl-Brunnen, with a jet of water 100 ft. high.

The Kolowrat-Ring.

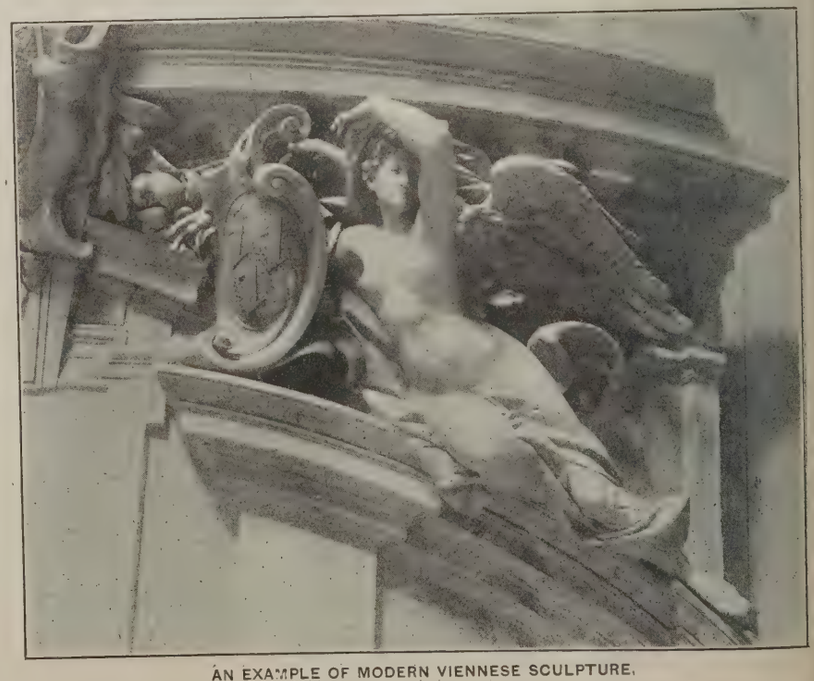
The Kolowrat-Ring commences at the Schwarzenberg-Platz. To the right, in the Christinengasse, is the Academic Gymnasium, with a Gothic facade by Schmidt, and the Beethoven-Platz, embellished with Zumbusch's monument to Beethoven, which consists of a bronze figure of the great composer seated on a lofty granite pedestal.

The Park-Ring.

In the Park-Ring, of which the whole of one side is open to the Stadt-Park, are the Dumba Palace and the Horticultural Society's building, containing large saloons for exhibitions and concerts. Beyond is the building known as the Palace of the Teutonic Order, erected by Hansen in the Renaissance style in 1865-67, and occupied by the Archduke Eugène.

The Stuben-Ring.

In the adjoining Stuben-Ring, on the right, is the Austrian Museum of Art and Industry—another Renaissance building, adorned with sgraffito-friezes and medallion portraits of celebrated artists and art-workers. The building on the north side of this museum contains the school of arts



AN EXAMPLE OF MODERN VIENNESE SCULPTURE.

and crafts. The central passage which connects the two buildings is embellished with a large mosaic figure by Lord Laufberger.

On the left side of the Stuben-Ring a new residential quarter has been built, on the site of the barracks and parade ground which formerly stood there.

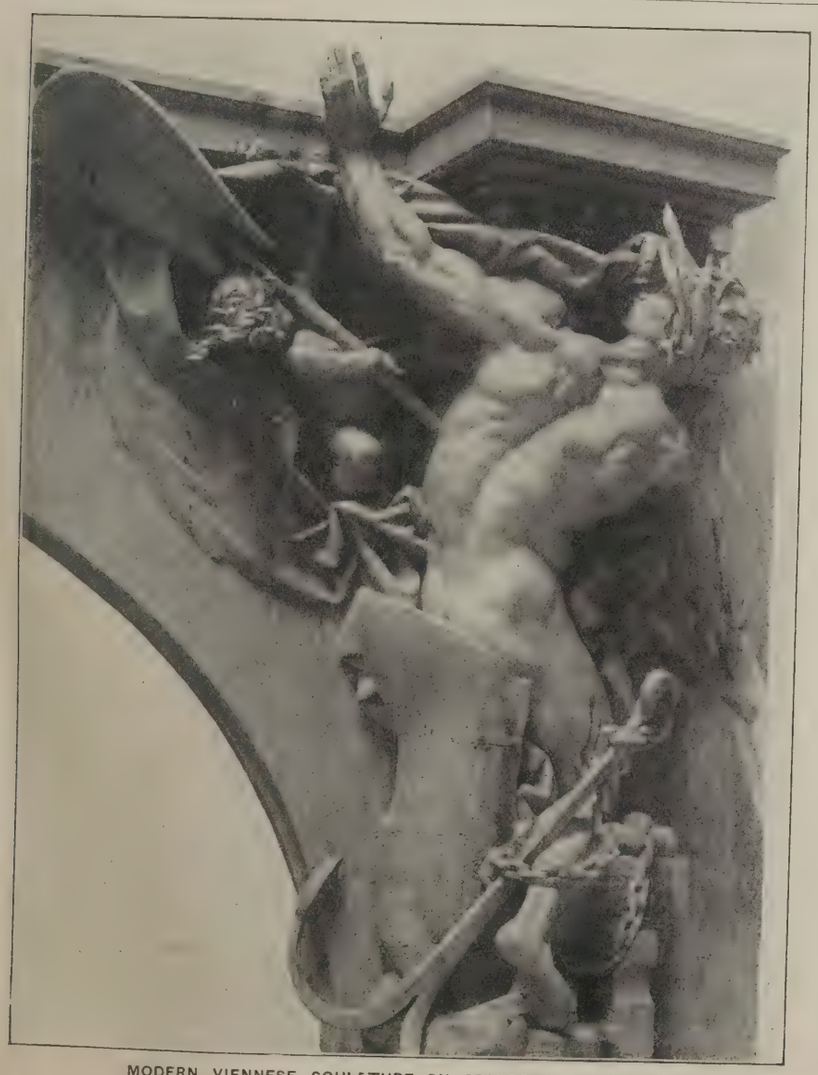
The Ring-Strasse ends at the Aspern-Brücke, a chain bridge erected over the Danube canal in 1864. Hence the Franz-Josefs-Kai leads, on the left, along the canal, passing the Ferdinands-Brücke and the Stephanie-Brücke to the starting point of the encircling boulevards at the Schotten-Ring.

The Streets of the Inner City.

Of the streets within the inner city the Graben, filled with attractive shops, is one of the principal business thoroughfares. It marks the position of the old fortifications of the 12th-century town, the houses on its north side occupying the site of the ancient wall. The Trinity Column, an extraordinary looking monument consisting of a confused group of figures among clouds (erected by the Emperor Leopold I. in 1693, in memory of the cessation of the plague in 1679), is placed in the centre of the Graben. The Kohlmarkt, another busy street, connects the Graben with the Michaeler-Platz, to the left of which stands the Church of St. Michael, dating from 1327, but practically rebuilt in the 18th century. The Mozart Monument (by Tilgner) is in the Albrechts-Platz and near it, at the corner of the Augustiner-Bastei, is the Albrechts-Brunnen, erected in 1869 and adorned with marble statues (by Meixner) of the Danube and its tributaries, above which rises the bronze equestrian statue of the Archduke Albreche. The Palace of the Archduke Friedrich, built in 1804, but altered in 1867, contains the famous "Albertina" library and collection of drawings and engravings, one of the most valuable in Europe, and familiar to all connoisseurs.



THE SCHWARZENBERG PALACE, VIENNA.



MODERN VIENNESE SCULPTURE ON SPANDREL OF ARCH.

Among the drawings are about 50 by Raphael, including some presented by Raphael to Durer in 1515, and authenticated examples of the works of Durer, Rembrandt, and Rubens.

North of the Albrecht-Platz is the Newmarket, in the centre of which is the celebrated fountain (by Ralph Donner) representing the chief rivers of the Archduchy which discharge into the Danube. On the west side of this Platz is the Capuchin Church (1622-32), containing the imperial vault, in which are the richly-decorated sarcophagi of the Hapsburg family.

Another important thoroughfare is the widened and embellished Kartner-Strasse, containing many fashionable shops. The Kartnerhof on the right, and the Todesco Palace on the left, are among the finest of the private houses to be seen in the street. Centrally placed, on the left of the street, is the Maltese Church, chiefly attended by Hungarians, and in the adjacent Annagasse are the Annahof, with a frescoed facade, and the former Jesuit Church of St. Anna, now used by a French congregation, which contains some frescoes and a picture of the Virgin by D. Gran. North of this church is the office of the Minister of Finance, designed by Hildebrand and Fischer von Erlach in 1703 and originally the town residence of Prince Eugene of Savoy. Beyond, in the Rauhensteingasse, the Mozarthof occupies the site of the house in which Mozart died in 1791. The Franziskaner-Platz, approached from the Singer-Strasse, contains a colossal statue of Moses, by J. M. Fischer. The Banco House, on the right side of the Singer-Strasse, built in 1740, is now the office of the National Debt. On the left is the fine baroque facade of the Palace of Count Breuner (1725). The House of the Teutonic Order (on the right) was rebuilt in 1730 and the Gothic Church of St. Elizabeth, dating from 1316, was rebuilt in 1730, and restored in 1864. The Greek Church in the Fleischmarkt, erected in 1787, has a new Byzantine facade, designed by Han-

sen in 1858. The small Stadt Lugeck is embellished with the Gutenberg monument, consisting of a granite stepped platform, upon which stands a beautiful pedestal supporting a bronze statue of Gutenberg, by H. Bitterlich. The Hohe Markt (said to have been the forum of the Roman Vindobona) contains the Sina Palace (restored by Hansen in 1860), which is supposed to occupy the site of the Praetorium and the Votive Monument (by Fischer von Erlach) representing the marriage of the Virgin, and erected in 1732 to commemorate the bravery of the Emperor Joseph I. at the siege of Landau.

In the Freiung-Platz is Count Harrach's palace, a modern building, with a fine winter garden, and the Harrach Picture Gallery, containing numerous examples of the later Italian and French Schools of the 17th and 18th centuries. To the right of this palace, at the end of the Herrengasse, is the well-known palace of Prince Kinsky, designed by Hildebrand in 1713.

The Schottenkirche, consecrated in 1200, rebuilt in 1662, and recently restored, contains the tomb of Count Starhemberg, the brave defender of the city in the Turkish siege of 1683.

The Bank-Gebäude, a Renaissance building of 1860, was designed by Festel. It contains Fernkorn's fountain in bronze, known as the Nymph of the Danube, and in the court of the Anglo-Austrian Bank (formerly the Montenuovo Palace) is a fountain group of St. George and the Dragon, by the same artist.

In the Herrengasse, which is terminated by the Michaeler-Platz, is the Niederösterreichische Landhaus, or Hall of the Diet of Lower Austria, erected about 1518, enlarged in 1571, and partly rebuilt in 1839. The ground floor of the back building contains an old Gothic chapel, and on the first floor there are several rooms dating from 1571, but since modernised, including the Knights' Hall, the Assembly Hall, and the Prelates' Chamber.

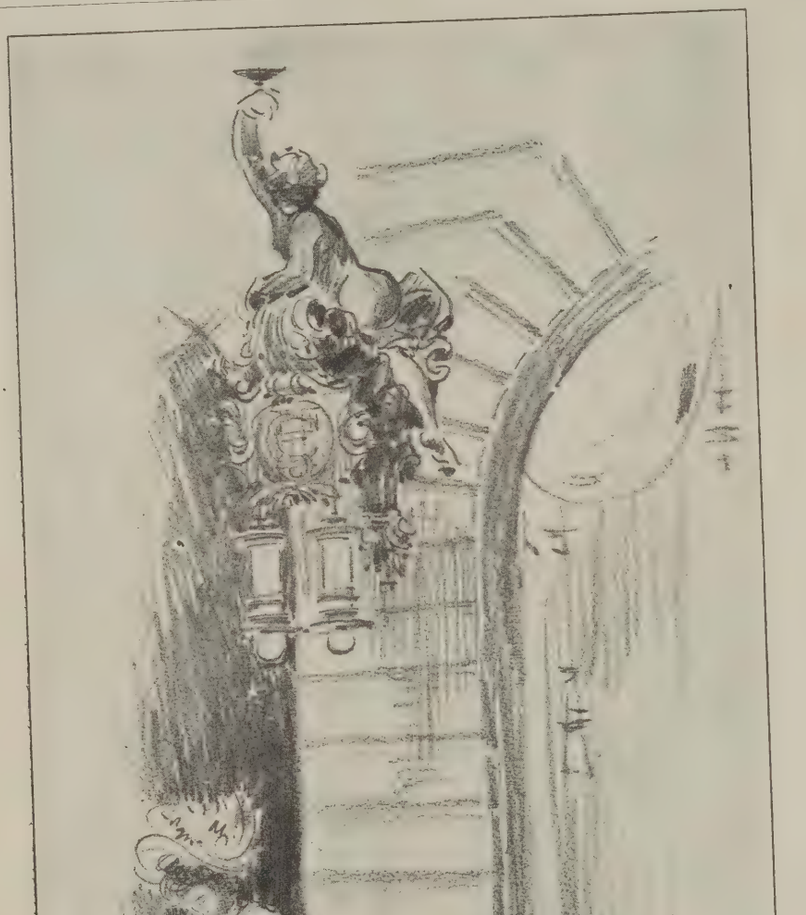
The 14th-century Minorite Church contains a copy in mosaic, 30 ft. long and 15ft. high, of Leonardo da Vinci's "Last Supper," executed by Raffaeli, between the years 1806-14, by order of Napoleon.

The Archives' office is on the south side, and the Starhemberg Palace (now used for the Ministry of Public Worship and Education) and the early 18th-century palace of Prince Liechtenstein are on the north-west side of the Minoriten-Platz.

The Hotel Hapsburg is a fine example of modern street architecture, its long unbroken facade presenting the appearance of an Italian palace. The fenestration of the ground-floor rooms is arranged in a series of large rusticated semi-circular headed openings, over which is a well-designed continuous balcony supported by consoles. The upper floors have Italian Renaissance windows, and the structure is crowned by a well-designed cornice and entablature. The coupled arc lamps, placed between the ground-floor windows, are carried by large, beautifully-modelled and posed gilded figures, and the attention which has been bestowed upon the design of the internal electric-light fittings is especially noteworthy.

In the Stadt Lugeck is a modern shop-front, that of the Teppichaus Orendi, which possesses many features of interest. The composition comprises a huge archway filled in with plate glass set in a well-designed framework of bronze, in front of which is a low central doorway. The amount of window space thus obtained for the display of fabrics, such as carpets and rugs, is probably almost unique.

Owing, doubtless, to the peculiarities of its situation, the population of Vienna is of a cosmopolitan and heterogeneous character, for although the German element is largely in the ascendant, there are also many Czechs, Hungarians, and Slavs. But whether they be of Germanic or Slavonic extraction, there is no doubt that the citizens are thoroughly united in love and appreciation of the splendours of their ancient capital, nor indeed could the temperament of the genial pleasure-loving Viennese find a more suitable environment than in that stately and historical city, rich in numerous old-time memorials, whose beautiful thoroughfares and streets bright with trees, flowers, and works of art, we have thus, all too inadequately endeavoured to describe.



THE HOTEL HAFSBURG, VIENNA. DRAWN BY E. A. RICKARDS.

Views and Reviews.

Fletcher's "Light and Air."

The fifth edition of Messrs. Fletcher's very useful treatise on "Light and Air" has been revised and re-written in accordance with the trend of current judicial opinion. The case of *Kine* v. *Jolly* being thought to modify the judgment in the leading case of *Colls* v. *Home and Colonial Stores*, both these actions are fully reported in the book, and the authors acknowledge in the preface, though not on the title-page, their indebtedness for the assistance given in the revision of the present edition by Mr. Richard Sillem, barrister-at-law. The questions at issue in various law cases in which light-and-air rights have been more or less authoritatively determined, are illustrated in a series of twenty-seven plates, which, together with the careful digest and brief but luminous discussion of many typical actions, seem to meet all conceivable conditions with respect to light and air, and render the volume very interesting, as well as extremely serviceable, to architects, builders, and building owners.

"Light and Air." A Textbook in tabulated form, for Architects, Surveyors, and others; showing what constitutes ancient light, how the right is acquired, jeopardised or lost; injuries without remedy; the relative position of servient and dominant owners. By the late Professor Banister Fletcher, F.R.I.B.A. Fifth Edition, revised by Banister F. Fletcher, F.R.I.B.A., and H. Phillips Fletcher, F.R.I.B.A., Barrister-at-Law. With numerous diagrams, on twenty-seven plates. London: B. T. Batsford, 94, High Holborn; 6s. 6d.

Cast-iron Drainage.

In New York, and in many other cities of the United States, Mr. Jensen observes, it is compulsory to construct house drains of iron to a distance of 10ft. on the sewer side of the intercepting trap, beyond which point stoneware piping may be used. He of course desires to see what he calls the cast-iron drainage system extended, and he claims many advantages for cast-iron pipes, but is bound to admit that they are from ten to thirty per cent. more costly than stoneware. The author's treatment of the subject is rather too discursive, but is quite thorough, and his book, with its 185 illustrations, affords sound as well as complete practical guidance in the details of house-drainage on the system advocated.

"Cast-iron House Drainage," with special reference to the drainage of town houses. By Gerard J. G. Jensen. With numerous illustrations. London: The Sanitary Publishing Company, Ltd. Price 4s. 6d. net.

Utility and Ornamentation.

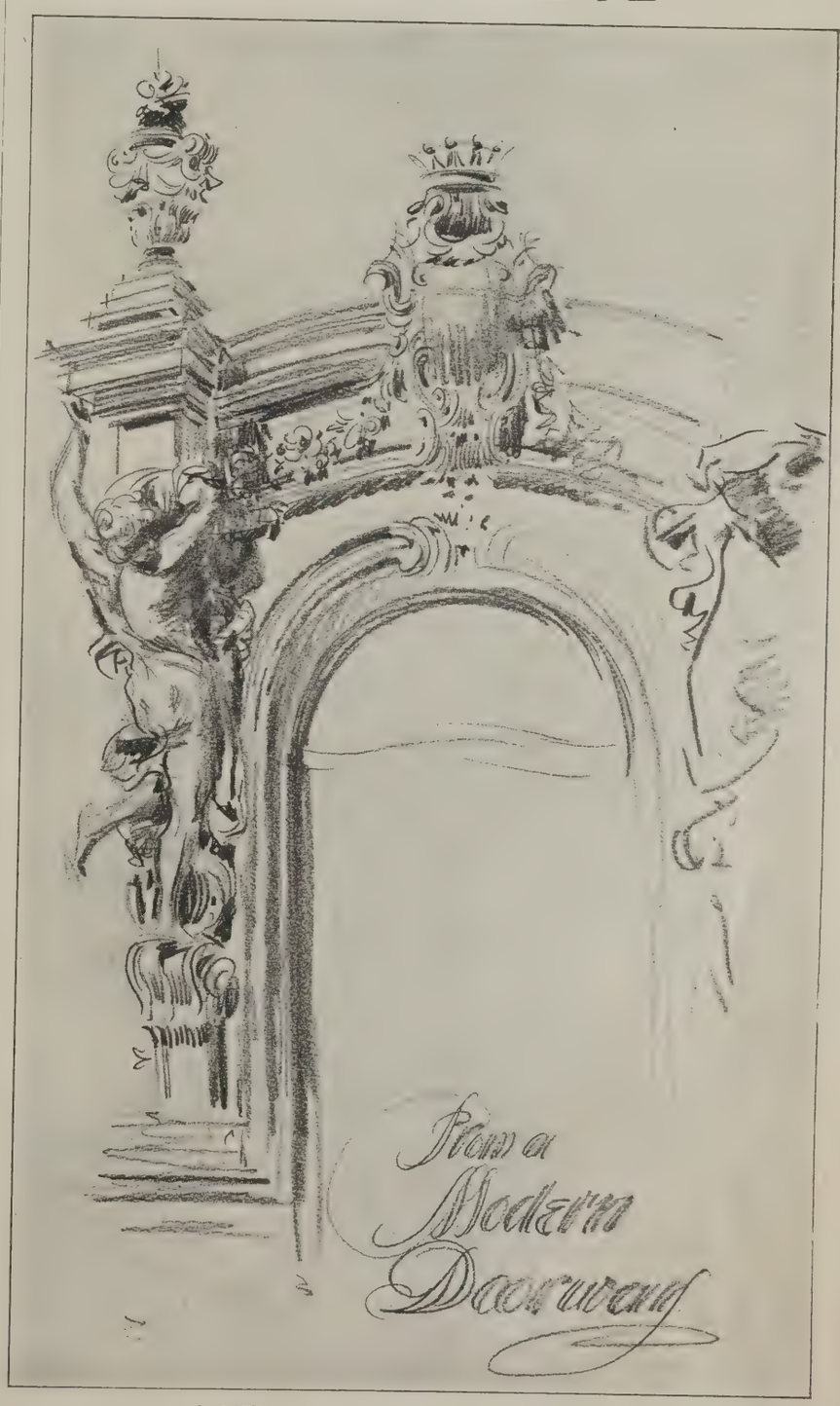
"The Handyman's Enquire Within" professes to do "for the handyman what well-known and popular volume has done for the housewife. When in difficulty about any little job in the house, he has only to enquire within its pages, to find just the information he needs." Certainly, there is a good deal of miscellaneous information that redeems this promise; but there is also a considerable amount of matter of which the utility is by no means obvious—for instance, that which appears under the heading "Egg-shell Ornamentation," where the advice seems quite superfluous, while the illustrations of suggested "ornamentation" are perfectly hideous. The same observation applies with full force to some frightful examples of crazy china work, and to some very distressing designs for carved walking-stick handles. Clearly, the handy-man should not be encouraged to attempt ornamentation.

"The Handyman's Enquire Within. Making, Mending, Renovating." Edited by Paul N. Hasluck. London: Cassell and Co., Ltd. Price 7s. 6d. net.

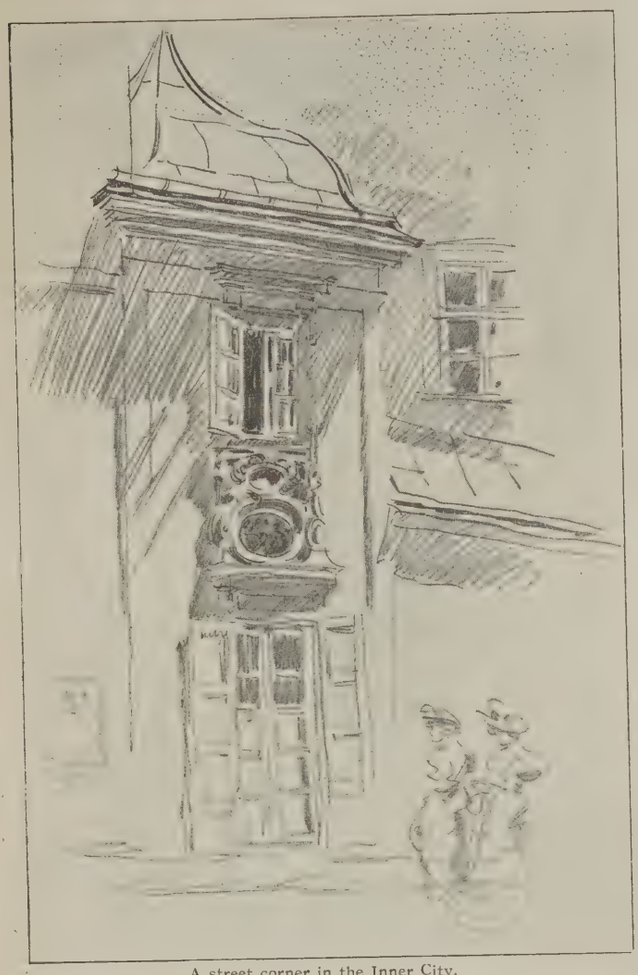
Heating and Ventilation.

Manuals on heating and ventilation are rapidly becoming so numerous as to create some embarrassment of choice. Mr. King's book is of American origin, and, as might be expected, it deals with certain phases of practice that are not very familiar in our own country. This is not altogether a disadvantage, as a careful study of American methods may conceivably result in improvements at home. The art of artificial heating being now, as the author claims, almost an exact science, the chief value of such a book must consist in the clearness with which principles are enunciated, mere details being entirely subordinate, and in this respect the author appears to be a trustworthy and competent guide. His glance at the history and development of the so-called science serves a useful purpose in emphasising modern improvements on the earlier methods. The book is abundantly illustrated, and contains many useful tables and a good index.

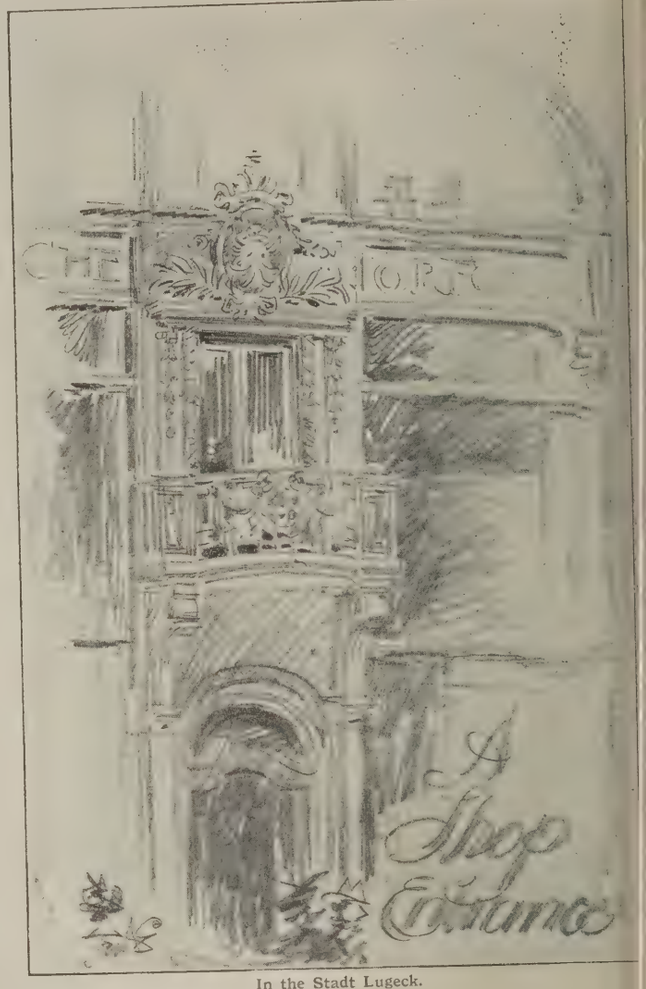
"Practical Steam and Hot-Water Heating and Ventilation." By Alfred G. King. Containing over three hundred specially made illustrations, showing in detail all the various heating systems. London: Crosby Lockwood and Son. New York: The Norman W. Henley Publishing Co. Price 12s. 6d. net.



A SKETCH IN VIENNA, BY E. A. RICKARDS.



A street corner in the Inner City.



In the Stadt Lugeck.

TWO SKETCHES IN VIENNA, BY E. A. RICKARDS.

POINTS IN FACTORY VENTILATION.*

By J. S. Haldane, M.D., F.R.S.

Dust, fumes, vapours, and gases are produced in a great variety of manufacturing processes, and as they are nearly all more or less noxious, though in very varying degree, the problem of their prevention or efficient removal is one of much importance. My own attention has been specially directed to the subject in connection with the work of the late Home Office Committee on Factory Ventilation, of which I was a member. This Committee has published two reports (in 1902 and 1907), the first dealing with general ventilation, and the second with the removal of dust and fumes, and with high temperatures.

Injurious Dusts.

Of dusts which are definitely harmful, one very important class is that from the disintegration of hard stone or other material. An instance of this is the dust made in the dressing of hard stone. Another dangerous kind of dust is that from poisonous material of any kind. Of more or less poisonous dusts there are many varieties, but the most important kind is lead in any soluble form, and in the manufacture of white lead itself great care is needed.

Fumes and Vapours

from chemical processes are commonly so unpleasant and irritant in their effects that the necessity of their removal is evident. The vapour of water perhaps needs special mention, as it is so commonly allowed to escape into rooms in the form of steam. A moderate addition of water vapour to the air of a room is often of no importance, provided that no moisture condenses in such a way as to cause damp. If, however, the temperature of a room is high, the addition of water vapour to the air may make it very oppressive. I have recently made many experiments on this point, and find that when the temperature and proportion of moisture are sufficient to raise the wet bulb thermometer above about 70 degrees, considerable oppression begins to be felt in still air with ordinary indoor clothing, which soon becomes more or less wet from perspiration.

Poisonous Gases.

The most important of these is carbonic oxide, which, besides being a constituent of lighting and fuel gas, is present in smoke, the products of imperfect combustion of fuel or fuel-gas, etc. Poisonous gases, if formed in manufacturing processes, ought always to be carried off by proper flues or exhaust ducts, and should never be allowed to escape into the air of a room at all.

Prevention of Du t Formation.

In many cases the best way of dealing with dust is to prevent its formation altogether. This can be effected by substituting wet for dry processes. Dangerous dust can often be dealt with in this way in particular the dust from disintegrati of hard stone or steel. Thus the use of jet of water prevents dust formation rock-drill and other work in tin a granite mining. It is to be hoped that all cases where dust from disintegrati of hard stone, fire-clay bricks, and simil material, is apt to be inhaled, wet metho will also be adopted where possible.

Prevention of Escape of Dust.

When dust formation cannot avoided, its escape can sometimes be p vented by entirely boxing-in the du process. Where the dust is itself the p duct of the process, as in the grinding breaking up of material, efficient boxi in is an advantage to the process itself well as to the persons employed in it.

In processes where fumes or noxi vapours are emitted closed vessels ou also to be used wherever possible, and closed vessel, or a boxed-in machine also connected with an exhaust pipe fumes or dust are prevented from esc ing at times when the vessel or mach has to be opened.

Removal of Dust.

In most cases it is, unfortunately, possible either to prevent the formatio dust or to box in the dusty process c pletely, and the only method availab to draw away the dust by means of an current. There are certain general p ciples applicable to the removal of du this way. In the first place, the

* Abstract of a lecture delivered before the Society of Arts.

ought to be removed at, or as near as possible to, the point of origin. The advantages of this are evident; for by this means the dust is prevented from getting into the general atmosphere of the room and being inhaled by those present, as well as settling everywhere. A far smaller volume of air is also sufficient to remove the dust. This is important, not only from the point of view of expense, but because draughts and cold are also prevented. When dust is permitted to get into the general atmosphere of a factory, enormous volumes of air are required to carry it away, which means that equal volumes have to come in from outside, so that warming or prevention of draughts may be quite impractible.

A second general principle is that the air current from the source of dust to the exhaust opening should, as far as possible, envelope the source of dust, and be of sufficient velocity to carry the dust with it in spite of the ordinary slight draughts existing in the room, or produced by the dusty machine.

A further important principle is that as all dust tends to fall, it is often best to remove it in a downward direction. This applies particularly in cases where the air-current carrying the dust towards the exhaust opening is very slow.

It must not be forgotten, finally, that when exhaust ventilation is used for removing dust, provision must be made for corresponding inlet ventilation to the room, the air being warmed, if necessary. It is not uncommon to see exhaust ventilation rendered partially inoperative by failure to provide proper inlets.

Arrangement of Ducts for Exhausting Air.

The air-currents used for exhausting air are nearly always produced by fans.

It is evident that the greater the sectional area of an air-duct is the lower the velocity at which a current of a certain number of cubic feet per minute will pass, and consequently the less work (in proportion to the square of the velocity) will be needed to move it. There is, however, little advantage in increasing the cross-section of a duct to much more than the cross-section of the fan opening, as additional velocity would then have to be given to the air as it passed through the fan, with corresponding increase in resistance. Nor would it, as a rule, be an advantage to increase the size of the fan so as to permit of a low velocity through it, as in such a case the current is easily reversed by wind. The space occupied by the ducts and fan is also a material consideration. Any obstruction or narrowing in a duct will correspondingly increase the velocity, and therefore still more the resistance, so that all obstructions should be avoided, including those due to deposits of dust. Any sharp bend converts into heat the energy of motion possessed by the moving air, and an equivalent quantity of energy of motion has again to be communicated to the air beyond the bend. A sharp bend may thus double the resistance, and ought to be avoided if possible. A gradual bend causes much less extra resistance.

Roughly speaking, the cross-section of the duct or its combined branches should be about equal to that of the fan opening; and if a centrifugal fan, capable of overcoming considerable resistance, is used, the duct may be much smaller, and the air-velocity in it much higher, than if a propeller fan is used. A propeller fan can only work against small resistance, while a centrifugal fan is adapted for much greater resistances. On the other hand, the horse-power required for the centrifugal fan is greater, in correspondence with the greater velocity of the air-current and consequent greater resistance.

Bad Arrangement of Ducts.

A main point to be attended to in the arrangement of ducts for exhausting dusty air, or for blowing air in, is the avoidance of resistance due to sharp bends or constrictions, and the accompanying inequalities of flow in branch ducts.

Fans for Removal of Dust.

The air-currents used for the removal of dust are nearly always produced by fans. Two types of fans are employed—the "propeller" and "centrifugal" fan—and the one or the other is more advantageous according to circumstances. Roughly speaking, the propeller fan is best adapted for moving large volumes of air against very small resistance, while the centrifugal fan is necessary when the resistance is at all considerable. A propeller fan 2ft. in diameter will deliver air at the rate of 170,000 cub. ft. of air per hour with a linear velocity of 900 ft. per minute, and an expenditure in power at the rate of only about a tenth of a horse-power. For any given expenditure of power much more air is, of course, delivered with a low than a high rate of speed, but in practice it is usually necessary to run a propeller fan at a pretty high speed, otherwise the air-current may be very easily diminished, or even reversed by wind. The retarding influence of wind may, of course, be prevented by carrying the outlet up to the roof of the building, but this is often inconvenient or impossible. On account of the serious influence of wind, resistances in ducts, etc., on propeller fans, centrifugal fans are often preferable to propeller fans, particularly for the removal of dust. They also permit of much narrower and less bulky ducts, and air-velocities which prevent choking of the ducts with dust.

It is clear that the openings of the centrifugal fan are at the best considerably smaller than that of a propeller fan. The air has also to change its direction abruptly in passing through the centrifugal fan. Hence the internal resistance of a centrifugal fan is much greater than that of a propeller fan of equal diameter; and if the external resistance to the flow of air is very small, this internal resistance greatly diminishes the volume of air moved by the fan. If, on the other hand, the external resistance due to ducts, etc., is high, the internal resistance is of very little importance. In the centrifugal fan there is no tendency to leakage backwards at one part of the blades, as in the propeller fan. Hence the centrifugal fan will overcome resistances against which a propeller fan revolving at same rate would be powerless. In short, the centrifugal fan works advantageously against moderate or high resistances, while the propeller fan is only suited for very slight resistances, against which it works more advantageously than a centrifugal fan.

CHANGE OF ADDRESS.—Messrs. C. A. Peters, Ltd., manufacturers of "Carbolineum Avenarius," "Antixoide," "Scalo," and other trade specialities, have removed their London offices from 68, Queen Street, Cheapside, to larger premises at 116, Newgate Street, E.C., in order to cope with the great increase in their business.

LANCASHIRE, CHESHIRE, AND NORTH WALES BUILDING TRADES EMPLOYERS' FEDERATION.

Annual Meeting at Blackpool.

The annual general meeting of this Federation was held at Blackpool on June 22nd, when Mr. Henry Matthews, J.P., Manchester, presided over a fair attendance of representatives from the federated towns.

The annual report, giving a record of the working of the federation for the half-year ended May 31st, 1908, was adopted for circulation amongst the members, together with the annual statement of accounts, which shows the federation to be in a very favourable position financially.

Mr. William Bullen, of the firm of Messrs. Bullen Bros. and Sons, Ltd., building contractors, Liverpool, was elected president for the ensuing year, on the motion of the chairman, seconded by Mr. S. Smethurst, J.P. Mr. Bullen, on taking the chair, thanked the members for electing him president, and proposed that the best thanks of the meeting be tendered to the retiring president (Mr. Henry Matthews, J.P.) for the valuable services he had rendered during his term of office. This was seconded by Mr. S. Smethurst, and carried unanimously. Mr. Matthews then thanked the meeting for the vote passed.

The chairman (Mr. Bullen) next referred in sympathetic terms to the death of the late junior vice-president (Mr. William Townson, of Bolton), and proposed that a vote of condolence and sympathy with his family be recorded in the minutes of this annual meeting, which was agreed to by the members standing in silence.

Mr. William Cooke, jun., of Preston, was elected senior vice-president, and Mr. Thomas Meadows, of Stockport, junior vice-president. Mr. Walter Marshall, of Manchester, was re-elected hon. treasurer, and Mr. Frank Woods, of Bolton, and Councillor T. Woolfenden, of Rochdale, were appointed hon. auditors.

The Administrative, Insurance, and Finance Committees were appointed for the year.

The new rules on the subject of the affiliation of honorary members and of branch trade associations in towns where there is a General Trades Association were adopted, after notice having been given.

It was decided to reprint the rules of the Federation, and the matter has been left in the hands of the Administrative Committee for a general revision thereof.

Several other matters of importance were considered at this meeting, including a proposed arbitration rule between scle and sub-contractors, and proposals for equal representation of the branch trades on the Executive Board, the former being approved and the latter allowed to drop.

Before the close of the meeting the chairman and Mr. S. Smethurst made reference to THE BUILDERS' JOURNAL, and stated that the National Federation had now entered into agreement with the publishers that the same be appointed as their sole official organ. Mr. Percy Hastings, the managing director, who was present, addressed the meeting, after which a resolution was passed in support of the JOURNAL.

This concluded the business. Subsequently the representatives were entertained at dinner by the members of the Blackpool Local Association.

Notes and News.

A CONVALESCENT HOME is to be erected at Worthing in connection with the Royal Surrey County Hospital, Guildford, at a cost of £10,000.

* * *

THE PRESERVATION OF WOOD.—Among the exhibits at last week's conversazione of the Royal Society were some of the beechwood logs taken from the foundations of Winchester Cathedral. One of them had been polished, and the wood showed as hard and true as when put into place 700 years ago. Still earlier relics were some Norman oak piles, dating back to 1079.

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QUEENSLAND HARDWOODS FOR THE CONTINENT.—A trade has recently sprung up between the Colony of Queensland and the Continent of Europe for hardwoods for wood paving. The Brisbane papers to hand announce that a shipment of 40,000ft. of wood-blocking was despatched by a vessel to the Continent, and that another similar lot was to follow in a week.

* * *

LIVERPOOL'S NEW BUILDING AT THE PIERHEAD.— At last week's meeting of the Liverpool City Council Mr. Cohen stated that nothing further had been done regarding the sale of the central portion of the George's Dock site, excepting the signing of the contract. Plans and designs of the building which is proposed to be erected thereon had not yet been submitted to the Finance Committee.

* * *

A SANITARY SECTION AT THE FRANCO-BRITISH EXHIBITION is the subject of a memorial which has been presented to the Exhibition authorities by the Sanitary Assurance Association, who urge that the very success of the effort to make the Exhibition representative of Science, Arts, and Industries emphasises the absence of adequate representation of Hygiene. The Association suggests that the several sanitary institutions and manufacturers of sanitary appliances should be invited to a meeting to consider the matter.

* * *

THE RECONSTRUCTION OF VICTORIA STATION, which was practically completed last week by the opening of platforms 1, 2, 3, and 4, has occupied eight years. The new station has an area of nearly 16 acres, and its length (1,500ft.) is nearly double that of the old station. The facade to the station yard forms an extension to the Grosvenor Hotel, with the main line booking hall (120ft. by 70ft.), waiting-rooms, and other offices, on the ground floor. The entire work has been carried out from designs by Mr. Charles L. Morgan, chief engineer to the Brighton Co.

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THE NEW UNIVERSITY BUILDINGS AT LEEDS, which were formally opened yestesday by His Majesty the King, have been designed by Mr. Paul Waterhouse, F.R.I.B.A., who has continued the work of his father, the late Mr. Alfred Waterhouse, R.A. The original group of buildings was known as the Yorkshire College, and the additions consist of a large wing facing College Road, which will contain the arts lecture rooms as well as the botanical department; a one-storey building of a more or less temporary character to accommodate part of the physics and chemistry schools, now greatly overcrowded; a complete building for mining, fuel, and metallurgy; another complete and self-contained block for electrical engineering; a new boiler-house; and an extensive addition to the department of mechanical engineering. The contractors were Messrs. Armitage and Hodgson, of Leeds, and Messrs. Longden and Sons, of Sheffield.

* * *

THE NEW BUILDING OF THE ROYAL NATIONAL PENSION FUND FOR NURSES, which was opened by the King and Queen on Saturday, occupies a site at the foot of Buckingham Street, Strand, facing the Embankment. It has been erected from designs by Mr. Paul Waterhouse, F.R.I.B.A. The contractor was Mr. J. Carmichael. Messrs. George Jackson and Sons, of Rathbone Place, reinstated the old ceilings and panelling; Mr. A. Whitehead, of Leeds, carried out the faience; and Messrs. H. H. Martyn, of Cheltenham, executed the stone and other carving.

* * *

HEATING BY THE CABLE SYSTEM is the subject of an attractive booklet which has just been issued by Messrs. Richard Crittall and Co., of 197, Wardour Street, Oxford Street, W., where a show system is now ready for inspection. The outstanding features of the system are thus set forth:—It is a low-pressure apparatus, yet has extremely small pipes (from ¼in. upwards); no excavation for the boiler is necessary, nor channels for the pipes; the system is automatically self-regulating, water being circulated at any desired temperature without pumps, and absolutely irrespective of levels.

* * *

THE ORGAN IN THE GREAT HALL OF DULWICH COLLEGE has recently been reconstructed and enlarged, new fronts and cases being at the same time added—through the munificence of Canon Carver, D.D., formerly headmaster of the College. The organ is symmetrically arranged on two opposite sides, at the western end of the hall, and flanking the stage. The cases are designed in the Renaissance style of the late 17th century, and are executed in oak with carved aprons and panels and with metal pipes. The work has been carried out by Messrs. Walford and Spokes, of Oxford, from the designs of Mr. W. H. Atkin Berry, F.R.I.B.A.

* * *

COMBINATION IN THE STEEL TRADES.—During the past fortnight considerable progress, it is claimed, has been made with the prosecution of the scheme for the formation of a British Constructional Steel Combination. Steelmakers in England and Scotland, it is understood, are distinctly favourable to the new arrangement; but in order to make it effective they argue that the distribution of plates, as well as of sectional material, should be included in its scope. It is now stated that as a basis of co-operation the Bridge-builders' and Constructional Engineers' Association ask that they should receive a price-preference over firms that refuse to throw in their lot of 5s. a ton; and they, on their part, undertake to place all their requirements with those British producers who are members of the corresponding steel combination. If these conditions can be effectively applied there will be created on the one hand a powerful consumers' organisation, and on the other an equally strong producers' organization—two bodies which, it is claimed, would ultimately control buying and selling prices in the United Kingdom. There are many details to adjust, but it is hoped that by August, when a united conference of parties is to be held in London, such progress will have been made as to justify active action being taken towards the constitution of a fixed agreement.—"Times," July 4th.

* * *

THE "RAILROAD" AND THE "DUMBBELL" DWELLINGS OF NEW YORK, as described at the Pan-Anglican Congress by an American named John W. Wood, appear to be slum hovels of the first order. These two early types of tenement house were commonly on the east side of New York. The "railroad" dwelling was a long narrow block, in which many of the rooms were absolutely shut off from daylight and fresh air. The law forbade any more of the railroad type to be built, and enacted that every room must have a window opening to the outer air. The builders got over this by evolving the "dumbbell" type, which was built with a central court; but this court was usually from twenty to thirty inches square only and it was easy to estimate the efficacy of that in lighting and ventilating rooms in the lower storeys of tall tenement buildings. Such things as water or sanitary accommodation were non-existent and property owners declared that it was impossible to provide them for working people. However, a new law was passed by the Legislative Assembly of the State of New York which had done something and improvements were being slowly made. Some of the old "railroad" and "dumbbell" tenements had been pulled down, and their sites converted into open spaces, and private corporations had begun the work of providing cheap and healthy homes for the working-classes in East New York.

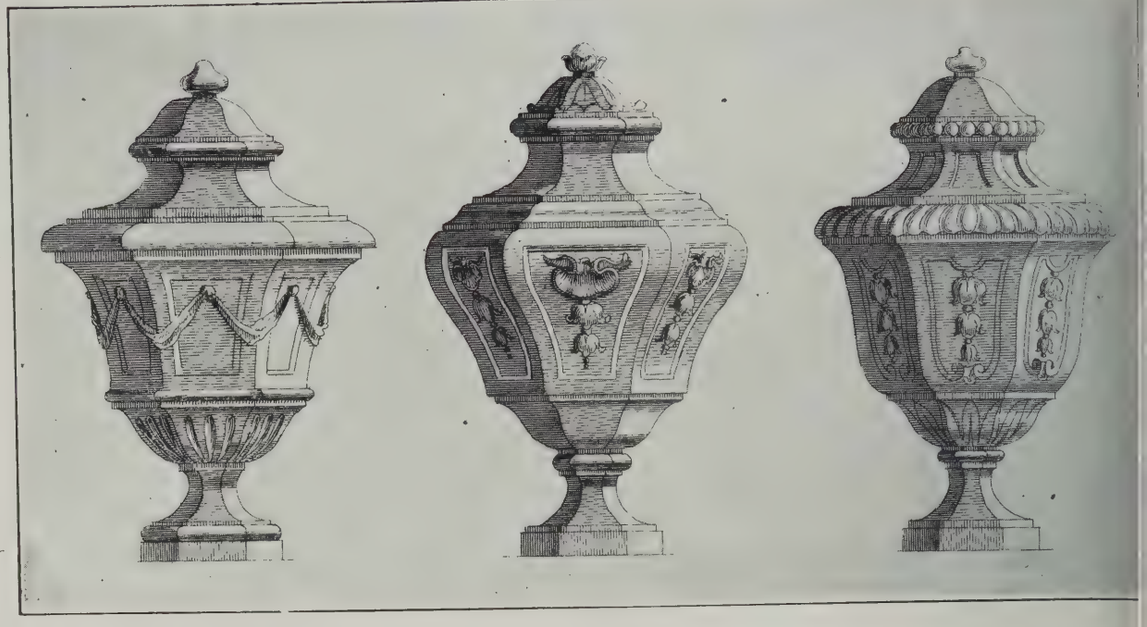
Our Plate.

Some Designs for Architectural Vases, by James Gibbs.

Gibbs was particularly careful in his designs of details. This is evident in the series of designs for architectural vases which we publish this week. Many of them are quite beautiful in outline and in their enrichment, and now that such vases are so much favoured, either as decorative features on buildings, or as embellishments to the garden, we are sure the designs will be studied with much interest.

A 62-STOREY BUILDING.

Plans for a gigantic building in New York, to be the loftiest in the world, overtopping the tower of the Metropolitan Life Co. in Madison Square by 200ft., and the Singer building by 300ft., were filed with the city authorities last week. The new building is to be the home of the Equitable Life Assurance Society, and will directly face the Singer building. It will have sixty-two storeys, and will be 900ft. above the kerb. The new structure will cost £2,000,000 sterling. The facades are to be of brick and granite, with dressings of terra-cotta. The design will be of the Renaissance type, presenting bays set between great Corinthian and Doric pilasters, the corners being offset with clustered columns. There will be 32 passenger lifts. This skyscraper of steel scrapers will come within a few feet of the Eiffel Tower, the highest structure ever reared in the Age of Steel.









L VASES, BY JAMES GIBBS.

Obituary.

MR. A. E. GOUGH, A.R.I.B.A., of the firm of Giles, Gough and Trollope, died recently, aged 66, from apoplexy.

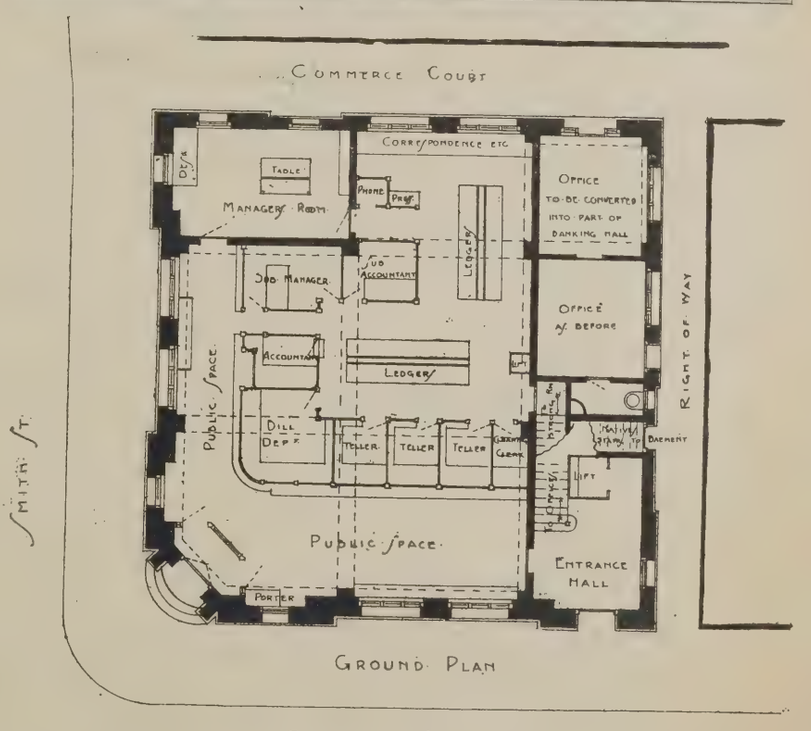
MR. F. H. OLDHAM, F.R.I.B.A., architect, of Manchester, died on June 30th. He served his articles with the architect of the late Duke of Portland, and engineer to the River Witham and Everton drainage schemes. When 26 years of age he went to Manchester, and joined Mr. W. Wilson in partnership. He achieved a high place in his profession, and was twice president of the Manchester Architectural Association before its amalgamation with the Manchester Society of Architects. His practice was an extensive one, embracing not only the Manchester district, but many parts of Yorkshire.

THE LATE MR. L. G. MOUCHEL, who died on May 27th, aged 56, left estate which has been valued at £79,570 gross, with nett personalty £68,384. Mr. Mouchel, who was unmarried, formed his London business in Hennebique Ferro-Concrete Construction into a company in 1907 to enable members of his staff to participate in the business, and he directed that his holding in the company should be offered at par, and his holdings in the various ferro-concrete companies and syndicates in which he was concerned at their fair or market value, to the other shareholders in the company. The residue of his property the testator left as to one-tenth (over £6,000) equally between Dr. Barnardo's Homes, the Salvation Army for general purposes of that institution, the Civil Hospital at Cherbourg, the Bureau de Bienfaisance, Cherbourg, L'Etablissement des Orphelines de St. Marie, Cherbourg, and La Société de Secours des Nauffrages de France, Paris.

MR. JOHN BEST, a well-known Edinburgh contractor, died on June 30th, aged 59. During his career Mr. Best managed operations in connection with the Monkland railway, the Broughton and Peebles Branch railway, the Govan graving dock, the Albert Dock and Edinburgh Dock and Imperial Dock at Leith, the Gouthwaite reservoir for the Bradford Corporation, the Strome to Kyllachan line, the Ballachulish line (including the foundations for the bridge over Loch Etive and the Creggan bridge), the Blair Athol to Dalnaspidal line, the pier at Newhaven, a portion of the Water of Leith sewer, the railway for the Cork, Blackrock Package Railway Company, and the Loch Erne drainage scheme in Ireland, and harbour work at Haulbowline for the Admiralty. At the time of his death works of which he had charge and which were in course of construction were a graving dock at West Hartlepool for the North-Eastern Railway Co., the Angram Reservoir for the Bradford Corporation, the Delph Reservoir for the Bolton Corporation, and the construction of new gates and locks for the old docks at Leith. For some years past Mr. Best was actively engaged in connection with the Talla Water Works for the supply of Edinburgh's water, and he lived to see the completion of the undertaking.

NOTICE. — The index to Vol. 27 of THE BUILDERS' JOURNAL is now ready and can be obtained from the Publisher, 7, Great New Street, Fetter Lane, E.C., post free for 1d.





NATIONAL BANK BUILDING, DURBAN. REGINALD G. KIRKBY, A.R.I.B.A., ARCHITECT.

This building occupies an important site in the centre of Durban, opposite the new town hall and municipal buildings. The elevation is faced with Portland cement and white sand, the cost of stone being in this case prohibitive. The interior of the building is of steel construction, well tied into the outer walls. Considerable difficulty was experienced with the foundations, owing to beds of running sand, but the difficulty was overcome by forming a concrete raft, 2 ft. thick, over the whole site. The architect was Mr Reginald G. Kirkby, A.R.I.B.A., formerly of Durban, but now in this country. The contractor was Mr. W. E. Johnstone, of Durban. Tile-work was supplied by Messrs. Carter and Company, of Poole, Dorset, and by Messrs. Molkin, of Burslem, while Messrs. Spital and Clark, of Birmingham, executed all the bronze panels, grilles, and electric-light fittings.

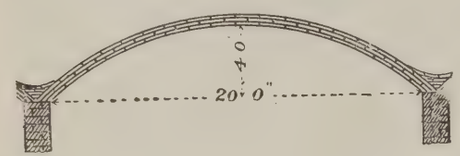
Correspondence.

"A New Method of Building with Tiles."

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Referring to the correspondence in your columns relative to the above, and to a notice that a patent has been taken out for what is called a new development in constructing roofs with roofing tiles by cementing three or more courses together, I would remark that this is a very old system. Louden, in his "Encyclopædia of Cottage and Villa Architecture," published more than seventy years ago, mentions the practice, but suggests that an embedded lattice of iron rods should be used, by which means flat floors could be formed—an anticipation of reinforced construction.

Major-General Pasley, in his "Limes and Cements," written in 1838, says that roofs formed with three thicknesses or courses of plain roofing tiles were in common use at that period, and gives an illustration of one 20 ft. span (reproduced)



adopted for roofing some stables in Oxford Terrace, Paddington. The writer says that three courses are of ample strength for spans up to 20 ft., the total thickness being about 2 ins.

I agree with your correspondent that this simple and light form of roof construction has much to commend it. Obviously roofs of this description would have to be asphalted.

THOMAS POTTER.

Law Cases.

FINES FOR CONTRAVENTION OF BY-LAWS.—At Wakefield, on July 1st, Thomas Makin, builder (a former member of the City Council) was fined 10s. and 8s. costs for failing to give notice to place water fittings in some property in course of erection at Westgate End.—At Sheffield Tom Andrews, builder, was fined 10s. for failing to fence in some excavations in Newbury Road; he was also fined a similar amount for omitting to put up a hoarding upon some property in course of erection at Bosworth Street. Another builder, Ernest Hancock, was fined 10s. for not fencing in some excavations at New Lane, Sheffield.

A "PERMANENT BUILDING" ON WHEELS, AND A "GILBERTIAN SITUATION."—At Torquay on July 2nd, Frederick Richards was summoned by the Town Council for a breach of the Public Health Act, and also of the borough by-laws, by the erection of a building at the entrance to his gardens. The question raised was whether the structure was a building within the meaning of the Act. It was a wooden structure, and the by-laws provided that all buildings should be of incombustible material. Instead of being let into the ground, the structure was placed on four wheels. It was nevertheless, prosecuting counsel contended, a permanent structure. It was used as a shop for the sale of fruit, vegetables, and sweetmeats. Mr. H. A. Garrett, borough surveyor, in cross-examination, admitted that the kiosk in the King's Gardens, the property of the Town Council, and let by them for the sale of refreshments, was a building of somewhat similar character. Defendant said that if permitted he would have put up a structure of stone or brick.—Mr. H. C. Goss, builder, said he should not regard the structure as a permanent building. It would be very easy to move it at any time.—Defendant's counsel contended that the building was not one to which the by-laws applied. The Act applied to buildings used as human habitations, but in this building there were no means for artificial lighting or artificial heating, and there was no drainage. A Gilbertian situation had been created, for whilst in the first place defendant wished to put up a stone or brick building, the Town Council refused to permit it, yet when he erected this structure they proceeded against him for not having put up a brick or stone building. The Bench decided that the structure was a building within the meaning of the Act, and fined defendant 5s. and costs, but agreed to state a case.

New London Buildings.

The following applications came before the London County Council at their meeting yesterday. Consent or refusal, as recommended by the Building Act Committee, is indicated in italics in each case:

Erection of a lych gate at St. Andrew's Church, Greyhound Road, Fulham, on the application of Mr. A. C. Forrester, on behalf of the vicar and churchwardens (*consent*).

Erection of an iron and glass shelter in front of the Shooter's Hill and Eltham Park Railway Station, Westmount Road, Plumstead, on the application of Mr. J. W. Watkin, on behalf of the South Eastern and Chatham Railway Company (*consent*).

Re-erection of the "Queen Adelaide" public-house and the erection of four shops immediately to the westward, on the northern side of Uxbridge Road, Hammersmith, on the application of Mr. C. G. Miller, on behalf of the Lion Brewery Company, Ltd. (*consent*).

Erection of a one-storey building on the western side of Rosendale Road, Norwood, on the application of Mr. A. Whitelaw, on behalf of the London and North-Western Railway Company (*consent*).

Rebuilding of the Trinity Presbyterian Church, abutting upon Buck Street, Kentish Town Road and Union Terrace, St. Pancras, on the application of Mr. J. A. Macdonald, on behalf of the trustees of the church (*consent*).

Erection of bay-windows to thirteen houses on the eastern and western sides of Steep Hill, Streatham, on the application of Messrs. Ellyatt and Porter (*consent*).

Erection of a one-storey shop in front of No. 33, Frederick Place, Woolwich, on the application of Messrs. Church, Quick and Whincop, on behalf of Mr. J. B. Harthan (*consent*).

Erection of a parish hall on the northern side of Old Mill Road, Plumstead, to abut also upon the western side of Tormount Road, on the application of Mr. C. H. M. Mileham, on behalf of the vicar and churchwardens of St. Mark's Church (*consent*).

Erection of a building on the northern side of Baldwin's Place, Holborn, to abut also upon the southern and western sides of Verulam Street, on the application of Messrs. Sheppard and Bullock, on behalf of Messrs. Willmott and Sons (*refusal*).

Erection of a building upon a site on the eastern side of Betts Street, St. Georges-in-the-East, on the application of Mr. S. D. Adshead, on behalf of Messrs. A. Barber and Sons (*consent*).

Erection of a building on the northern side of Ben Jonson Road, Stepney, to abut also upon the eastern side of Stepney Square and the western side of St. Thomas' Yard, on the application of Mr. E. Jackson (*consent*).

Erection of a building on the north-eastern side of Margravine Road, Fulham, to abut also upon the southern side of St. Alban's Terrace, on the application of Messrs. Aston Webb and E. Ingress Bell, on behalf of the vicar and churchwardens of St. Alban's Church (*consent*).

Erection of a two-storey oriel window and railing in front of No. 1, Streets Mews, Aldford Street, Mayfair, on the application of Mr. G. A. Codd, on behalf of Mr. H. R. Read (*refusal*).

Erection of a fourth floor and loft addition at No. 68, Curzon Street, Mayfair, on the application of Messrs. Emden, Egan and Co., on behalf of Mr. G. J. Toby (*consent*).

Erection of two houses on the eastern side of Normanhurst Road, Streatham, with irregular open spaces at the rear (*consent*).

Erection of three one-storey shops on the Uxbridge Road frontage of Nos. 271 and 273, Uxbridge Road, Hammersmith, two onestorey shops on the flank frontage next Askew Road, a fireproof staircase block to give access to Nos. 271 and 273, Uxbridge Road, a block of three shops on the western side of Askew Road, and to an irregular open space at the rear of Nos. 271 and 273, Uxbridge Road, on the application of Mr. C. D. Cox, on behalf of Mr. H. E. Barley (*refusal*).

Formation or laying out of a new street for carriagt traffic to lead from Woodwarde Road to Townley Road, Dulwich, on the application of Messrs. H. J. Williams and Sons (*consent*).

Erection of an iron and glass roof at the Kensington High Street station of the Metropolitan District Railway, on the application of Mr. G. Sherrin, on behalf of the Metropolitan District Railway Company (*refusal*).

Erection of five shops and dwelling-houses on low-lying land situated at Nos. 59 to 69, Old Kent Road, on the application of Mr. F. W. Foster (*consent*).

Notes on Competitions.

Baptist Church and Schools, Leeds.

In the limited competition for a new Baptist church and schools at Headingley, Leeds, estimated to cost £8,500, the design submitted by Messrs. Percy Robinson, F.R.I.B.A., and W. Alban Jones, joint architects, of Leeds and London, has been selected. The assessor appointed by the Committee was Mr. W. H. Thorp, F.R.I.B.A. The new buildings are Gothic in style, to be carried out in brick with stone dressings. The church will provide accommodation for 500, with schools, gymnasium, and church parlour etc. The site is a corner one at the junction of Cardigan Road with Kirkstall Lane.

New Secondary Schools, Tiverton.

No fewer than 217 designs have been submitted in this competition. The assessor is Mr. C. Harrison Townsend F.R.I.B.A.

Islington Workhouse Extension.

In the competition for extensions to the receiving wards and the erection of new vagrant wards at the Islington Workhouse in St. John's Road, the assessor (Mr. Lewis Solomon) has reported in favour of the design submitted by Messrs. Greenaway and Newberry, of Westminster. The assessor's report is under consideration by the Accommodation Committee. There were seven competitors.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
July 11	SCHOOL AT HAZEL GROVE, STOCKPORT (to accommodate 800). Architects desirous of competing should send in their names by this date, with references to school buildings erected under their direction, to J. W. Bate, Clerk, Education Sub-Committee, School Brow, Bredbury, near Stockport. 20 architects to be selected. Remuneration at county scale. Two premiums.
July 13	EXTENSIONS TO WORKHOUSE BUILDINGS, DUDLEY.—Limited to architects practising within 35 miles of Dudley. Conditions from G. W. Coster, Clerk, Union Offices, St. James's Road, Dudley.
July 31	ELEMENTARY SCHOOL AT BANBURY.—Conditions from Oliver Stockton, Town Clerk, Banbury. Deposit £1.
Aug. 1	COUNTRY HOSPITAL, GUERNSEY. Conditions from Thomas Robin, President of Directors of County Hospital, Castel, Guernsey.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Row, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
No date.	SCHOOL AT DEVONPORT. Limited to architects in the Three Towns. Premiums 20 and 10 guineas.

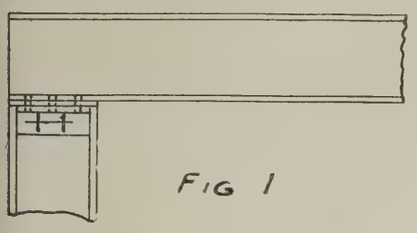
Enquiries Answered.

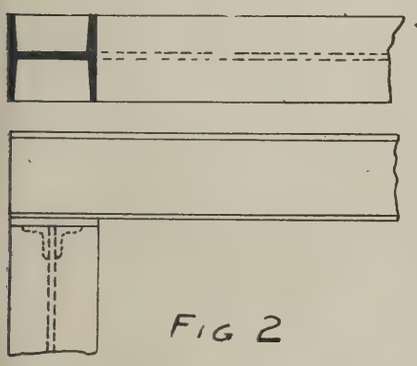
Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Connecting Joist to Stanchion.

KINGSTON-ON-THAMES. — S.G. writes: "Which is the correct way to bolt a rolled steel joist to a stanchion, and why?"

Figs. 1 and 2 show the two arrangements submitted by the querist. From





the figures the stanchion appears to be a broad-flange beam. In this case there is not much to choose between the two methods. If the load on a stanchion is central, it does not generally matter theoretically which way round it is placed. Fig. 1 is, however, in the writer's opinion, preferable, because, if from any cause the load came to the edge of the stanchion, instead of centrally, this arrangement would be stronger than that shown in Fig. 2. In the case where joists have to be connected to the sides of stanchions, the stanchion is best arranged so that the joist can be connected to its web instead of one of its flanges, as the stress due to the eccentricity of the load is less in this case. A.

The Office of Works.

SHEFFIELD writes: "Where can I obtain a list of questions that were set at a recent examination for appointment as assistant architect and surveyor in the Office of Works?"

Apply to the Secretary of the Civil Service Commission, Burlington House, London, W.

Books on Valuation of Property.

WIMBLEDON.—QUERIST writes: "Please recommend a book giving information as to how the value of property is ascertained; the conditions and items to be considered in order to effect profitable sale and purchase of land; information as to tithes, taxes, ground rent, etc."

I know of no one book which gives all the information for which you ask, but probably the followng may be of service:—"Valuation of Property," by C. E. Curtis, published at 2s. at "The Field" Office; "Building Estates," by F. Maitland, published at 2s., by Crosby Lockwood and Son (Weale's Series); "House Property," by E. L. Tarbuck, published by Crosby Lockwood and Son (Weale's Series) at 3s. 6d. F.S.I.

Church Roof Truss Stresses.

WINSFORD.—R.S. writes: "Kindly favour with an opinion as to the suitability of the church-roof construction shown in the accompanying illustration."

It is difficult to calculate the stresses in a roof truss of the type shown in the figure, because such stresses depend on the degree to which the walls are able to withstand the thrusts imposed upon them. For this reason, this type of roof is economically and scientifically bad, although for the sake of its appearance it is frequently adopted. In the present case, if, as is probable, it is considered necessary to avoid a tie-beam, the scantlings should be increased. The main rafter and collar-beam should be made 14ins. by 7ins., and the arch-rib increased to a thickness of 6ins. The other scantlings would then be satisfactory. The stability of the buttress, as far as the wind pressure is concerned, can be determined as shown for similar cases in the BUILDERS' JOURNAL for February 19th, 1908 and April 8th, 1908. If this is done in the present case the line of pressure will be found to come outside the section, so that the buttresses should be strengthened. Taking the wind-pressure and dead load as being equivalent to 40lbs. per sq. ft. of ground plan, the total load in this case comes equal to $\frac{40 \times 37{\cdot}5 \times 10}{112}$ =134cwt. on each truss. This means a load of 134=33·5 on each node, so that the horizontal thrust will be equal to $\frac{33{\cdot}5}{2} + 33{\cdot}5 = 50$ cwt. about. The overturning moment at the foot of the wall due to this thrust will be equal to 50 by 19 = 95oft. cwt. Now take the moment of stability of the wall. The weight of wall and pier per truss is equal to $\frac{10 \times 19 \times 3}{2} + 28.5 = 313$ cwt. nearly. The vertical force transmitted from the truss is equal to $\frac{134}{2}$ 67ft. tons, so that the total weight resisting overturning is equal to 313+67=380cwt. The moment of this about the edge of the pier is equal to $\frac{380 \times 13{\cdot}5}{12} = 427$ ft. cwt. This is not so large as the overturning moment, and so the buttresses must be increased. Take buttresses 3 bricks thick by 2½ bricks wide; weight of wall and buttress per truss is then equal 285 80 365; so that total resisting weight=365+67=432 cwt. The moment of this about the edge is about equal to 432 by 3 = 1296 ft. cwt. This will be sufficient to keep the line of pressure within the section, but not enough to fulfil the condition, often imposed, that there must be no tension in the mortar. This size of buttress will, however, be probably quite sufficient, unless the church is in a very exposed position. The truss itself might be strengthened to ensure safety in the event of the walls yielding by adding iron or steel plates as indicated in my reply to "Nouveau" of February 19th, 1908. A.

A Miserere Seat.

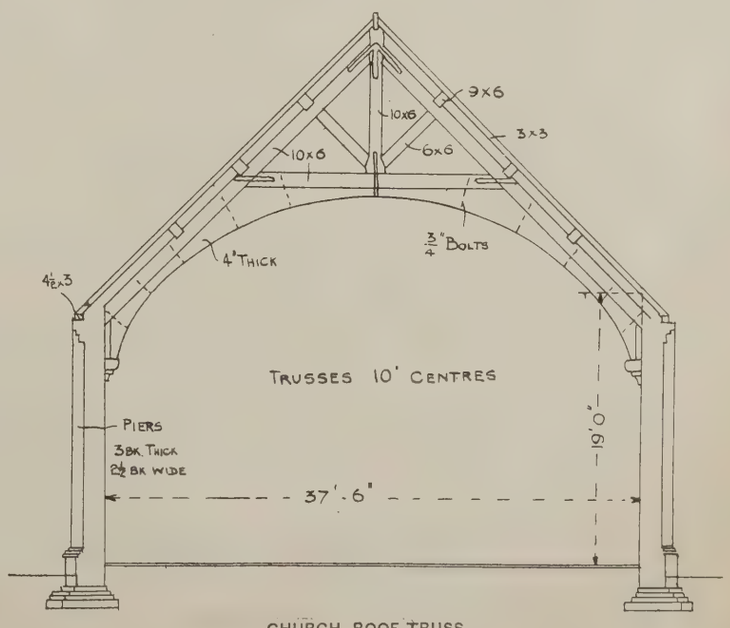
M. writes: "The accompanying sketch (not reproduced) shows a miserere seat. Can you tell me from what building it is taken? I am drawing it from a cast for the R.I.B.A. Intermediate."

I cannot say where it is, but I can say where it is not. It is not at Exeter, nor Gloucester, nor Worcester Cathedrals, nor at Salisbury. There are perhaps thousands of old miserere scattered about the country, although only about half-a-dozen in this county, outside Exeter Cathedral, which are at once the oldest and practically the finest complete series in the whole world. HARRY HEMS.

Linen Panelling.

LONDON.—P.H. writes: "Please give section and elevation of a drapery panel."

By the term "drapery panel" we presume you mean the "linen panelling" so often used in Tudor work. Illustrations of such panelling have frequently been published, and we regret we cannot find space to give fresh illustrations now. You will find examples on page 169 and 266 of Ellis's "Modern Practical Joinery" (3rd edition), which can be seen at any good public library. Other illustrations



CHURCH ROOF TRUSS.

are to be found in "The Domestic Architecture of England during the Tudor Period," recently published.

Reinforced Concrete Raft Foundation.

LONDON W.C.—R.D. writes: It is desired to erect a brick building, 24ft. by 24ft. by 12ft. to eaves, on a site that (about twelve years ago) has been raised 20ft., with soft refuse. Piling on piers, carried down to ballast, which is 35ft. below my level, would be too costly. Would a reinforced concrete slab be reliable? If so, what should be the details of construction?"

It is impossible for us, with the information provided by our correspondent, to determine the dimensions and details of a reinforced concrete raft foundation for the building in question. We advise him to place the matter in the hands of a consulting engineer. We certainly consider that a reinforced concrete raft would be satisfactory; whether it would be necessary to have much spread outside the walls depends upon the weight of the building, and the resistance of the subsoil. As regards the position of the reinforcement, that would depend upon the details of the design and the distribution of the loads. It would be more economical to use reinforced concrete than to employ rolled steel joists embedded in concrete.

Stability of King-bolt Truss.

HALIFAX.—QUERUS writes: "Please give an opinion as to the stability of a roof truss constructed as shown in the accompanying diagram." (Reproduced in Fig. 1).

Fig. 1 shows the proposed truss. Taking the load, including the wind pressure, as 40lbs. per sq. ft. of ground plan, we get the load carried by the truss equal to $\frac{23'5 \times 13 \times 40}{112}$ = 108cwt., about. Dividing this load up in proportion to the length of the different portions of the rafters, we get the loads on the various nodes as shown in the frame diagram, Fig. 2, in which the curved tie is replaced by two straight ties, Ao, A'o. From this frame diagram the reciprocal diagram shown in Fig. 3 is obtained according to the ordinary rules. Scaling off from this figure, we get the force P in the tie-bar Ao equal to 120cwt., or 4 tons. The maximum distance x between the straight tie and the curved tie is 1.3ft., or 1.3 × 12ins., so that the bending-moment due to this is equal to Px. The combined stress in the T-bar is equal to $\frac{P}{A}\left(1 \times \frac{xd}{k^2}\right)$, where A is the

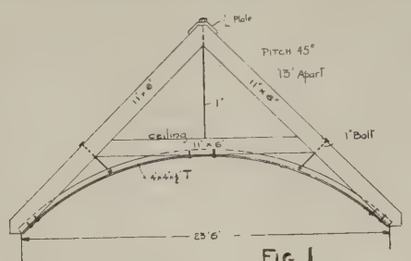


Fig. 1

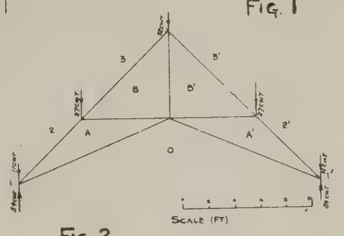


Fig. 2

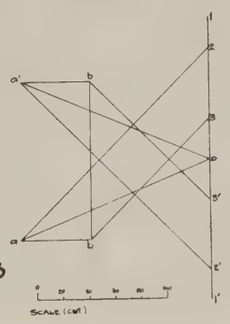


Fig. 3

area of cross-section of the bar, k the radius of gyration, and d the distance from the centroid of the section to the edge. From the tables we see that for a 4 by 4 by ½ T, A=3.75 sq. in.; k^2 = 1.44 inch units; d = 1.16ins. Therefore in our case maximum tensile stress $= \frac{4}{3'75}\left(\frac{1 \times 1.3 \times 12 \times 1.16}{1.44}\right) = \frac{4 \times 13.5}{3'75} = 14'4$ tons per sq. in. This is too much. For a 6 by 4 by ½ T, the maximum stress would come about 11.3 tons per sq. in. This is also high, but the 1in. bolts have a strengthening effect, and the timbers are heavier than necessary to carry their stresses, so that this would probably be safe. To make quite sure of safety by bringing the stresses in the curved tie within 7 tons per sq. in., the T might be replaced by two 5 by 3 by ½ angles, placed with the long legs vertical, and connected to each side of the main rafter and collar beam, bolts passing through the web and the eye-bolts connecting to the rafters being connected to such bolts. The connection between the tie and the rafter should be quite secure. If the tie were increased in strength in this way, the size of the timbers might be reduced if desired, although the additional size adds to the rigidity. A.

Reinforced Concrete and High Temperatures.

BRADFORD.—R.A.W. writes: "How does reinforced concrete stand the high temperatures of flue gases?"

Reinforced chimneys have been found to sustain high temperatures excellently. We would refer our correspondent to the articles by Mr. Sanford E. Thompson, published in our issue for January 29th last, page 107, in which the effect of temperature stresses is referred to at length. In that article reference is made to results of actual experience of nearly 150 chimneys. Concrete chimneys will be smoke-tight and water-tight if adequately reinforced. A plain concrete chimney will not be efficient, and would crack with the expansion and contraction. The problem of designing reinforced concrete chimneys is fraught with some little difficulty, and should only be placed in the hands of those who have made special theoretical and practical study of the subject, though it must be confessed that some of the specialists in this class of work have not proved themselves to be thoroughly competent, as they have had failures that can only be attributed to want of appreciation of the nature of the problem.

Bankruptcies.

During the week ended June 26th, twenty failures in the building and timber trades of England and Wales were gazetted.

J. MORRIS, builder, Richmond. Adj., June 22.

J. POWELL, late builder, Whitstable (formerly of Northampton). Adj., June 23.

C. L. PEPPIATT, builder, London, E.C. Liabilities, £7,964. Estimated surplus in assets, £30.

G. G. ASH, builder, Alvaston. First meeting O.R.'s, Derby, July 8, at 11. P.E., St. Peter's Churchyard, Derby, July 14, at 11

A. DUNN, builder, Gloucester. First meeting O.R.'s, Gloucester, July 4, at 12. P.E., Shire Hall, Gloucester, July 28, at 12.

J. THOMPSON, architect, Kendal. First meeting O.R.'s, Barrow-in-Furness, July 4, at 11.15. P.E., C.C., Kendal, July 15, at 11.

E. BURROWS, builder and contractor, Droitwich. First meeting, O.R.'s, Worcester, July 7, at 12. P.E., Guildhall, Worcester, July 7, at 2.

A. E. PITT, painter and decorator, Earlestown, Lancs. First meeting, O.R.'s, Manchester, July 4, at 11. P.E., C.C., Warrington, August 14, at 11.

When TENDERING . . .

Write to the Manufacturer for Prices of Door Springs, Fanlight Openers and Gearing, Panic Bolts, Casement Bolts, Metal Casements and Fastenings, Locks and Furniture, Sash Balances, Reversible Window Fittings, Weather Bars—Special Sections, and all Builders' Ironmongery.

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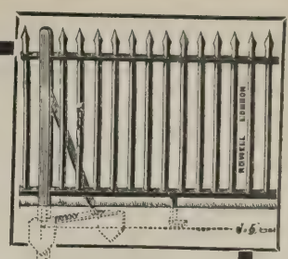


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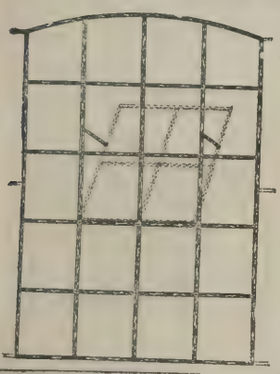


The pattern here illustrated has standards of T iron, horizontals of channel iron, verticals of solid square iron placed about 4½" apart. Price, with necessary fittings for fixing, from 4/2 per yard.

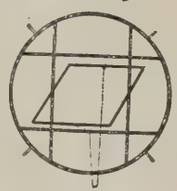
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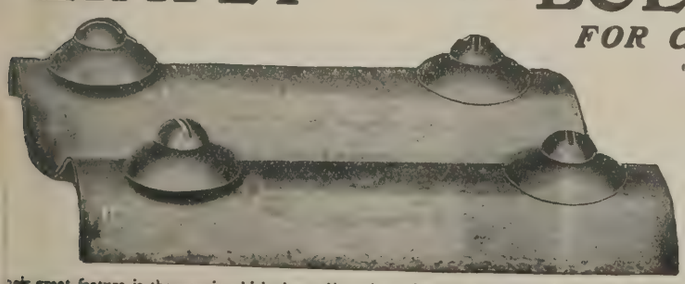
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Chesham.—For the construction of 927 yds. lineal of 9 in. stoneware pipe sewer and 294 yds. lineal of 6 in. cast-iron pipe sewer, together with all manholes, lampholes, flushing tanks, etc., in Hivings Hill, Lye Green Road, and Pednor Road, Chesham, for the Chesham Urban District Council. Mr. Percy C. Dormer, engineer and surveyor:—

W. N. Green and Co., Aylesbury	£1,148 10 0
R. W. Swaker, Hounslow	867 17 9
O. Kennard, Amersham	845 0 0
Langley and Johnson, Slough	829 12 0
J. Jackson, Forest Gate	799 0 0
Seymour and Hanson, Enfield	780 12 6
J. Cutting and Co., Shepherd's Bush, W.	774 14 6
J. Pearson, Wilson, and Co., 1, Raphael Street, S.W.	770 0 0
F. G. Brummell, Willesden Green	765 0 0
F. Osenton, Hampton-on-Thames	725 0 0
T. Free and Sons,* Maidenhead	713 0 0
E. H. Bate and Co., Slough	666 18 6

*Accepted.

Cleethorpes (Lincs.).—For the erection of a new infants' block at the Elliston Street Schools at Cleethorpes, for the Lindsey County Council Education Committee. Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln:—

G. H. Vickers, Louth	£5,126 0 0
G. F. Mashford and Sons, Cleethorpes	4,953 18 0
W. Ion, Grimsby	4,986 0 0
H. W. Parker and Son, Boston	4,800 0 0
Hewins and Goodhand, Grimsby	4,769 0 0
W. Kirton, Grimsby	4,724 10 0
H. J. Thomson, Scunthorpe	4,690 0 0
A. E. Faulks, Loughborough	4,687 0 0
T. Barlow and Co., Nottingham	4,405 0 0
H. S. and W. Close,* Lincoln	4,183 0 0

*Accepted.

Denham (Bucks.).—For alterations and additions to house, Maltmas Green, Denham, for Mr. C. M. Newton. Mr. Anthony Wilson, architect, 1, Hare Court, Temple, E.C. Quantities by Mr. Alfred R. Evans, Q.S.A.:—

C. Brown and Son	£2,275 0 0
W. Buttram	2,272 2 3
W. Ward	2,236 0 0
Fassnidge and Son*	2,144 0 0
Heffer and Co.	2,103 0 0

*Accepted.

Farnham.—For erecting an observation block, for the Joint Hospital Committee. Mr. W. J. Wells, architect, 112, West Street, Farnham:—

W. White	£990
Martin, Wells, and Co.	980
W. Watson	959
W. G. Tarrant	949
Cook and Son	945
Goddard and Son	939
J. Disney	913
E. F. McCarthy	897
J. Mills	889
G. Kemp	878
Goodall and Sons	865
Crosby and Co.	859
Tompsett and Co.	850
A. Chuter	845
Cæsar Bros.,* Hale, Farnham	789

*Accepted.

Fishguard (Wales).—For the erection of 40 or more houses, for the Fishguard Building Club. Mr. Preese James, architect, Tenby:—

J. Morgan, Fishguard	£10,836 0 0
W. H. Thomas,* Tenby	9,407 10 0
Howell and Son, St. Clears	9,144 0 0

*Accepted.

Harlington (Beds.).—For a pair of workmen's cottages and range of stabling for Mr. C. Franklin. Mr. W. B. Stonebridge, M.S.A., architect, Bedford and Woburn Sands:—

W. T. Sharpe	£1,012 0 0
G. W. Buckingham	850 0 0
Mann and Sons	795 19 0
G. Botsford	709 0 0
C. Sharp,* Flitwick	565 0 0

Architect's estimate, £630.

*Accepted.

Haltwhistle.—For alterations to business premises of Co-operative Society. Mr. E. Hastewell, architect, Haltwhistle:—

W. Strachan	£1,930 10 6
J. Laing and Son	1,850 15 0
Killah and Carr	1,845 0 0
F. White,* Heaton, Newcastle	1,083 13 0

*Accepted.

Handsworth Wood (Birmingham).—For erect of a residence, Friary Road, Handsworth Wo for Mr. A. D. Keeling. Mr. Harold S. Scott, chitect, 44, Waterloo Street, Birmingham:—

W. and J. Webb	£2,900
B. Whitehouse and Sons	2,497
Butler Bros.	2,487
J. Webb	2,467
W. J. Whittall and Son	2,450
E. Crowder	2,424
T. Elvins*	2,390

*Accepted after modification.

Harrow-on-the-Hill. — For making up Dr Road, for the Harrow-on-the-Hill U.D.C. Mr. Percy Bennetts, engineer and surveyor:—

Dykes	£1,753 7 8
Truman	1,723 0 0
Bell	1,673 19 4
Hanson	1,641 13 1
Champniss	1,620 14 6
Bower Bros.	1,543 12 8
Mowlem	1,532 0 0
Mann	1,518 18 2
French	1,484 11 11
Brummell	1,452 10 3
Wimpey	1,436 10 5
Adams	1,422 5 4
Free*	1,389 12 4

Surveyor's estimate, £1,483.

*Accepted.

London.—For the reconstruction of an eng house block at the chief station of the fire gade, for the London County Council:—

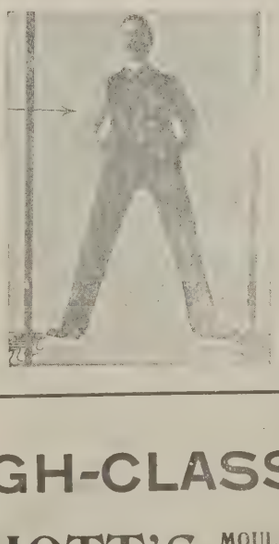
Kirk and Randall, Warren Lane Works, Woolwich, S.E.	£4,676
Holloway Bros. (London), Victoria Wharf, Belvedere Road, S.E.	4,390
J. Carmichael, 331, Trinity Road, Wandsworth, S.W.	4,313
Higgs and Hill, Crown Works, South Lambeth Road, S.W.	4,253
Spencer, Santo, and Co., Earl Street, Westminster, S.W.	4,214
E. Lawrance and Sons, 14, Wharf Road, City Road, N.	4,083
C. Wall, Limited, 4, Lloyd's Avenue, London, E.C.	4,080
F. and H. F. Higgs, Station Works, Hinton Road, Herne Hill, S.E.	3,900
G. Munday and Sons, Muscovy House, Trinity Square, E.C.	3,670
H. L. Holloway,* Union Works, Church Street, Deptford, S.E.	3,652

*Recommended for acceptance.

(*Tenders continued on page viii.*)

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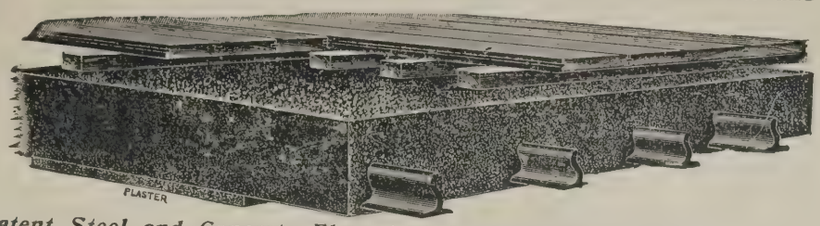
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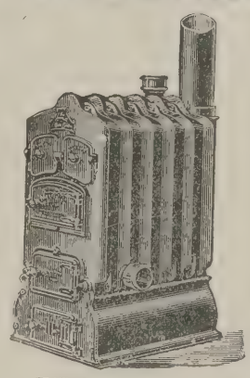
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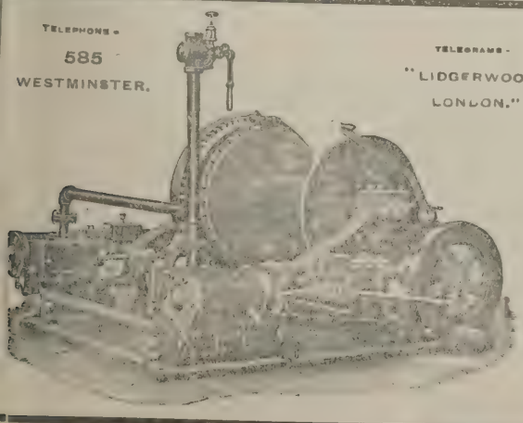
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Tenders continued from page vi.

Hawarden (Flints.).—For the erection of a mixed school at Ewloe Green, Hawarden, Flintshire, to accommodate 170 scholars, for the Flintshire Education Authority. Mr. Saml. Evans, county architect, Mold:—

P. Edwards, Dodelston	£2,750 0 0
E. O. Probert, Hope Village	2,646 15 0
R. Peters, Buckley	2,340 0 0
G. Wright and Sons, Hawarden	2,300 0 0
E. Blane and Sons	2,220 0 0
P. Williams,* Overton	2,100 0 0

*Accepted.

London.—For the manufacture and delivery of tramway feeder pillars required for the works to be put in hand during the year 1908-9, for the London County Council:—

Whipp and Bourne, Manchester	£2,597 16 6
W. T. Glover and Co., Ltd., Manchester	2,445 18 3
Callender's Cable and Construction Co., Ltd., Victoria Embankment	2,117 19 9
Nalder Brothers and Thompson, Ltd., Queen Street, E.C.	1,951 17 9
Johnson and Phillips, Ltd., Old Charlton	1,911 7 11
Estler Brothers, Victoria Docks, E.	1,901 2 0
The Universal Electric Manufacturing Co., Ltd., Peckham	1,897 19 9
W. Boydell and Sons, Ltd., Leigh, Lancs.	1,877 16 9
Thomas L. Scott and Co., Ltd., Cannon Street, E.C.	1,831 3 6
British Insulated and Helsby Cables, Prescott (Alternative tender)	1,896 3 3
British Insulated and Helsby Cables, Prescott (Alternative tender)	1,841 11 3
British Insulated and Helsby Cables, Prescott	1,818 16 3
The Edison and Swan United Electric Light Co., Ltd., Queen Street, E.C.	1,782 3 0
Spagnoletti, Ltd., Goldhawk Road, W.	1,762 3 0
Robert W. Blackwell and Co., Ltd., Westminster	1,718 16 9
J. H. Tucker and Co.,* Birmingham	1,595 6 0

*Recommended for acceptance.

London, S.E.—For the execution of the road-work and platelaying for the construction on the underground conduit system of electric traction of the tramways from Dulwich Library, via Lordship Lane and London Road, to Dartmouth Road, Forest Hill, for the London County Council. Mr. Maurice Fitzmaurice, engineer:—

W. Muirhead and Co., Queen Victoria Street, E.C.	£31,613 6 6
J. G. White and Co., Ltd., Cannon Street, E.C.	30,277 13 6
Fry Bros., Greenwich	29,992 17 2
Robert W. Blackwell and Co., Ltd., Westminster	28,459 8 9
Dick, Kerr and Co., Ltd., Cannon Street, E.C.	28,126 6 7
John Mowlem and Co., Ltd., Westminster	28,120 0 0
W. Manders,* Leyton	27,431 10 1

*Recommended for acceptance.
Chief engineer's estimate, £30,298 11s. 4d.

Morley (Yorks.). — For works in proposed preaching room at Banks Hill Wesleyan Chapel, Morley. Mr. T. A. Buttery, architect, Queen Street, Morley, and Leeds. Accepted tenders:—

W. and H. Sykes, Westfield Road, Morley, masons	£1,785 14 6
A. Furness, Queen Street, Morley, joiner and roof work	1,014 0 0
J. Lees and Son, Grove Foundry, ironfounders	121 14 8
Standard Patent Glazing Co., Dewsbury, patent glazing	211 9 2
Scott Bros., Churwell, painters	42 15 0

Swansea.—For erection of Christ Church School. Messrs. Beazley and Burrows, architects. Quantities by Messrs. Margrave and Peacock, Swansea, architects and surveyors:—

Lloyd Bros.	£926
J. Marles and Sons	895
Bennett Bros.	884
J. and F. Weaver	850
D. Jenkins	840
J. and D. Jones	830
R. Lacey	810
T. D. Jones	806
G. Davies	800
T. Richards*	786

All of Swansea.
*Accepted.

Wigan.—For the laying, jointing, etc., of about 7¼ miles of 36 in. and about 1⅜ miles of 27 in. cast-iron socket pipes between Wigan and Hoscar Moss, and for the construction of manholes, ventilators, and syphons under the River Douglas, and other incidental works, for the Corporation. Mr. William Bolton, borough engineer:—

C. R. Warren, Seacombe	£34,899 19 8
Monk and Newell, Bootle	30,404 0 0
J. Bentley and Co., Bradford	23,975 0 11
G. Bell and Sons, Manchester	23,240 0 0
Holme and King, Liverpool	22,361 14 8
G. Freeman and Sons, Hollinwood, Lancs.	22,315 0 0
W. Underwood and Bro., Dukinfield	22,067 11 6
Bennie and Thompson, Warrington	21,317 8 1
J. Mackay, Derby	21,009 7 8
R. C. Crawford, Marsden	21,000 0 0
J. H. Macdonald, Southport	20,570 0 0
J. Moffatt, Manchester	20,389 13 2
H. M. Nowell, Manchester	19,403 12 8
Jowett Bros., Burscough	18,416 15 2
A. H. Price and Co., Nottingham	18,209 0 0
R. C. Brebner and Co., Edinburgh	18,151 10 0
R. Annakin, Southport	17,439 0 0
W. Jowett,* Prescot	16,820 14 5

*Accepted.

Wellesbourne.—For alterations and additions to Chadley, Wellesbourne, near Warwick, for Capt. Bernard Granville. Mr. C. M. C. Armstrong, architect, Warwick:—

J. G. Fincher and Co., Stratford-on-Avon	£620
A. E. Sheasby,* Barford	595

*Accepted.

Coming Events.

Saturday, July 11.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual Excursion: Holy Island.

Monday, July 13, to Saturday, July 18.
ROYAL SANITARY INSTITUTE. — Annual Congress Cardiff.

Monday, July 13, to Monday, July 27.
ROYAL INSTITUTE OF BRITISH ARCHITECTS. — Exhibition, at the Old Water Colour Society's Gallery, Pall Mall East, of M. Jean Hulot's Grand Prix de Rome Drawings of the Restoration of the Ancient Fortified Port of Selinus, lent by the French Government.

Wednesday, July 22.
NORTHERN ARCHITECTURAL ASSOCIATION.—Annual Excursion, to Northallerton.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 9. BRADFORD.—Rebuilding of a block of offices in Brook Street and Booth Street, Bradford. Names and addresses of tenderers to be sent not later than July 9, to R. Armistead, 8, Charles Street, Bradford, or W. G. Smithson, 13, Ind Street, Leeds.

July 9. REDRUTH.—Rebuilding of business premises at Fore Street, Redruth. Tenders to be sent to E. F. Grant, Esq., Albany Road, Redruth, on or before July 9. Leonard Winn, architect and surveyor, 27, Boscawen Street, Truro, and The Free Library Chambers, Redruth.

July 9. GASCOIGNE WOOD (Yorks.).—Erection of offices, etc., at Gascoigne Wood. Particulars with Mr. William Bell, architect to the North-Eastern Railway, at York. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Offices, Gascoigne Wood," to be sent to the Secretary at York, not later than 9 a.m. on July 9.

July 9. UPPER HOLLOWAY.—Pointing and repairing the brickwork of the tower at the St. Jan's Wood Workhouse, Upper Holloway, in accordance with specifications and conditions of contract, copies of which may be obtained on application to Mr. W. Smith, architect, 15, Mercer's Road, Holloway, N., or 65, Chancery Lane, W.C., upon depositing £1 1s. Tenders to be delivered not later than 3 o'clock in the afternoon of July 9, endorsed "Tender for Pointing, etc.," to Edwin Davey, clerk, Guardians' Offices, St. John's Road, Upper Holloway, N.

July 11-24. NORTHAM (Devon).—New Council school at Northam, Appledore, for Devon County Education Authority. Bills of quantities on payment of £1 1s. Contractors desiring to tender must apply to the County Architect (Education), 3, Richmond Road, Exeter, before July 11, enclosing a crossed cheque drawn in favour of the County Treasurer. Quantities will be issued about July 16, and tenders must be delivered to the Architect not later than 10 a.m. on July 24.

July 11. LAGGAN.—Erection of a Free Church manse at Laggan. Tenders wanted for mason, carpenter and joiner, plumber, slater, plaster and painter work. Plans and specifications to be seen with, and schedules of quantities obtained from, Alexander Cattanach, architect, Kingussie, who will receive offers up to July 11, marked "Manse," Laggan.

July 13. ABERDARE.—Erection of two semi-detached villas at Abernant Road, Aberdare, for Messrs. Jones and Williams. Particulars with T. Roderick, architect, Clifton Street, Aberdare. Tenders to be sent not later than July 13.

July 13. EXETER.—Taking down the chimney of the brick-kiln, and erecting a new chimney at the brickworks, Clifton Hill, Exeter. Bills of quantities for the erection of chimney may be obtained from the architects on payment of 10s. Specifications and drawings at the office of John Pinn, and A. J. Pinn, A.R.I.B.A., 5, Bedford Chambers, Exeter, where tenders are to be delivered not later than July 13.

July 13. ENNISCORTHY.—Erection and completion of a parochial house at Enniscorthy, Co. Wexford, for the Rev. Robert Fitzhenry. Drawings and specification may be inspected at "St. Martin's," Enniscorthy, and at the office of the undersigned, where quantities can be had on application, accompanied by a deposit of £2 2s. Tenders to be delivered to T. F. Slevin and Sons, architects and surveyors, 8, Leinster Street, Dublin, not later than July 13.

July 14. ELGIN.—For the erection of a villa at Elgin—mason, carpenter, slater, plumber, plasterer, painter, and glazier works. Plans and specifications may be seen with Charles C. Doig, architect, Elgin, and offers must be lodged with him not later than July 14.

July 14. THORNTON (Lancs.).—Erection of buildings, excavations, etc., in connection with the new gas works, for Thornton U.D.C. Copies of the specification, general conditions, and quantities may be obtained and plans inspected on application to Mr. H. Fenton, surveyor, Council Offices, Thornton. Tenders, endorsed "Gas Works Buildings," to be addressed to the Chairman of the Council, and delivered not later than noon on July 14, to Richard Bowman, clerk, Council Offices, Thornton, near Preston.

July 14. DURHAM.—Erection of new Council school at High Clarence, and alterations at Stargate and Cornforth Ferryhill Council schools. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained as follows:—1, for school at High Clarence (for about 280 children)—At the office of Mr. J. Garry, architect, 47, Church Street, West Hartlepool. 2, for alterations to Stargate and Cornforth Ferryhill Council Schools—At the office of Mr. F. E. Coates, Shire Hall, Durham. Tenders (endorsed with name of school) to be sent not later than July 14, to A. J. Dawson, clerk to the Education Committee, Shire Hall, Durham.

July 15. UPPINGHAM.—Alterations and repairs to the Uppingham School Swimming Baths. Drawings and specifications may be seen and forms of tender, with quantities (price one guinea) obtained from Fred. H. Bancroft, A.M.I.C.E., F.S.I., civil engineer, 88, Mosley Street, Manchester. Tenders must be delivered to the Head Master, the Rev. H. W. McKenzie, Uppingham, Rutland, not later than July 15.

July 15. LANGLEY PARK (co. Durham).—Erection and completion of two houses at Langley Park, co. Durham, for Messrs. White and Lowes. Drawings, specifications, conditions of contract, and forms of tender at the architect's office, 22, Durham Road, Blackhill (Mr. Geo. Thos. Wilson's). Tenders to be sent in to the above office not later than July 15.

July 15. PORTH.—Erection of two semi-detached houses at Cymmer, Porth, for Miss A. Jones. Plans and specification at the offices of the architect. Tenders, endorsed "Tender for Two Houses," to be delivered before noon on July 15, to James T. Jenkins, architect and surveyor, Porth.

July 15. CARDIFF.—Erecting farm buildings and bailiff's house at Llwynarthan, Castleton, near Cardiff, for Henry Webb, Esq., J.P. Plans and specification can be seen at the architect's office, and bills of quantities obtained on payment of a fee of three guineas. Tenders to be sent not later than noon on July 15, to E. M. Bruce Vaughan, F.R.I.B.A., architect, Cardiff.

July 15. LANARK.—Erection of four attendants' cottages at Liquo Village, Hartwood, for Lanark District Lunacy Board. Tenders required for (1) digger, brick, and mason work; (2) joiner work; (3) slater work; (4) plaster work; (5) plumber work. Particulars with Mr. John Thomson, clerk of Works, Hartwood, on payment of a deposit of 10s. 6d. for each schedule. Tenders must be lodged not later than July 15, to Thos. Munro, clerk, County Offices, Hamilton.

July 15. LEEDS.—Repairing and pointing the viaducts, retaining the walls and bridges over the river Aire and the Leeds and Liverpool Canal, at Canal Road, Leeds. Particulars at the City Engineer's office. Bills of quantities on payment of one guinea. Tenders to be sent not later than 10 a.m. on July 15, to W. T. Lancashire, city engineer, Municipal Buildings, Leeds.

July 15. PORTHCAWL. — Building a new women's block to accommodate 26 patients, and a new men's block, to accommodate 20 patients at The Rest, Porthcawl. Plans and specification can be seen, and bills of quantities obtained, on payment of a fee of three guineas, at the office of the architect, Mr. Bruce Vaughan, F.R.I.B.A., 21, Dumfries Place, Cardiff. Tenders to be sent not later than noon on July 15, to Arthur Williams, secretary, The Rest, Porthcawl.

July 15. MANCHESTER.—Erection of a block for the accommodation of imbeciles, and for other additions at the Workhouse, at Crumpsall, near Manchester. Plans at the office of Mr. A. J. Murgatroyd, architect, 23, Strutt Street, Manchester, from whom quantities may be obtained upon a deposit of one guinea. Tenders, endorsed "Tender for Workhouse Extension," to be delivered not later than half-past two o'clock on July 15, to James Macdonald, Clerk to the Guardians, Poor Law Offices, New Bridge Street, Manchester.

July 15. SALTNEY.—Erecting a Council school near Boundary Lane, in the parish of Saltney, in accordance with plans, specifications, and bills of quantities prepared by the Flintshire County Architect, Mr. Sam. Evans. Plans and specifications can be seen during ordinary office hours at the offices of the County Architect, Education Offices, King Street, Mold, from whom also bills of quantities can be obtained on payment of a sum of £2 2s. Tenders, on forms which will be supplied, to be forwarded in sealed envelope to the County Architect, Education Offices, Mold, not later than July 15.

July 15. WILLESDEN.—Erection of a telephone exchange at Willesden, N.W., for the Commissioners of H.M. Works and Public Buildings. Particulars on application to Mr. J. Wager, H.M. Office of Works Westminster. Bills of quantities and forms of tender at the undermentioned address on payment of one guinea. Tenders to be delivered before noon on July 15, addressed to the Secretary H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Willesden Telephone Exchange."

July 15. SHILDON.—Extending the machine-shop at Shildon Waggon Works. Particulars with Mr. William Bell, the Company's Architect at York; duplicate plans may also be seen upon application to the Manager, N.E.R. Waggon Works, Shildon. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Machine Shop Extension, Shildon Works," to be sent to the Secretary at York not later than 9 a.m. July 15.

July 16. BERMONDSEY.—Demolition, removal, and purchase of corrugated iron and wood building at the Lower Road, Rotherhithe. Tenders, endorsed "Tender for Purchase of Iron Building," not later than 10 a.m. on July 16, to E. Pitts Fenton, clerk, 283, Tooley Street, S.E.

July 16-August 10. WELLS.—Erecting Laundry buildings and altering boiler-house at the Asylum at Wells. Application for bills of quantities, accompanied by a deposit of £1, to be made to the architects, Messrs. G. T. Hine and Co., 35, Parliament Street, Westminster, not later than July 16. A copy of the plans may be inspected at the asylum or at the offices of the architects, and tenders, addressed to the sub-committee, to be delivered at the asylum, Wells, not later than 5 p.m. on August 10.

July 16. BOYLE (co. Roscommon).—Erection and completion of a post-office at Boyle, co. Roscommon. Forms of tender and bills of quantities on deposit of £1. Tenders to be sent not later than 10 a.m. on July 16, to H. Williams, secretary, Office of Public Works, Dublin.

July 16. MANCHESTER.—Erection of bowl houses at Ripingham Road, Withington, and Lower Crumpsall Open Spaces. Drawings may be seen, and specifications and bills of quantities obtained, at the office of the City Architect, Town Hall, upon deposit of 10s. 6d. per set. Tenders, enclosed in the official envelope, to be delivered at the above office not later than 5 p.m. on July 16.

July 16. HASTINGS.—Erection of a nurses' home at the Hastings Workhouse Infirmary, in accordance with the drawings and specifications prepared by Messrs. A. W. Jeffery and Son, 5, Havelock Road, Hastings. Drawings, specification, and conditions of contract may be inspected, and bills of quantities and forms of tender obtained, at the architects' office, upon payment of a deposit of £2 2s. Tenders to be sent not later than noon on July 16, to A. R. Inskipp, clerk to the Guardians, 11, Wellington Square, Hastings.

July 17. WALKER-ON-TYNE. — Erection of stables and other buildings in Lamb Street, Walker. Plans and specifications at the office of Walker Co-operative Society in Lamb Street. Tenders to be addressed to the Walker Co-operative Society, Ltd., and delivered at the Society's office not later than on the morning of July 17, marked "Tender for Stables, etc."

July 20. BIRMINGHAM.—Erection of a tramway depot in Miller Street, for Birmingham Corporation. Tenders to be delivered not later than noon on July 20, to the Chairman of the Tramways Committee, Council House, Birmingham, and endorsed "Tender for Tramway Depot." Fair wages clause.

July 20. PRESTON.—Alterations to Holme Slack Farm, Deepdale. Particulars at the office of the borough surveyor, Town Hall, Preston, to whom sealed tenders, endorsed "Tender for Alterations, Holme Slack Farm, Deepdale," must be delivered not later than July 20 Fair wages clause.

July 21. DERBY.—Construction and fixing complete of a movable American maplewood floor at the Reginald Street Baths, Derby. Plans, specifica-

tions, etc., may be seen, and bill of quantities and form of tender obtained on application at the office of John Ward, M.Inst.C.E., borough surveyor, Borough Surveyor's Office, Babington Lane, Derby. Tenders, with quantities fully priced out, and endorsed "Tender for New Floor, Reginald Street Baths," to be sent to the Town Clerk, 15, Tenant Street, Derby, not later than 9 a.m. on July 21. A sample of the timber proposed to be used must be submitted with the tender.

July 22. RINGWOOD.—Erection of a new Council school. Particulars with Mr. W. J. Taylor, county surveyor, The Castle, Winchester. A deposit of two guineas will be required for a copy of the bills of quantities and form of tender. Deposits must be made by cheque, payable to the Hants County Council, and crossed "Bank of England," or particulars will not be sent. Tender to be endorsed "Ringwood Council School," and to be delivered not later than 10 a.m. on July 22, to H. Barber, clerk of the County Council, The Castle, Winchester.

July 22. BLACKPOOL.—Erection of a police Station at Hawes Side Tenders, endorsed "Hawes Side Police Station," addressed to the Chairman of the Watch Committee, care of John S. Brodie, Borough Engineer and Surveyor, Town Hall, Blackpool, should be delivered not later than 10 a.m. on July 22. Fair wages clause.

July 23. MENAI BRIDGE.—Alterations and repairs to the Council school, Menai Bridge. Plans and specifications may be inspected at the office of Jos. Owen, F.R.I.B.A., county architect, Menai Bridge. Tenders, sealed and endorsed "Menai Bridge Council School," to be sent in to Mr. R. H. Williams, secretary of Education, Education Offices, Llangefni, by not later than 9 a.m. on July 23.

July 23 RHOSNEIGR. — Erection of a new Council school at Rhosneigr, for the Anglesey Education Committee. Plans and specifications may be inspected at the office of Jos. Owen, F.R.I.B.A., county architect, Menai Bridge, Exchange Chambers, Holyhead. Tenders, endorsed "Rhosneigr Council School," to be sent in to Mr. R. H. Williams, Secretary of Education, Education Offices, Llangefni, not later than 9 a.m. on July 23.

July 24. SLEAFORD.—Erection of a Wesleyan school chapel, Grantham Road, Sleaford. Quantities with Mr. A. E. Lambert, architect, 22, Park Row, Nottingham, on payment of a deposit of 10s. Plans can be seen at 24, Jermyn Street, Sleaford. Tenders to be delivered to the Secretary, Mr. J. Chatwin, 24, Jermyn Street, Sleaford, before 10 a.m. on July 24.

July 24. PENGAM.—Erection of an infectious diseases hospital near Pengam. Particulars with Mr. P. Vivian Jones, P.A.S.I., architect and surveyor, Hengoed, with whom plans may also be seen. A deposit of £3 3s. is required for the quantities and specifications. Tenders to be sent not later than July 24 to Frank T. James, clerk, 134, High Street, Merthyr Tydfil.

July 27. NEW HERRINGTON (Durham). — Erection of two cottages adjoining the Recreation Ground of New Herrington Workmen's Club. Plans and specifications at the Club premises. Tenders to be sent not later than July 27 to W. Hill, Secretary, New Herrington, Fence Houses, Co. Durham.

July 27. HORNCASTLE.—Erection of a Grammar School at Horncastle, in Lincs. Bills of quantities and form of tender with Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln, not later than July 8, on payment to them of two guineas. Drawings and conditions of contract may be inspected at the offices of the architects. Tenders to be delivered to H. Tweed, clerk to the Governors, 6, Lindsey Court, Horncastle, before 10 a.m. on July 27.

No date. SOUTHMEAD (Bristol).—Erection of blind school, at Southmead, near Bristol. Drawings and form of contract may be inspected upon written application to the architect, Mr. Edward Gabriel, 42, Old Broad Street, London, E.C., or at 12, Orchard Street, Bristol. Application for bills of quantities and form of tender must be addressed to the superintendent, Rev. H. T. G. Kingdon, School of Industry for the Blind, Queen's Road, Clifton, Bristol, and on payment of the sum of £1 1s. (not returnable) they will be forwarded.

No date. DOLGELLEY.—Alterations at the Cross Foxes Inn, Dolgelley. Particulars on application to the architects, Messrs. Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

No date. LEEDS.—Erection of a pair of semi-detached villas at Killingbeck, Leeds (plumbers', plasterers', slaters', or painters' work). Names to be sent to Fred. Mitchell, architect and surveyor, 9, Upper Fountaine Street, Leeds.

No date. BLACKBURN.—Erection of new central premises in Northgate, Blackburn, for the Blackburn Industrial and Co-operative Society Apply to Simpson and Duckworth, architects, Richmond Chambers, Blackburn.

No date. COULSDON.—Erection of a parish room for St. Andrew's, Coulsdon, Surrey. Apply to Rev. F. H. Roberts, Coulsdon, or to the architect, Mr. Samuel Knight, F.R.I.B.A., 12, Rossdale Road, Putney, S.W. Bills of quantities are being prepared by Messrs. Batstone Bros., 110, Cannon Street, E.C.

No date. WINTERBORNE. — Alterations and additions to the United Methodist Chapel, Winterborne. Particulars with La Trobe and Weston, F.R.I.B.A., architects, 44, Corn Street, Winterborne.

ENGINEERING.

July 10. NEWCASTLE-UPON-TYNE.—Alterations to and part re-construction of the bridge over Benton Bank, adjacent to the Armstrong Bridge. On payment by the contractor of £2 2s. to the City Treasurer, Town Hall, Newcastle-upon-Tyne, general conditions, specification, bill of quantities, and form of tender can be obtained, and drawings inspected, at the City Engineers' Office, Town Hall. Tenders, with complete filled up schedule, addressed to the City Engineer, Town Hall, Newcastle-upon-Tyne, and endorsed "Benton Bank Bridge," to be sent not later than noon on July 10.

July 11. MIDLETON (Ireland). — Execution of the following works, for the Middleton R.D.C.: — 1, erection of platform and doing other works in connection with placing of pump at Glenbeg; 2, improving the sewerage works at Cloyne; 3, improving the waterworks of the village of Whitegate. Tenders to be lodged with John Stanton, clerk of the Council, at his office, not later than noon on July 11.

July 14. BURNLEY.—Supply of—(A) 13 b.h.p. gas-engine and plant, regulating wind-engine and pump, capable of lifting 6,000 gallons per hour to a head of 115 ft. (B) About 2,490 lin. yds. of 6 in. turned and bored cast-iron pipes, including sluice valves, hydrants, and all necessary ironwork required in the Briercliffe Water Supply (Herd House Scheme). Tenders, endorsed "Machinery and Ironwork, Briercliffe Water," to be sent not later than 4 p.m. on July 14, to J. S. Horn, clerk to the Council, 18, Nicholas Street, Burnley.

July 15. FELIXSTOWE.—Provision of overhead lines and services, for electric lighting, for Felixstowe U.D.C. Particulars at the offices of the Consulting Engineer, Mr. Reginald P. Wilson, 66, Victoria Street, Westminster, on payment of a sum of two guineas. Tenders, endorsed "Overhead Lines and Services," to be addressed to F. B. Jennings, Clerk to the Council, Felixtowe and Walton U.D.C., and delivered at the Town Hall, Felixstowe, not later than noon on July 15.

July 17. MALTA.—Supply of stoneware pipes and specials, for the Receiver-General and Director of Contracts. Valletta, Malta. Tenders to be accompanied with a deposit of £40, to be made in the office of the Crown Agents by tenderers residing in Great Britain, not having a representative in Malta. Particulars, specification, etc., may be obtained on application to the Crown Agents for the Colonies, Whitehall Gardens, London. Tenders to be sent not later than July 17, to Wm. Casolani, Receiver-General and Director of Contracts, Valletta.

July 20. CHELMSFORD.—Supplying and laying sewers and water mains for the Waterhouse Estate, and for extending water mains in Bradford Street, and Rainsford Road, Chelmsford. Specifications, forms of tender, and full particulars may be obtained, and the plans may be inspected, at the borough surveyor's office, 16, London Road, on and after July 13. Tenders, endorsed "Sewers etc., to be delivered not later than noon on July 20, to W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford.

July 21. LONDON.—Roadwork and platelaying required for the reconstruction for electric traction of the following lines:—(a) From Euston Road via Hampstead Road and Camden Road to Holloway Road. (b) From Loughborough Junction to Norwood, and from Hammersmith to Putney. Tenders must be upon the official forms, to be obtained from the Chief Engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment to the Cashier of the Council of a sum of £5 in case of each contract. No tender will be received after 11 a.m. on Tuesday, July 21.

July 22. BRIERLEY. — Construction of a covered reservoir at Ringstone Hill, in the township of Brierley, near Barnsley, and providing and laying about 600 yds. of cast-iron pipes, 5in. in diameter, together with the necessary hydrants, etc. Particulars at the office of Mr. T. H. Richardson, Hemsworth, and a copy of the schedule of quantities and form of tender may be obtained from him on depositing a cheque for £3 3s. Tenders, endorsed "Tenders for Ringstone Hill Reservoir," are to be sent not later than July 22 to John Scholefield, Clerk to the R.D.C., Hemsworth, near Wakefield.

July 27. SHOOTERS' HILL.—Construction and erection of a steel stand pipe and other subservient works, at Shooters Hill, Kent. Particulars at the offices of the Chief Engineer, Savoy Court, Strand, W.C., on and after July 13. Particulars from the Chief Engineer on the production of an official receipt for £5, which sum must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders, addressed to the Clerk, Metropolitan Water Board, Savoy Court, Strand, W., and endorsed "Tender for Steel Stand Pipe, Shooters' Hill," must be delivered at the office of the Board, Savoy Court, Strand, W.C., not later than 10 a.m. on July 27.

July 27. MOLESEY.—Construction of a storage reservoir, together with a pipe line 54 in. diameter, a girder bridge over the river Mole, and other subservient works, for the Metropolitan Water Board. The embankment of the reservoir will be about 1 2-3rd miles in length, and will contain approximately 875,000 cub. yds. of earthwork. The pipe line will have a length of about 1 2 miles, and is to be constructed partly of steel and partly of cast-iron pipes. Forms of tender, conditions of contract, specification, list of drawings and bills of quantities, etc., from the chief engineer on the production of an official receipt for the sum of £50, which sum must be deposited with the Accountant at Savoy Court, Strand, W.C. Tenders, addressed to the Clerk, Metropolitan Water Board, Savoy Court, Strand, W.C., and endorsed "Tender for Island Barn Reservoir," to be delivered at the offices of the Board, Savoy Court, Strand, W.C., not later than 10 a.m. on July 27.

No date. DEARNLEY.—Alterations in the heating in certain blocks of buildings at the workhouse at Dearnley, near Rochdale. Firms desiring to tender for the work to send name and address to R. A. Leach, Union Clerk, Union Offices, Todmorden, Rochdale.

IRON AND STEEL.

July 10. DARLINGTON. — Construction and supply of 24 steel-plate girders, with cross girders, etc., necessary for the strengthening of two of the ducts on the Saltburn and Whitby Branch. The work consists of about 285 tons of steel and iron work, which must be delivered at the Permanent Way Yard, Darlington. Plans and specification may be seen and detailed quantities and form of tender obtained on personal application at the office of Mr. W. J. Cudworth, the Company's engineer at York. Tenders, marked "Tender for Supply of Steel Girders for Viaducts," to be sent to the secretary at York not later than 9 a.m. on July 10.

July 15. SOUTHAMPTON.—Supply of cast-iron pipes and special castings for the Waterworks Department, according to specification and conditions to be obtained of the Acting Waterworks engineer, 33-35, French Street, Southampton. Tenders, endorsed "Tender for Pipes and Castings," to be delivered at the town clerk's office, Southampton, before 2 p.m. on July 15.

PAINTING.

July 9. LOUGHBOROUGH.—Painting, cleaning, and colour washing at several schools, Loughborough Education Committee. Also providing and fixing three ranges of sanitary fittings at the out-offices of the Shakespeare Street Council School. Particulars on application to Messrs. Barrowcliffe and Allcock, Town Hall Chambers. Tenders to be delivered not later than 4 o'clock on July 9, to E. A. Jarratt, clerk to the Committee, Education Offices, Loughborough.

July 9. SHEFFIELD.—Execution of painting and white-washers' work required at the Union Hospital, Fir Vale:—(1) Inside work at Hospital Blocks Nos. 4, 5, 6, 7, and south and pavilions of Block 8; and (2) Outside work at Hospital Blocks 1 to 8, and outbuildings, etc., in accordance with specifications prepared by the clerk of works, a copy of which specification may be seen and further particulars obtained on application at the workhouse. A separate tender must be given for each of the two sections of the work, and should be sent marked "Tender for Painting," not later than first post on July 9, to Albert Edwd. Booker, clerk to the Guardians, Union Offices, Westbar, Sheffield.

July 10. CORK.—Annual painting works at the South Charitable Infirmary and County Hospital, Cork, in accordance with specification prepared by Mr. James F. McMullen, architect, which may be seen at the Infirmary. Tenders to be lodged with the House Surgeon, John P. Higgins, M.A., not later before noon on July 10.

July 11. NEWPORT (Mon.). — Painting and colouring several Council schools, for Monmouthshire Education Committee. Particulars with Mr. Dauncey, secretary, County Council Offices, Newport, Mon., to whom separate tenders for each school are to be sent not later than July 11.

July 11. MONMOUTHSHIRE.—Painting and colouring the following Council schools, Monmouth Overmonnow and Llanvihangel-y-Llewern. Specifications may be seen at the office of Bickerton H. Deakin, Clerk to the Managers, Parade House, Monmouth. Tenders to be delivered not later than July 11.

July 13. BLACKBURN. — Painting, etc., various schools in the borough. Specification and form of tender at the office of William Scott, A.M.I.C.E., borough engineer, Municipal Offices, Blackburn. Tenders properly endorsed to be delivered at the Municipal Offices, not later than 9 a.m. on July 13.

July 13. BISHOP STORTFORD. — Painting at ie hospital in Haymeads Lane, Bishop's Stortord. Particulars with Mr. E. T. Watts, surveyor, horley. Tenders, endorsed "Tender for Painting," to be sent on or before Monday, July 13, o Alfred G. Gwynn, clerk to the Hospital Joint ommittee, 29, North Street, Bishop Stortford.

July 13. PRESTON.—Painting lamps in various reets of the borough. Specification and form of nder at the office of the borough surveyor, Town all, Preston, fo whom sealed tenders, endorsed Tender for Painting Lamps," must be delivered t later than noon on July 13. Fair wages ause.

July 14. BURY ST. EDMUND'S.—Painting, c., at eleven Council schools. Specifications and rm of tender on application to the building inpector, Mr. A. Ainsworth Hunt, Shire Hall, Bury . Edmund's. Tenders to be sent not later than ly 14, to Fred. R. Hughes, Secretary to the ducation Committee, County Education Offices, ire Hall, Bury St. Edmund's.

July 14. BETHNAL GREEN.—Painting the exrior of the Administrative offices, Bishop's Road, ictoria Park, N.E., for Bethnal Green Board Guardians. Forms of tender and specifications the work required to be done may be obtained depositing two guineas. Tenders must be nt not later than noon on July 14, to D. homas, clerk to the Board, Guardians' Administative Offices, Bishop's Road, Victoria Park, N.E.

July 16. LEEDS.—Painting and cleansing of chools during the midsummer vacation, for the eeds Education Committee. Specifications and ll particulars on application to the architect's partment, Education Offices, or to James Grahm, secretary for Education, Education Offices, eeds, to whom sealed and endorsed tenders must sent not later than 10 a.m. on July 16.

July 17. RHONDDA.—Painting and colouring veral schools during the midsummer vacation, ly 30 to August 29. Specifications and bills of antities may be seen and forms of tender obined at the residence of the architect, Mr. acob Rees, Hillside Cottage, Pentre. Separate nders must be submitted for each school. Tenrs, endorsed "Tender for painting schools," d addressed to the Chairman of the Building ommittee, to be sent, not later than noon on ly 17, to W. P. Nicholas, clerk to the Council, ouncil Offices, Pentre, Rhondda.

uly 20. DUBLIN.—Painting work at artisans' ellings, Benburb Street. Particulars at the office o Edmund W. Eyre, City Treasurer, on payment o ten shillings. Tenders to be sent to the Chairan, Estates and Finance Committee, Municipal Buildings, and marked "Benburb Street," not ter than 4 o'clock on July 20.

lo date. DOLGELLEY.—Painters' work at D Williams's School, Dolgelley. Particulars on plication to the architects, Messrs. Deakin and dward Jones, M.S.A., Plas Ynys, Borth, R.S.O.

ROADS AND CARTAGE.

ly 9. DEARNLEY.—Materials and workmanip required in paving and laying of edgings, hannel, wheelstones, macadam, and drainage of rd at the Union Workhouse, Dearnley. Particuri at the office of S. H. Shuttleworth, surveyor, Oldham. Tenders, endorsed "Tender for Rd," to be sent so as to be delivered not later an noon on July 9, to R. A. Leach, Union Clerk, nion Offices, Townhead, Rochdale.

ly 10. HUNSLET. — Making up Hollyshaw reet, and back Hollyshaw Terrace, at Whitkirk, ar Leeds, for Hunslet R.D.C. Tenders to be t not later than July 10, to W. B. Pindar, clerk, Glasshouse Street, Hunslet, Leeds.

ly 11. HARROW-ON-THE-HILL. — Public ad improvement in Pinner Road. The work nsists of widening the present carriageway, oing, channelling, and forming paved footays, and incidental works. Plans may be seen specification and quantities obtained from J. Percy Bennetts, engineer and surveyor to Council, on deposit of a £5 note. Tenders, dorsed "Street Improvement," to be sent not ter than July 11, to John Strachan, clerk, Harow-on-the-Hill U.D.C.

ly 11. GOLDTHORPE. — Footpath improveents on the Doncaster and Saltersbrooke main ad, Goldthorpe, for Bolton-upon-Dearne U.D.C. e work includes about 146 yds. cube digging, yds. 9in. potpipe drain, 36 yds. 6in. drain, 409 ds. 12 x 8 in. kerb, 410 yds. 12 x 4 in. lineal annel, 1 manhole, 683 yds. super limestone tarping, setts, junctions, bends, surface water annels, etc. Particulars from the surveyor upon eposit of £1 1s. Tenders to be delivered not ter than July 11, endorsed "Improvements," to edger Hawksworth, Council Offices, Station ad, Bolton-upon-Dearne, Rotherham.

July 11. ROTHERHAM.—Footpath improvees on the Doncaster and Saltersbrooke main ad, Goldthorpe. The work includes about 146 d cube digging, 47 yds. 9in. potpipe drain, yds. 6in. drain, 409 yds. 12 by 8 kerb, 410 yds. 4 lineal channel, one manhole, 683 yds. super. limestone tarpaving, setts, junctions, bends, surface water channels, etc., for Bolton-upon-Dearne U.D.C. Particulars from the surveyor upon a deposit of £1 1s. Tenders to be delivered not later than July 11, endorsed "Improvements," to J. Ledger Hawksworth, Council Offices, Station Road, Bolton-upon-Dearne, Rotherham.

July 13. HUNSLET.—Repair of about 560 yds. of highway in Woodlesford, near Leeds. Particulars with W. B. Pindar, clerk, Council Offices, Glasshouse Street, Hunslet, Leeds, to whom tenders must be sent marked "Tender for Road Repairs," not later than July 13.

July 13. STOCKTON-ON-TEES.—Extensive private street improvements, for the Corporation. Particulars with Mr. M. H. Sykes, Borough Engineer, Town Hall, on payment of a deposit of half-a-guinea. Tenders, endorsed "Private Street Improvements," to be sent to a.m. on July 13, to Arthur B. Crosby, Town Clerk, Borough Hall, Stockton-on-Tees.

July 13. WILLESBOROUGH.—Supply and delivery of quartzite of the undermentioned quantities for the East Ashford R.D.C.:—150 tons of 2-in. quartzite to Smeeth Station, S.E. Railway; 650 tons of 2-in. quartzite to Wye Station, S.E. Railway. The material to be delivered, carriage paid, on or before October 31. Tenders to be delivered at the Workhouse, Willesborough, not later than 9 a.m. on July 13.

July 13. LEEDS.—Paving and flagging of several streets, for Leeds Corporation. Particulars at the City Engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained and copies of the documents forming the contract inspected on application at the Highways Office, 155, Kirkstall Road. Tenders, endorsed "Tender for Private Street Works," and addressed to the Highways Committee, to be delivered at the Town Clerk's Office, Town Hall, Leeds, not later than 10 a.m. on July 13.

July 14. MANCHESTER.—Supply and delivery of granite setts. Particulars with Mr. J. M. McElroy, general manager, Tramways Department, 55, Piccadilly, Manchester. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester, endorsed "Tender for Setts," not later than 10 a.m. on July 14.

July 14. CORK.—Supply of gravel and stone for the War Department at various places in the Cork Sub-District. Forms of tender, specification of material to be supplied, and all necessary information, may be obtained on application by letter to L. Bertie Millington, Capt. R.E. for Commanding Royal Engineer, Cork Sub-District, Royal Engineer Office, Victoria Barracks, or by personal inquiry, between 11 a.m. and 3 p.m. (Saturdays 1 p.m.) at the above-mentioned Royal Engineer Office. Application should be made not later than July 14.

July 17. LANCASTER.—Kerbing, flagging, paving, etc., of several streets. Particulars at the office of Mr. John C. Mount, borough surveyor. Tenders, endorsed "Tender for Street Works," to be delivered not later than July 17, to T. Cann Hughes, Town Clerk, Town Hall, Lancaster.

July 21. NEWCASTLE-UPON-TYNE. — Supply and delivery of dressed freestone for quay extension works, about 16,300 cub. ft. Specification, bill of quantities, and form of tender can be obtained, and drawings inspected at the city engineer's office, Town Hall, Newcastle-upon-Tyne. Tenders, endorsed "Tender for Dressed Freestone for Quay Extension," to be sent to the above address not later than noon on July 21.

July 21. NELSON.—Supply and delivery of about 180 tons of specially dressed granite setts, for the Plans and Buildings Committee of the Borough of Chorley. Particulars may be obtained and sample sett seen at the office of the borough surveyor. Tenders, endorsed "Granite Setts," to be lodged with the town clerk, and a sample sett with the borough surveyor, not later than July 21.

July 22. BOLLINGTON.—Supply of about 300 tons of Welsh granite macadam, to be delivered at the Bollington Railway Station in such quantities and at such times as required. Particulars from Samuel Knight, clerk, Council Offices, Bollington, near Macclesfield, to whom tenders, endorsed "Granite Macadam," must be forwarded not later than July 22.

SANITARY.

July 15. BIRMINGHAM.—Construction of sewers as follows, for King's Norton and Northfield U.D.C.:—(1) The reconstruction of the Rea Valley Sewer from Pershore Road along Cartland Road, Twyning Road, etc. (2) The construction of a 12in. sewer from Rubery to tLongbridge. Particulars at the office of the Engineer and Surveyor to the Council, Mr. Ambrose W. Cross, A.M.I.C.E., 23, Valentine Road, King's Heath, on payment of deposit of two guineas in each case. Tenders, endorsed "Tender for Reconstruction of Rea Valley Sewer," or "Tender for Construction of Rubery Sewer," must be sent not later than noon on July 15 to Edwin Docker. Clerk to the Council, 10, Newhall Street, Birmingham.

July 21. STREATHAM.—Construction of a underground convenience at Christchurch Road, Streatham. Particulars at the borough engineer and surveyor's office, No. 215, Balham High Road, S.W., on payment of one guinea. Tenders marked "Convenience," to be delivered at the Council House, East Hill, Wandsworth, S.W., not later than 3 p.m. July 21. Fair wages clause.

July 21. PORTSMOUTH. — Construction of sewers, manholes, pumping station, attendant's cottage, and all accessories in Copnor Road, with Crossley's gas engines and centrifugal pumps. On payment of £5 a lithographed copy of the specification, general conditions and bill of quantities, with form of tender, can be obtained on application to the undersigned, and any further particulars can be obtained at the borough engineer's offices at the Town Hall, Portsmouth. Tenders, marked "Tender for Copnor Road Sewer and Pumping Station," to be sent not later than 10 a.m. on July 21, to Alexander Hellard, Town Clerk, Town Hall, Portsmouth. Fair wages clause.

MISCELLANEOUS.

July 9. EDINBURGH.—(1) Supplying and fitting up gymnastic apparatus, and (2) erection of fencing at children's playground, Lochend Meadows, according to plans and specifications which may be seen at the Public Works Office, City Chambers, where also schedules of quantities may be obtained on personal application. Tenders to be sent not later than 10 a.m. on July 9, marked "Tender for Gymnastic Apparatus," or "Fencing Lochend Meadows," respectively, to J. A. Williamson, City Superintendent of Works, Public Works Office, City Chambers, Edinburgh.

July 10. RHONDDA.—1—Laying about 400 lineal yds. of 9 in. cast-iron pipe sewer on concrete piers in the river bed at Gelli. 2—Ballasting, metalling, kerbing, fencing, etc., about 230 lineal yds. of road between Llwynypia and Trealaw. Particulars at the Public Offices, Pentre, on depositing the sum of one guinea for each contract. Tenders, endorsed "Sewer at Gelli" and "Road at Llwynypia" respectively, to be delivered by 10 a.m. on July 10, addressed to the Chairman of the Council, Public Offices, Pentre. Fair wages clause.

July 11. WESTON-SUPER-MARE.—Supply and delivery of the undermentioned goods, for the period ending March 31, 1909, for Weston-super-Mare U.D.C.:—Ironmongery, tools, castings, iron, steel, oils, paints, tar, pitch, etc., stable utensils, disinfectants, lime, cement, bricks, drain pipes, etc. Samples of the goods may be inspected at the Town Depot, Oxford Street, Weston-super-Mare. Tenders, endorsed "Tender for ——," are to be sent not later than July 11, to Harold A. Brown, Surveyor, Town Hall, Weston-super-Mare.

July 11. CHORLEY.—Following supplies for Chorley B.C. Engineering bricks, cast-iron pipes, lias lime, and cement. Specifications and further particulars can be obtained on application to the borough surveyor, Town Hall, Chorley. Tenders, endorsed "Bricks," "Pipes," or as the case may be, to be sent not later than July 11, to Jno. Mills, town clerk, Town Hall, Chorley.

July 13. WHITBY.—Construction of two sea piers and timber landing quay, and the dredging of a harbour, channel, and other works, at Whitby Harbour, for the Whitby U.D.C. Particulars from Messrs. J. Watt Sandeman and Son, C.E., 1, St. Nicholas Buildings, Newcastle-on-Tyne, on and after June 15, upon payment of a deposit of £5 5s. Tenders to be addressed to Mr. Wm. Seaton Gray, clerk, Council Offices, Whitby, by July 13.

July 13. SALFORD.—Supplying benches and other fittings, for the manual instruction rooms at the Tootal Road and Leicester Road Council Schools. Particulars with the Director of Education, Education Office, Chapel Street, Salford. Tenders, endorsed "Tenders for Manual Instruction Benches, etc.," to be sent not later than noon July 13, to L. C. Evans, Town Clerk, Salford.

July 14. LONDON.—Supply and delivery of:— (1) 5 tons galvanised eye bolts and 30 tons galvanised strand wire. (2) 135 tons red and white lead (dry powder). (3) 59 tons paints (various). as per specifications to be seen at the offices of the Bengal and North-Western Railway Company Alexander Izat, Managing Director), 237, Gresham House, Old Broad Street, London, E.C. Tenders, marked "Tenders for Eye Bolts, etc.," or as the case may be, are to be lodged not later than noon July 14, at the address just given. For each specification a fee of 10s. will be charged, which cannot under any circumstances be returned.

July 16. TROWBRIDGE.—Widening and reconstruction of bridges. Plans and specification may be seen, and further particulars obtained, on application to the County Surveyor, Alfred Dryland, County Surveyor's Office, Trowbridge. Tenders, sealed and endorsed with the name of the bridge tendered for, to the clerk of the County Council, County Offices, Trowbridge, must be delivered not later than July 16.

No date. MANCHESTER.—Supply and delivery of 65 porcelain wash baths for Bradford Baths, for the Baths Committee of Manchester Corporation. Forms of tender and full particulars may be obtained upon application at the City Architect's Office, Town Hall.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

ACCURATE quantities prepared by London Surveyor of experience in shortest possible time. Reasonable terms. Provincial work undertaken. Jobs measured up and settled in town or country.—Surveyor, 441, Birkbeck Bank Chambers, Holborn, W.C. 3031

ADVERTISER (27), seeks re-engagement; ten years' first-class experience of estate building, management and repairs, etc.; qualified to prepare plans and estimates, including quantities for new works; ex. refs.—Y., 86, Coniston Road, Muswell Hill, N. 4407

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford. 4425

ARCHITECT'S Assistant (24), desires engagement —seven years' varied experience; neat, expeditious draughtsman; honours construction and architectural certificates; excellent references; moderate salary.—Address, W. E. K., 34, Wingate Road, Hammersmith, W. 4375

ARCHITECTURAL Assistant, 7 years' experience, in busy London office. Working drawings for various buildings, details, etc.; measuring up and levelling; good reference; moderate salary.—Box 4424, Builders' Journal Office.

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Fred Griffiths, 6, Bath Terrace, Hanwell, London, W. 4421

ARCHITECT'S Assistant, 26, desires engagement, town or country; good designer, well up in detail, neat draughtsman, and good leveller.—J. B., 65, Archway House, Abbey Wood, Belvedere. 4371

ARCHITECT'S Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4406

ARCHITECT'S junior assistant (just completed articles with city architect) desires engagement; good draughtsman, and colourist, neat tracer, working drawings and perspectives.—H. F., 39, Victory Road, Wimbledon 4351

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities, R.A. Exhibitor; expert perspectives.—Box 4409, Builders' Journal Office.

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Assistant (21), disengaged; five years' London and Provincial experience; working drawings, specifications, details, levelling, assist with quantities; five first classes in construction; highest references, 25s. — C. D. H., 7, King's Parade, Finchley, N. 4412

ARCHITECTURAL Assistant (34), sixteen years' splendid experience, first class designer and colourist, practical, and artistic, working drawings, perspectives, details, excellent references; salary to be arranged. — Box 4430, Builders' Journal Office.

ARCHITECT'S Assistant (25), desires engagement; 7 years' experience; working drawings from rough sketches, details, measuring up, surveying, etc.; excellent references; salary 35s.—E. J. C., "Beaconsfield," Kew Green, Surrey. 4368

ARCHITECT'S Assistant, twelve years' experience, desires engagement; good draughtsman, designs, working and detail drawings, etc.; excellent references.—W. A. N., 17, Hugo Road, Tufnell Park, N. 4326

ARCHITECTURAL assistant, served articles, good draughtsman, details; testimonials and drawings if desired: salary 30s. weekly. — Box 4204, Builders' Journal Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, Builders' Journal Office.

ADVERTISER desires engagement in or near London; expert surveyor and leveller; just completed important survey in the North; plans, specifications, superintendence. — Box 4391, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (24), passed P.A.S.I. exam.; six years' varied London experience —working drawings, dilapidations, surveying, levelling, measuring and usual office routine; good ref.; salary 30s.—Box 4387, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (21), 4½ years' London and Provincial experience; Student R.I.B.A.; excellent refs.; experience more an object than salary; country preferred.—E. H. H., 68, Newbridge Hill, Bath. 4386

ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, Builders' Journal Office.

BUILDER'S Clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4373

BUILDER'S Assistant (23), reliable, desires engagement, construction, surveying, sanitation, measuration, quantities; also accounts, costs, wages, etc.; good draughtsman; assist estimating and supervision; outside experience; moderate salary.—Box 4306, Builders' Journal Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J. G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, Builders' Journal Office.

CARPENTER-JOINER (31), seeks situation; good all-round man, good draughtsman, etc. Three years present job, now finishing. Town, country, and teaching experience. Excellent references.—G. K., 8, Tudor Road, Upton Park. 4313

CLERK of Works, contractors' manager, or general foreman disengaged, carpenter and joiner, practical in all details; smart, energetic, trustworthy, recently concluded large industrial undertakings; accustomed to large jobs. — Box 4341, Builders' Journal Office

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN Painter, could take entire management of flats or estate. Good estimator. Well up in all trades connected with buildings. Age 35. Life abstainer.—B. Calverley, 20, Fernlea Road, Balham. 4325

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GENERAL Assistant (30), fourteen years' excellent all round experience, good knowledge of construction, sanitary science, and everything in building estate development; Surveyors' Institution and Municipal and County exams. £4 4s. and prospects of betterment.—Apply Box 4318, Builders' Journal Office.

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, Builders' Journal Office.

GENERAL Foreman wants job; town or count carpenter; age 44; experienced new or alteratio good timekeeper and manager of men; high references; moderate terms. — King, 4, Bur Grove, Greenwich. 4

IMPROVER or junior assistant (22), stud R.I.B.A., excellent knowledge, practical build construction experience, supervising, neat draug man, surveying; assist quantities; small sal specimens; good references.—Box 4090, Build Journal Office.

IMPROVER or junior assistant (21) desires p tion with architect or surveyor; working drawi quantities, surveys, qualified P.A.S.I.; nom salary.—R. R. F., 25, Queen Street, Hemel He stead.

JUNIOR Draughtsman (19), desires re-enga ment; assist generally; good refs.; town country; shorthand; probationer; R.I.B.A. — Weston, The Laurels, Rotherfield, Tunbridge W

JUNIOR Assistant (20) requires situation in veyor's or builder's office, 3 years' experience London surveyor; can assist in abstracting, w ing up, variations, etc.; willing worker.—W. Co 102, Faraday Road, Wimbledon, S.W.

JOINER-MACHINIST, or general assistant; to office, bench, or building work, planer, spindle, mortise, or entirely bench; construc certificates; good draughtsman; abstainer; re ences.—Box 4419, Builders' Journal Office.

PLUMBER (good registered.) Thoroughly p tical in all branches of first-class sanitary w lead-laying, gas and hot water fitting; alterations, or jobbing. Reference.—Plumber, Sunnyside Road, Upper Teddington.

PLUMBER, gas and hot water fitter, desires ployment; good refs.; total abstainer; moderate.—P. A. J., "The Lodge," Bonner Road, Kingston.

PLUMBER wants job in town or country; stancy preferred.—E. Frogley, 2, Mount St Dorking, Surrey.

QUANTITY Surveyor's assistant, just compl three years' articles, passed Intermediate of veyors' Institution; first class references, billet in busy office; salary £7 per mensem.— 4346, Builders' Journal Office.

SURVEYOR'S Junior Assistant (19), Student served articles; good leveller, draughtsman tracer; experienced in private street works, ing, sewerage, water supply, etc.; excellent monials; small salary. — Box, 4284, Buil Journal Office.

SURVEYOR, architect's junior assistant fami iar estate work, surveying, levelling, ge building work; small specifications, and quant 4 exams. Inter. R.I.B.A., June next, 1½ guin Box 4288, Builders' Journal Office.

THOROUGHLY competent builder's book-k and general assistant requires engagemen years' experience in London with builders shopfitters; good reasons for leaving present excellent references. Age 32.—Apply Box Journal Builders' Office.

TEMPORARY assistance on working dra quantities, measuring up, surveys, levels, s out and stee.work generally rendered at o outside offices—F. B., 51, Hillfield Park, M Hill.

THE ESTATES MANAGER AND AGENT t known public institutions. London estates prising over 1,000 properties), holding a ment, over 11 years, desires similar appoi in town or provinces, with view to improvi position; exclusive knowledge and experie management of leasehold and troublesome properties; thoroughly qualified architect a veyor; administrative ability and experience collecting; highest references. — Apply Bo Builders' Journal Office.

TO ARCHITECTS.—An experienced Civil En will advise upon and assist on drainage di water supply and estate development; road veys, levels, etc.—Apply Box 4121, Builders nal Office.

TO Contractors and Builders.—Smart, energe experienced general foreman desires re-e ment (carpenter and joiner by trade). Fir refs.; moderate salary for good job.—Pleas "London," Box 4392, Builders' Journal

WANTED at once, position as builder's m assistant, or general foreman; disengaged energetic; abstainer; references. — Box 4 Broadway, Wimbledon.

YOUNG architect, having completed engag with well-known city surveyor, is at liberty sist architects with the preparation of t signs; 7 years experience. Student R.A. Sch R.I.B.A.—Box 4294, Builders' Journal Office

July 15, 1908. Volume 28, No. 701.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Foolhardy Risks.

Accidents that workmen bring upon themselves by sheer foolhardiness are so common as to be regarded as incidental to the business. It will be remembered that in the draft regulations prepared by the Home Office Committee on Building Accidents an abuse of cranes and hoists was recognised and expressly forbidden, regulation 44 insisting that workmen "shall not be carried by the cranes, or ride in barrow hoists or hod hoists, or adopt other unsafe means of getting about the building, but shall use the gangways, ladders, or stairwises provided for the purpose." In reproducing this regulation, in our issue of January 8th last, we appended a comment on the rashness with which workmen commonly disregard the obviously necessary and common-sense precaution embodied in the clause. A painful instance of this recklessness is reported from Truro, where, on Wednesday last, five workmen employed on the erection of the western towers of the cathedral were seriously injured. They were working at a height of about 70ft. Just before the dinner-hour a lift or cage for conveying materials was sent up, and after it had been unloaded a party of six men stepped into it in order to get to the ground. Something having gone wrong with the gear, the cage ran down at a furious pace and four of the workmen were injured, two very seriously. These poor fellows having paid a heavy penalty for their carelessness, further comment on their particular case would be impertinent. It is to be supposed that, unless closely watched, men will continue to add to their risks by using unsuitable and unauthorised means of conveyance. To save themselves time and trouble is not the only incentive; and, so far from being ignorant of the danger, they realise it quite widely, and court it in a spirit of bravado; the more cautious or timid of the men or youths being ashamed to betray what the others would regard as effeminate weakness. Regulations which are merely prohibitive without penalty may possibly be useful in defending an action for damages, but they will never prevent accident unless they are rigidly and sternly enforced with instant dismissal as the penalty for infraction. But to save foolish workmen from incurring unnecessary risks is well-nigh impossible. They evidently hold that regulations, minds, and limbs were all made to be broken.

Modern Building Methods and Unemployment.

The causes of unemployment in the building trade are examined and discussed at considerable length in the "Morning Post" for July 8th by a writer whose somewhat discouraging conclusions seem to be only too well warranted by the facts that he summarises. He deals specially with London, where he thinks there have never been so many large and important buildings rising at one time as at the present; and yet he is forced to admit that, with all its apparent prosperity, the building trade is more "slack"—he means, of course, as regards the workmen—than it has ever been before. This paradoxical statement he proceeds to justify by explaining the great alteration that has taken place within recent years in the conditions of production. He instances particularly the general use of labour-saving devices. Less than thirty years ago, woodworking machinery was uncommon, except in the largest shops; now it is found everywhere, and one spindle, operated by one man, will do in one day as much "sticking" as a bench joiner could do in a month. The carpenter is being rapidly eliminated. Formerly he "would lay joists and floorboards, make partitions, fix windows and doors, and, of course, prepare the timber for the roof. Now, the joists and the roof supports are generally steel and the floors concrete, while the partitions are usually constructed of one or another of the plaster slab compositions, so that all that is left to the carpenter is the fixing of windows and doors." The plasterer also suffers from the increasing use of slab partitions, which require only a single coat of plaster facing, whereas the old-fashioned lathing required three coats. The London mason, too, finds fewer opportunities of employment, the stonework being now usually worked at or near the quarries instead of on the job or in a yard near it. The custom, once general among the more prosperous of London builders, of keeping a permanent staff of good mechanics, is now almost entirely abandoned; "almost without exception, the London builders, at the finish of a contract, discharge everybody; and those men who were formerly in regular employment find it difficult to obtain a job which shall last for more than a month." The strange case of the plumber is set forth with refreshing candour. "Jobbing work (patching up and tinkering) formed for many years the stand-by of the plumber, but of late years the standard of excellence enforced by the public authorities has been so high that this tinkering has been stopped." Finally, the painters also are being sacrificed to modern methods. The common use of electric light instead of gaslight "makes a tremendous difference in the cleanliness of inside London"; ceilings and walls require the attention of the painter far less frequently and much less extensively than in the time of universal gas lighting; while the enormous areas of interior wall-surface that are now lined with glazed bricks must deprive the painter of about a third of his old-time opportunities. The "depression," it will be seen, is not merely temporary: "The trade has changed its ways, and there is not the slightest prospect of any return to the old style." This is a hard saying for the unemployed; but it is best to face the facts.

Architectural Education at University College.

Some important alterations have been made in the architectural day courses at University College since the incorporation of the College into the University of London. After this session the existing two years' day course will be discontinued. The courses in future will both be for three years; one course leading to the B.A. degree of the University, the other to the College certificate. The architectural training in the two courses will be the same; but candidates for the degree will have to pass the Matriculation examination of the University before commencing the course, and the intermediate examination in general subjects at the end of their first year. Certificate students will not have to pass any preliminary or intermediate examination, but in their first year they will be required to attend lectures on general subjects, each student having the right to choose his own from a long and comprehensive list, including languages, mathematics, mechanics, physics, chemistry, geology, etc. The study of such subjects is discontinued after the first year in both courses, and the second and third years are devoted entirely to architectural work. The reasons for instituting the Degree course and for making the change in the Certificate course are: (1) the amount of general knowledge possessed by the majority of boys on leaving school is not sufficient to enable them to follow a comprehensive architectural training, which must in these days include at least the simpler problems of engineering (besides



MEMORIAL TO THE LATE DR. BARNARDO AT BARKINGSIDE, ESSEX. GEORGE FRAMPTON, R.A., SCULPTOR.

This memorial was recently unveiled by the Duchess of Albany. The pedestal is of fine grey granite, about 100 tons of specially selected blocks having be required for it. The stones forming the seating right and left are shaped out of the solid blocks. This work was executed by Messrs. Kirkpatrick Brothers, the Manchester Granite Works, Trafford Park, and was in hand some four months; the date of completion being well within the guaranteed time. The princip group on the memorial, representing Charity clasping two children to her breast; the bas-relief of Dr. Barnardo; and the group of three little girls, were executed bronze, to Mr. Frampton's design, by Mr. A. E. Burton, of Thames Ditton.

which the student who cannot read books published in foreign languages is at a serious disadvantage); (2) most schoolboys have not learnt how to learn, and nothing helps them to do this better than a course of study at a University. At the same time it is recognised that some architectural students, and those not necessarily the least promising, are unable to reach proficiency in certain subjects—mathematics in some cases, languages, etc., in others—and the certificate course is therefore framed accordingly. The granting of the certificate is not in any way dependent on the passing of examinations in general subjects. The required standard in these for degree students—that of the intermediate examination—is not unnecessarily high, and yet is admitted to be sufficient for all practical purposes. (3) The first-year training in both courses includes instruction in building construction and in architectural and freehand drawing, and students consequently commence their professional training from the first, this running concurrently for one year with the study of other subjects. (4) Degree students who, having passed the preliminary examination, fail in their intermediate, can, if they please, proceed with the certificate course without loss of time. (The Professor of Architecture at University College is Mr. F. M. Simpson.)

CARDIFF OLD TOWN HALL has been purchased for £60,000 by the Wholesale Co-operative Society, who intend to dismantle the old building and erect what will be one of their largest depots.

CHANGE OF ADDRESS.—Messrs. C. Pearson, Shaw, Son and Hemingway, quantity surveyors, arbitrators and valuers, have removed from Pelham Chambers, Angel Row, Nottingham, to 14, Sherwood Street South, Nottingham.

THE SCULPTOR'S ART IN ENGLAND.

Although not usually repulsive in treatment, and indeed, as a rule, modelled with a considerable amount of scholastic accuracy, the statues which have been set up in London and elsewhere in this country during the past hundred years are often lacking in the originality of conception and vigour of execution requisite for the attainment of a high standard of artistic success. The Wellington monument in St. Paul's Cathedral, perhaps the one brilliant exception to the usual mediocre production of modern English sculptors, was the work of an artist whose talents were neither appreciated nor understood by the public during his lifetime, and who died neglected, worn-out by the constant vexatious interference of the Government, without seeing the realization of the grand design which he regarded as his life's work. It is idle to speculate whether, in happier circumstances, the genius of Alfred Stevens would have been as instrumental in founding a school of sculpture in England as was that of Raphael in instituting one of painting in Italy, but there can be little doubt that the non-existence in our own country of some system of artistic education under which the impress of the genius of one man can be handed down to future generations accounts, to a large extent, for the present unsatisfactory condition of national art.

The Beginnings.

A glance at the historical development of sculpture in this country is sufficient to show that for hundreds of years there has been no native school of plastic art, and consequently there is neither national style nor national tradition to bequeath to posterity. The earliest specimens of stone sculpture are found among the memorial crosses of certain churchyar situated chiefly in Cornwall and in northern parts of the Kingdom. Althou generally graceful in outline, and, ow in a large measure to the ingenuity played in the arrangement of the des of the constantly recurring interla knotwork, rich in decorative effect, t undoubtedly exhibit a very primitive s of artistic development. Of far grea interest, from the sculptor's point of vi are the two stone 11th century reli Byzantine in treatment, now in Chic ter Cathedral, in which scenes illust ing the raising of Lazarus are depicte stiff, ugly and extremely attenu figures. During the earlier Nor period the tympana of church doorv were often adorned with rude sculpt enrichments, and in the later deve ment of this style, although the sc ture is often rich in design and spi in execution, the treatment of the hu figure is still weak and devoid of gr

Mediæval Work.

The best preserved examples of century monumental sculpture are effigies of the Knights-Templars in Temple Church, London, which are c hard Purbeck marble; but another ef in the same church, carved in stone at one time decorated with colour, is finer piece of sculpture, and shows a artistic advance on the usual work o period.

In the second half of the 13th anc beginning of the 14th century the a sculpture had made rapid progres England, owing to the patronag Henry III., who employed a large nu of native artists and imported fo ones from Italy and Spain. In fact end of the 13th century saw the cu ating point of English sculpture, being the only period in its histo which a high degree of excellence

obtained by purely national means, for the foreign artists brought over by the king were merely employed, under the supervision of their English colleagues, in quite a subordinate capacity. The two bronze effigies in Westminster Abbey modelled and cast by William Torell (a goldsmith and citizen of London), about the year 1300, which are on the tombs of Henry III. and Queen Eleanor, bear no traces of foreign influence. The crowned head of the king with its clearly defined features is extremely well modelled, whilst the head of Eleanor is remarkable for its almost classic beauty, and in both cases the drapery is well designed and executed.

Salisbury, Peterborough, and Lichfield Cathedrals all have fine examples of 13th century sculpture, and Westminster Abbey possesses a representative collection, which is almost complete, of English mediæval sculpture, from the 13th to the 16th century. Carving in stone, of a purely decorative character, reached its highest point of excellence rather later than the best period of figure sculpture—namely, about the middle of the 14th century.

Bronze Sculpture.

The gilt-bronze effigies of Edward III. and of Richard II. and his Queen, to be seen at Westminster Abbey, are inferior, as works of art, to the earlier figure work of William Torell. The effigy of Richard I. was executed by Nicholas Broker, and that of Anne of Bohemia by Godfred Prest, both citizens of London.

Another example of the sculpture of this period is the bronze effigy of the Black Prince (d. 1376) at Canterbury, but a better and more realistic work is the figure of William of Wykeham (d. 1404) in Winchester Cathedral. Examples of 14th century sculpture exist in profusion in the cathedrals of Lincoln, Exeter, York, Rochester, and Lichfield.

In the Beauchamp Chapel at Warwick there is a fine 15th century bronze effigy of Richard Beauchamp (d. 1439) which is richly decorated with engraved ornamentation. The modelling and casting of this figure were done by William Austen, of London, and the gilding and engraving by a Netherlands goldsmith named Bartholomew Lambespring.

At the commencement of the 16th century English sculpture began to lose its native individuality, and entered upon a period of rapid decadence. The life-size figures placed high on the walls of Henry VII.'s chapel at Westminster vary in merit. Some are merely copies of older English sculpture, and other show traces of German and Italian influence; in some cases the heads and general pose are graceful and dignified, but, in the main, they fall below the better plastic art of the 13th and 14th centuries.

The Decline.

This decline of English sculpture appears to have been recognised by Henry VII., and led to his invitation to Michael Angelo's old enemy, the sculptor Torrigiano (1472-1522), to visit England to model and cast the bronze recumbent figures which the king was about to have executed for his magnificent tomb in the chapel at Westminster. Another work of this Florentine sculptor is the bronze effigy of Margaret of Richmond placed in the south aisle of the same chapel.

The decline of sculpture continued during the troublous times of the Reformation, and during the 17th century the effigies enshrined in the costly monumental tombs of alabaster and marble, which were then in such demand, were usually feeble in conception and badly modelled.

Nicholas Stone (d. 1647), who worked with Inigo Jones, was the chief English sculptor of his time, and to him are attributed the De Vere monument in the north transept of Westminster Abbey and the bronze statues of George Villiers, Duke of Buckingham, and his wife, in Henry VII.'s chapel.

The bronze equestrian statue of Charles I. at Charing Cross (taken from its pedestal and concealed during the Protectorate and replaced at the Restoration) is the work of the French sculptor, Le Soeur (d. 1670), whilst the statue of James II. at Whitehall is attributed to Grinling Gibbons, a native of Holland, who was more famous for his skill as a wood carver than as a sculptor.

Sculpture in the 18th and 19th Centuries.

During the 18th century sculpture in England was to a large extent controlled by foreign artists, of whom Roubiliac (1695-1762), Rysbrack (1694-1770), and Scheemakers (1691-1773) were perhaps the best known. Later, Nollekins (1737-1823), a pupil of the last named, shared with John Bacon (1740-1799) and John Flaxman (1755-1826) the honour of being regarded as the leading sculptor of the day.

Flaxman, to whom the classical revival in sculpture was largely due, worked for many years for Josiah Wedgwood, the pottery manufacturer, for whom he designed a number of very refined cameo-reliefs for the adornment of vases. Flaxman's more ambitious works are of less merit, but all breathe the essense of classic art and scholarship.

The first half of the 19th century saw the prevalence of the cold, lifeless, pseudo-classic style of which Francis Chantry was perhaps the one exponent of genius. To him succeeded John Gibson (1790-1866), who unsuccessfully endeavoured to revive the polychromatic decoration of sculpture, the *circumlitio* of the classical age of Greek art. Others sculptors of this period were E. H. Baily (a pupil of Flaxman), who executed the bas-reliefs on the south side of the Marble Arch, Westmacott (the author of the Achilles statute in Hyde Park), Wyatt (who cast the equestrian statue of the Duke of Wellington), Macdowell, Campbell, and Banks.

The ridiculous custom, at one time so prevalent, of representing Englishmen of the 18th and 19th centuries clad in the *toga* or armour of Ancient Rome has invariably proved fatal to the realisation of a satisfactory artistic effect.

Once only, during the phase of art favoured in the golden days of the 13th century, did the English sculptor appear to inherit one of the great merits of the best Greek masters. In the period to which we refer the figures and reliefs of the mediæval sculptors formed an integral part of the architectural design to which they were affixed, and were almost invariably designed with due regard to the main lines of the buildings they were intended to decorate, to the architecture of which they were, rightly, held to be subordinate. But modern sculptors (or modern architects?) for many years past have cared for none of these things.

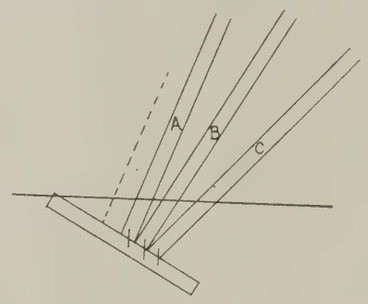
WESTMINSTER STREET REPAIRS now in hand include many of the chief thoroughfares in the district, such as Grosvenor Road and Northumberland Avenue.

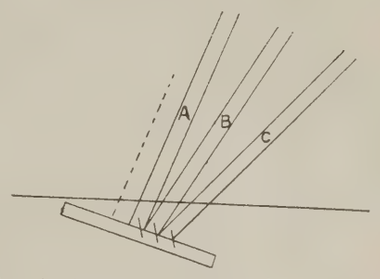
Correspondence.

Shoring.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—With reference to the article in your issue of June 24th on the subject of shoring, would your contributor be kind enough to say why the sole-piece is placed at or beyond right angles to the raking shores, and how it is proposed to tighten them up? I reproduce a portion of Figs. 4 and 5, excluding the riders. Now, B must be fixed before A or C. Also the needles must be fixed before the shores.





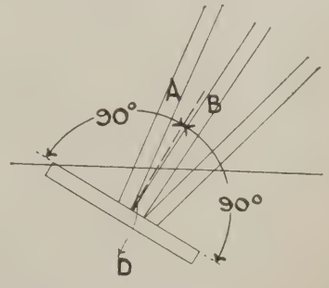
How is A to be tightened, seeing that the nearer it is prized towards B the looser it will become? It is not proper to wedge at the needles or between the rakers and the sole-piece. I should also be glad to know what objection there is to the usual method of placing the sole-piece at a slight angle to the rakers, as shown in my second sketch, so that the act of bringing the rakers up into their place automatically tightens them.

BUILDING SURVEYOR.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The following will clear up "Building Surveyor's" difficulty:—

Referring to Figs. 4 and 5 of the illustrations on p. 525 of your issue for June 24th, these shores were taken from an actual erection. The outer shores had



wedges fixed at their upper ends for tightening up. The shores A and B of querist's sketch thrust one against the other, and, in the case in point, it was not necessary to tighten up. If such had been necessary, thick wedges inserted at D would have been sufficient. This is an alternative method to Fig. 3 on p. 525, for, as shown at D, the shore feet thrust one against the other, and wedges

inserted force out the feet right and left along the sole-plate, thereby tightening up the shores. H. SLICER.

Banbury School Competition.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—An advertisement of the above has appeared in several of your recent issues, and I should be obliged if, as a matter of some interest to your readers, you could find space for the following.

The notice referred to is of the usual type and gives no hint of the procedure adopted by the Banbury Education Committee. It invites architects to submit designs, the conditions for which are to be obtained from the clerk in exchange for a deposit of £1.

It is no way my intention to criticise the conditions, for, although one may consider that to require "quantities" without offering any additional remuneration is asking too much, the justness or not of such a demand is largely a matter of opinion. It is not, however, the usual custom to retain the deposit money when the authorized copy of the conditions is returned immediately, but the Banbury Committee has done so.

This proceeding may be eminently profitable to the committee, but, if it becomes general, the consequences will be disastrous, as it gives the opportunity to any council to issue the most unfair conditions, and, by enforcing this regulation, to acquire a considerable sum which should not be theirs.

Other objections, such as the discredit which it will bring upon the competition system, need hardly be mentioned.

WILFRID I. TRAVERS, A.R.I.B.A.

Our Plate.

Porte Cochere, Rue de Lille, Paris.

This is an interesting example of architectural design of the period of the First Empire. It is eminently characteristic of the French school, showing great delicacy of proportion and appropriateness of detail, and as such it merits the attention of modern architects.

COMPETITION FOR NEW COUNTY HALL & OFFICES, CARDIFF.

Summary of Conditions.

The following is a summary of the conditions of the competition which is being promoted by the Glamorgan County Council in connection with the new county hall and offices proposed to be built in Cathays Park, Cardiff:—

Premiums of 100, 50 and 30 guineas for designs placed first, second, and third respectively.

Designs to be submitted by October 1st, 1908.

Accommodation specified in detail; site plan supplied; no rights of light.

Drawings to be to the scale of 8 ft. to 1 in., comprising plans of each floor, at least two elevations and sections, and ½ in. detail of main front; also a key plan to each floor showing the accommodation provided for each department.

Drawings to be accompanied by report, with particulars of materials proposed to be used, and stating price per cub. ft. of each section, as well as an estimate for the whole.

Total cost not to exceed £45,000 above basement floor, including water supply, heating, lighting, and ventilating.

The designs will be adjudicated upon by an independent architect specially engaged for this purpose. His instructions will direct him to have special regard to convenient planning and arrangement, and he will be expected to give his opinion that the designs to which he awards premiums can be carried out for the amount herein named for the architects to work to, and accord with these requirements.

The County Council do not bind themselves to adopt the design placed first, or to employ its author or the author of any other of the competitive designs to carry out the building. If they do so, any premium awarded will merge in the commission which will be paid him as herein provided. If none of the competitive designs are adopted, the liability of the Council will cease on the payment of the above premiums as awarded, and the return of their designs to the competitors.

The attention of competitors is called to the Standing Order of the Council that personal canvassing for any appointment is prohibited, and will disqualify.

When the Council has accepted a design for execution, quantities will be taken out by a quantity surveyor approved by the architect engaged, for a commission of 1 per cent. on the estimated cost of the building, which, together with the cost of multiplying the bill of quantities, will be paid by the County Council.

A commission of 5 per cent. upon the cost of the buildings will be paid to the architect engaged for his services, including settling the final account, such commission to include all office expenses, stationery, and all other charges in connection with the work, except architect's travelling expenses, and his fees when giving evidence on any litigation or arbitration.

A clerk of the works will be engaged and paid by the County Council to superintend the works, under the direction of the architect.

Notes on Competitions.

Secondary School. Shrewsbury.

The design of Mr. Joseph Holt, A.R.I.B.A., of 9, Albert Square, Manchester, has been placed first in the competition for this school.

Public Hall and Institute, Andsell.

In a limited competition among architects in Manchester, Blackburn, Lytham, and St. Anne's for a new public hall and institute to be erected at Andsell, near Lytham, the design of Mr. G. H. Willoughby, F.R.I.B.A., of Parr's Bank Chambers, Manchester, has been selected by the committee. The work is to be proceeded with at once in order that the foundation-stone may be laid early in the autumn.

Public Libraries, Rowley Regis.

In this competition 103 designs by 99 competitors have been submitted. The design placed first by the assessor is that by Messrs. Wills and Anderson, of London, and that placed second by Messrs. Crouch, Butler and Savage, of Birmingham, while the designs submitted by the following architects are specially commended: Mr. A. T. Butler, Cradley Heath: Messrs. Hardy and Harris, Westminster; Mr. G. H. Wenyon, Dudley; Messrs. Hall and Phillips, London; Messrs. Hobbiss and Thacker, Birmingham; and Messrs. Adams and Holden, London.

LIST OF COMPETITIONS OPEN.

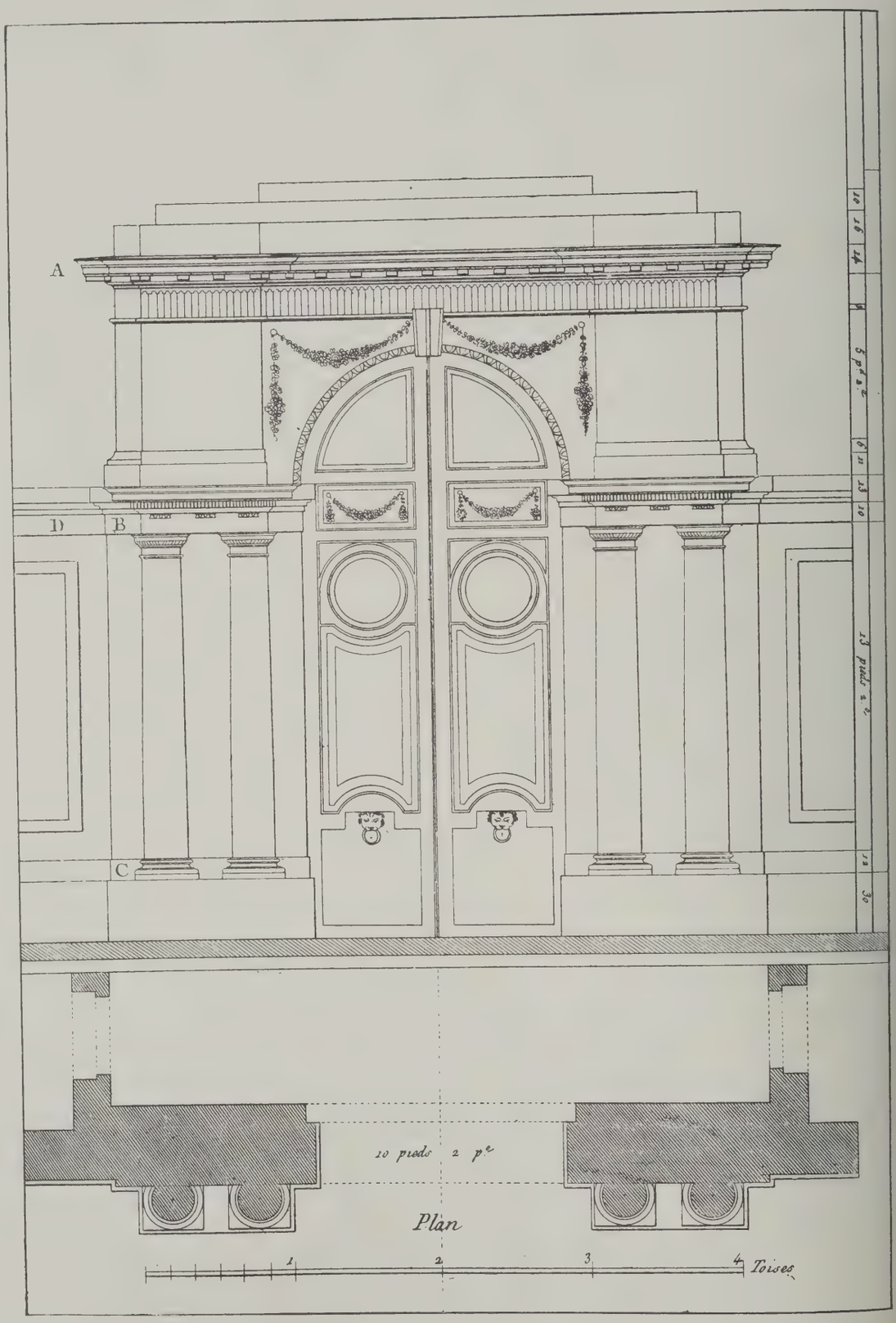
Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
July 31	ELEMENTARY SCHOOL AT BANBURY.—Conditions from Oliver J. Stockton, Town Clerk, Banbury. Deposit £1
Aug. 1	COUNTRY HOSPITAL, GUERNSEY.—Conditions from Thomas Robin, President of Directors of Country Hospital, Castel, Guernsey.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. H. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SCHOOL AT DEVONPORT. Limited to architects in the Three Towns. Premiums 20 and 10 guineas.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.

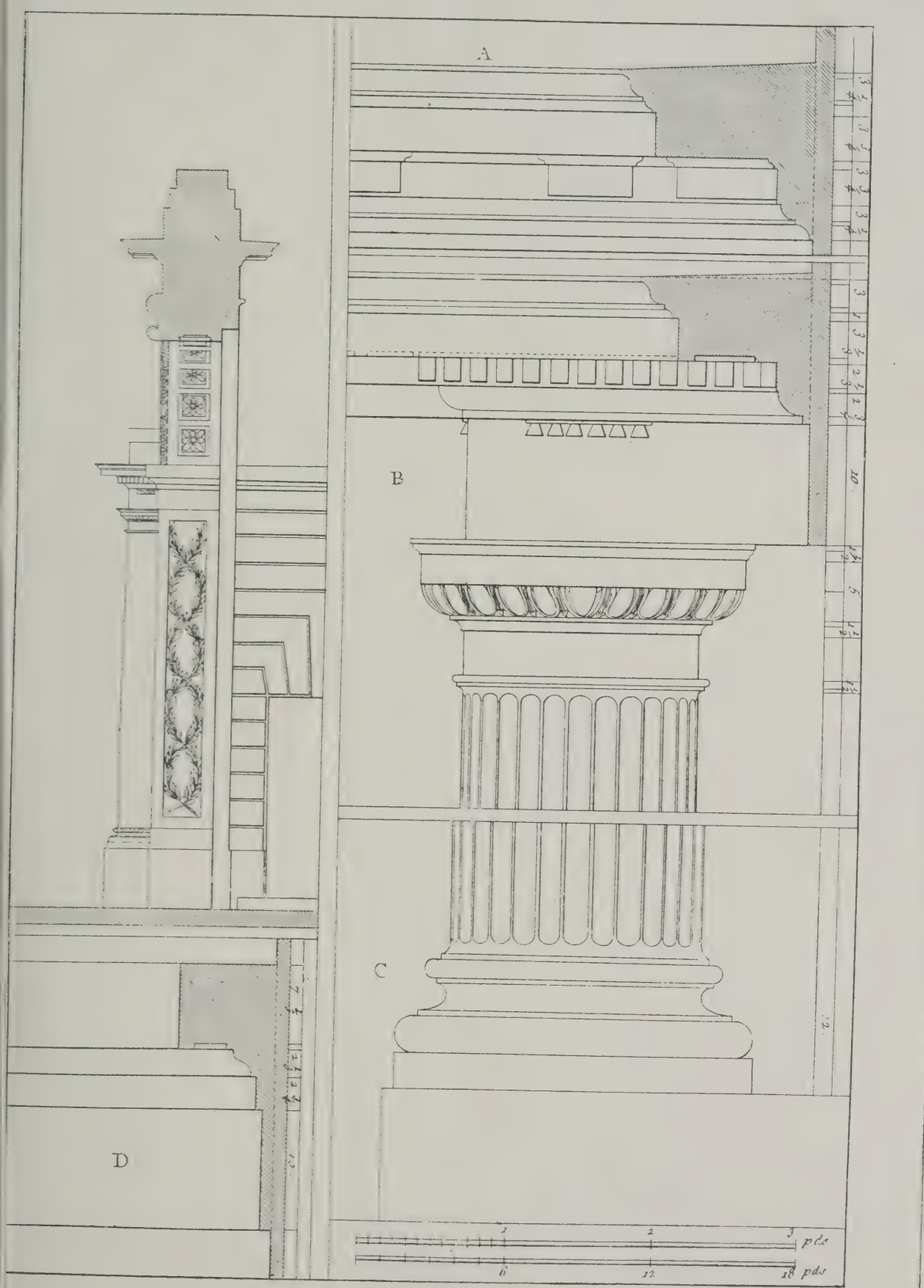
Law Cases.

HOME OFFICE REGULATIONS FOR PREVENTING ACCIDENTS TO WORKMEN.—In the Southwark Coroners' Court on July 4th Dr. Waldo held an inquest on William Thomas McShee, aged 61, a foreman painter employed by Messrs. John Greenwood and Co., Ltd., of Arthur Street West, London, E.C. It appeared that McShee on the previous Saturday was engaged in decorating the Leather Market, Bermondsey, and that to reach the roof of an office 10ft. from the ground he ascended a pair of steps only 9ft. high, another man steadying them until he reached the top. A little later a crash was heard, and McShee was found to have fallen to the stone floor, the steps being beside him. He died in Guy's Hospital from the effects of his injuries. Mr. A. G. H. Thatcher, one of His Majesty's inspectors, stated in evidence that at present there was nothing in the Factory Acts requiring a second man to hold steps. The Home Office, he said, was considering the desirability of adopting a series of regulations which, it was hoped, would have the effect of preventing a large number of the accidents that now happen to workmen. One suggestion was that where ladders were used for giving access to work they should rise to a reasonable height (6ft. was suggested) above the place of access. Had such a regulation been in force on this occasion it might have prevented the accident.—In returning a verdict of "Accidental death," the jury expressed a hope that the Home Office proposals would take effect.

ARCHITECT'S CLAIM FOR FEES.—At the London Law Courts, on July 9th, the Official Referee, Mr. Muir MacKenzie, heard the case of *Barnes and Buxton* v. *Sievewright*, which was an action brought by a firm of architects, of West Hartlepool, against Mr. William Sievewright, a shipbroker, of Manchester, and Mr. Frederick Sievewright, a commission agent, and a director of companies at West Hartlepool, for £2,340, for services rendered by Mr. Harry Barnes, jun., a member of the plaintiff firm.—Plaintiffs' counsel stated that in 1901 defendants conceived the idea of starting cement works at Haverton Hill, and Mr. Harry Barnes was asked for information as to the cost of erecting a building to contain the machinery necessary to manufacture cement, and he wrote a letter stating that he would be willing to prepare the preliminary plans and estimates of the cost of the works for a nominal sum of £20, on condition that he should be employed as the architect, and paid a certain commission on the cost of the work. Defendants did not succeed in getting the Haverton Hill site, and then it was proposed to go to Manchester. Mr. Barnes visited that site, and that idea fell through. Then it was proposed to go elsewhere, and Mr. Barnes executed the work which he said represented the amount of the claim. Defendants' case was that Mr. Barnes's letter precluded plaintiffs from recovering more than £20, except that Mr. Barnes was entitled to be paid in addition for certain things he did at the end of the period. The case was ultimately settled on the following terms: That the defendants pay the plaintiffs £1,000 within seven days, and the taxed costs of the action, and if the defendants did not proceed with the building within 12 months, the defendants were to pay the plaintiff £750 in addition.



PORTE COCHÉRE.


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NORWICH BUILDING TRADE CONCILIATION BOARD.

The second annual meeting of this Board was held recently, and in consequence of the death of the chairman (Mr. J. Hurn), Mr. G. F. Hipperson took the chair. After confirming the minutes of the last meeting of the Board, it was reported that the representatives for the forthcoming year were:—*Employers*: Messrs. G. A. Mawes and J. Youngs (masons); Messrs. H. E. Scarles and J. S. Smith (bricklayers); Messrs. T. W. Scarles and W. Stacey Daws (carpenters); and Messrs. W. E. Bird and R. A. Pank (plumbers). *Operatives*: Messrs. G. Brown and G. F. Hipperson (Bricklayers' Society); Messrs. J. Green and F. Buttress (Masons' Society); Messrs. J. Newman and G. E. Beckwith (Carpenters' Society), and Messrs. C. Lake and A. Pigg (Plumbers' Society). On the motion of Mr. W. Stacey Daws, Mr. G. Brown was appointed chairman for the forthcoming year. The two secretaries, Mr. J. H. Catch (employers) and Mr. G. E. Beckwith (operatives) were re-elected.

During the year which the Board has been established it has done some useful work. Points which had been in dispute in regard to the carpenters' and bricklayers' rules have been amicably settled by the Board. One or two outstanding matters affecting the masons were dealt with at the meeting and adjusted to the satisfaction of both masters and men. Some points concerning the rules of local plumbers may have to be considered in the near future, but no difficulties are anticipated. Codes of working rules affecting the local building trades have now been signed by representatives on both sides, and will remain in force until 1911.

Obituary.

THE LATE MR. WILLIAM BOUCH, builder of the Tay Bridge, who died on April 30th last, aged 49, left estate which has been proved at £282,225.

MR. ALFRED DARBYSHIRE, F.S.A., F.R.I.B.A., died on July 5th at his residence, Chatham House, Flixton, in his seventieth year. Mr. Darbyshire came of an old Quaker family. He was born in the Adelphi, Salford, in June, 1839. He was educated in Manchester, at the Friends' School at Ackworth, and at Alderley, and, after serving his articles in the office of Peter B. Alley, he began at the age of 23 to practise for himself. His reputation is chiefly that of a theatrical architect. In Manchester he built the Comedy Theatre and the Palace of Varieties; he carried out extensive alterations at the Theatre Royal, and also at the Prince's, which was originally built for Mr. Edward Salomons. He also designed a theatre at Rawtenstall and one at Exeter. In London Sir Henry Irving employed him to alter and to decorate the Lyceum. He built the Manchester city abattoirs in Water Street and the lodges to Alexandra Park. Pendleton Town Hall is also his work. He refitted and decorated Hutsford Parish Church and restored Adsall Hall. Galtee Castle, County Cork, and St. Cyprian's Church, Salford, are his, or the work of his firm, Messrs. Darbyshire and Smith, who were also responsible for the representation of "Old Manchester and Salford" at the Jubilee Exhibition of 1887. Mr. Darbyshire was a Fellow of the Royal Institute of British Architects and of the Manchester Society of Architects, of which he was president in 1901-2. As president he was a member of the Joint Committee for the establishment of a Chair of Architecture at Owens College. In 1897 he wrote and published an autobiography under the title of "An Architect's Experience, Professional, Artistic, and Theatrical." For the portrait reproduced on this page we are indebted to the "Manchester Evening Chronicle."

Notes and News.

ANCIENT WELSH MONUMENTS.—In the House of Commons on July 8th, Mr. Asquith, in reply to Mr. Rees, said that he had under consideration the desirability of appointing an Archæological Commission to report upon the preservation of the ancient monuments and buildings in Wales. It was proposed to appoint such a commission.

* * *

NEW TOWN HALL AND LAW COURTS FOR HULL.—The Law Courts in connection with this building were opened on July 6th. The work occupied about 2½ years to carry out, at a cost of about £44,000, exclusive of fittings. The architects are Messrs. Russell and Cooper,



THE LATE MR. ALFRED DARBYSHIRE, F.R.I.B.A.

F.F.R.I.B.A., of London, the builders Messrs. Quibell and Son, of Hull, the clerk of works being Mr. J. Fraser. The sculpture and stone carving are by Mr. Albert Hodge; fireproof construction by Messrs. Stuart's Granolithic Co.; heating, ventilation, and steel casements by Messrs. Henry Hope and Sons, of Birmingham; lead work and glazing by Mr. William Smith, of Balcombe Street, London, N.W.; electric wiring by Mr. Shaw, of Hull, and the special fittings by Mr. Nelson Dawson, of Chiswick; marble work and staircase by Messrs. J. Whitehead and Sons, of Kennington Oval; and the mosaic by Messrs. Diespeker and Co.

* * *

THE A.A. SCHOOL OF ARCHITECTURE.—The annual exhibition of drawings made in the Architectural Association School of Architecture will be held on Friday next, July 17th, at 18, Tufton Street, Westminster, from 3 to 6.30 p.m.—The following is the list of awards in the competitions and prizes for the session 1907-8:—A.A. travelling studentship (value £25) and silver medal, Mr. Percy May; second prize (value £5), Mr. E. A. R. Rahbula. A.A. medal and prize value ten guineas, Mr. T. Braddock; hon. mention and special prize value ten guineas, Mr. L. Mansfield. A.A. essay prize (value ten guineas) and silver medal, Mr. L. M. Gotch. Banister Fletcher Bursary (value 25 guineas) and medal, Mr. W. T. Jones. Advanced Class of Design, prize (value five guineas) and bronze medal, Mr. T. Braddock. Elementary Class of Design, prize (value three guineas) and bronze medal, Mr. G. G. Wornum.

* * *

THE RECONSTRUCTION OF DRURY LANE THEATRE after the recent fire, is being proceeded with under the direction and to the designs of the architect, Mr. Pilditch. It is intended to complete the work for the autumn drama in September.

* * *

CROSBY HALL TO BE TRANSPORTED TO CHELSEA.—It has now been definitely decided to transport the remains of Crosby Hall from the City, and to re-erect the hall at More's Garden, Chelsea Embankment. The estimated cost, including the removal, is from £11,000 to £12,000, and of this sum £6,000 has been promised in subscriptions.

* * *

IN THE DEVELOPMENT OF ITALIAN PORTS, on which project the sum of £5,481,720 is to be expended, definite projects are being pushed forward for minor works as well as for the larger ports, and probably the greater part of the works will be started during next summer. A considerable amount of concrete blocks, also reinforced concrete for minor works, will be employed.

* * *

A NEW OUT-PATIENT DEPARTMENT has been provided at the Hospital for Sick Children in Great Ormond Street, Bloomsbury, by Mr. W. W. Astor, in memory of his daughter. The old waiting-hall and consulting rooms had grown so crowded that it was impossible efficiently to carry on the pressing work of the hospital. This valuable addition meets the needs that have arisen, and it is estimated that between 30,000 and 40,000 patients will pass through it annually, receiving the great benefits of the skill and care of the medical and nursing staff.

* * *

MR. LESLIE WILKINSON, A.R.I.B.A., has been appointed assistant in the Architectural Department at University College, London, in succession to Mr. A. G. James. There were 66 candidates. Mr. Wilkinson, when a student at the Royal Academy, gained the following prizes there: Silver medals for measured drawings and perspective, £10 premium (Lower School), £25 premium (Upper School), £60 travelling studentship (England), and the gold medal and foreign travelling studentship (£200). He also gained the R.I.B.A. silver medal and prize of ten guineas for measured drawings.

* * *

CANDIDATES FOR SHEFFIELD CITY ARCHITECTSHIP.—From 147 applications for the post of City Architect at Sheffield the following have been set down for the final selection:—Mr. William Eaton, A.R.I.B.A., Cardiff; Mr. F. E. P. Edwards, F.R.I.B.A., City Architect, Bradford; Mr. J. Stockdale Harrison, F.R.I.B.A., Leicester; Mr. Reginald G. Kirkby, A.R.I.B.A., architect to the Glamorgan County Council; Mr. T. W. Newbould, City Surveyor's Department, Sheffield; and Mr. J. H. La Trobe, F.R.I.B.A., Bristol. The commencing salary attaching to the post is £650 per annum.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Formulæ for Strengthening Fir Posts.

BRISTOL.—CONCRETE writes: Please state whether Hodgkinson's formula for wood columns—namely, $7.81-\frac{D^4}{L^2}$ is safe for designing temporary struts for concrete floors (with a factor of 5). Or would Rankine's be safe to work to with a factor of 3 if the struts are efficiently cross-braced?"

By a common rule, the safe load on a fir post not exceeding 10 diameters long is 4-cwt. per sq. in. sectional area: 15 diameters, say, 3-cwts., 20 diameters, say, 2-cwts., 25 diameters, say, 1½-cwts. For a 6in. by 6in. fir post 10ft. long this gives 36×2=72 cwts. safe load. By Rankine's formula the safe load in cwts. on a 6in. by 6in. fir post 10ft. long would be $\frac{7A}{1+\frac{l^2}{250d^2}}=\frac{7\times6\times6}{1+\frac{120}{250\times6^2}}$ =97-cwt. Hodgkinson's formulæ are very little used now.

HENRY ADAMS.

Acoustics of a Public Hall.

SURREY.—INSTITUTE writes: "In the hall of an institute, trouble arises from reverberation when there is speaking or singing. The fewer the people in the room the greater the trouble from the echo. Please advise as to remedial measures."

Without detailed investigation, we can only say that probably the wall surfaces are not sufficiently absorptive. The difficulty that exists of making words intelligible when only a few persons are about arises from the fact that clothed bodies are absorptive of sound. To overcome the trouble, absorptive materials of some description must be used for covering the surfaces of the building. Mats on the floor as well as curtains of soft fabric hung on the walls might be found to make the building less resonant. The problem is capable of approximately accurate solution by making proper calculations, and we recommend our correspondent to consult an expert.

Formulæ for Retaining Wall.

CLAYTON (STAFFS.).—CONCRETE writes: "Kindly supply formulæ for calculating the dimensions of a retaining wall, when it is constructed of (1) brickwork, (2) concrete, (3) simple reinforced concrete, such as could be done by unskilled workmen. The wall is to be erected at the back of some cottages on a hillside, to support an existing 18ft. roadway, the level of which is 16ft. above the foundation level of the cottages. On the opposite side of the road are four cottages, one pair against the road and the other two about 30ft. back. The subsoil is sand and gravel. The principal traffic on the road consists of coal carts to and from a waterworks, to which the road is the only approach. What would be the approximate price per yard of the wall when constructed of any of the above-named materials, sand and gravel being obtained on the site, and bricks delivered at 27s. per 1,000? How shall the road be supported while the ground is being excavated for the cottages and the wall being built?"

Some easy rules for calculating the thickness of brick or concrete retaining walls have already been given in the articles on "Retaining Walls" recently published in THE BUILDERS' JOURNAL. Good reinforced concrete requires to be made under experienced supervision. We have not space to deal with the design of retaining walls in reinforced concrete. There are no simple formulæ, though the treatment of the problem is not particularly difficult, but it must be dealt with in detail if dealt with at all. Of course, a reinforced concrete retaining wall contains a much smaller mass of material than a brick wall. It is almost impossible to give anything like an approximate estimate for such work, because so much depends on the conditions of the problem, and the district. Roughly, the cost of the concrete, including the steel reinforcing, might be placed at £2 per cub. yd., including the shuttering, but not allowing for the retaining of the earth while the wall is in course of construction. As regard the cost of a brick retaining wall, we think our correspondent will be able to determine this himself by estimating in the ordinary manner, having regard to local conditions. In constructing the wall the work should be done in sections, and the ground cut away and temporarily supported by laggings and props.

Ascertaining Stresses in Roof Truss.

GILLINGHAM.—H.G. writes: "Please explain how to draw the reciprocal figure and so obtain the stresses for the roof truss loaded as shown in full lines in Fig. 1. Is it correct to draw the diagram by assuming that the loads X and Y are transferred to the positions shown dotted?"

To obtain the stress diagram for this case, we must first calculate the stress in the bar OH, by the method of moments. This is obtained by taking the moments about the node Z of all the forces to one side of it, and dividing by the vertical distance from Z of the bar OH. Taking the loads X, Y, as equal to the loads 1, 2, etc., and equal to W, this gives the force in OH equal to 4.88 W. If the loads have not this value, their actual value must be used in calculating the moment about the point Z. The points 1, 2, 3, 4, etc., are then placed on a vertical line, as shown in Fig 2, to represent the loads, and *oh* is drawn horizontal, equal to the value calculated for the stress in OH (4.88 W in this case). Having obtained the point *h*, the reciprocal figure is then drawn by the ordinary rules, and comes as shown in Fig 2. This diagram would not be the same as if the loads were in the position shown dotted in Fig. 1. This will be seen by considering Fig. 3, which shows the reciprocal figure drawn for the loads X, Y in the dotted position. The force in OH in this case comes 4.59 tons by the method of moments, but this need not have been calculated in this case, as the diagram could have been obtained by Barr's method of replacing the bar DE EF by a single bar. A comparison of Figs. 2 and 3 will show the difference in the stresses for the two methods of loading.

A.

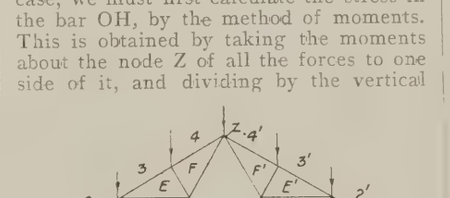
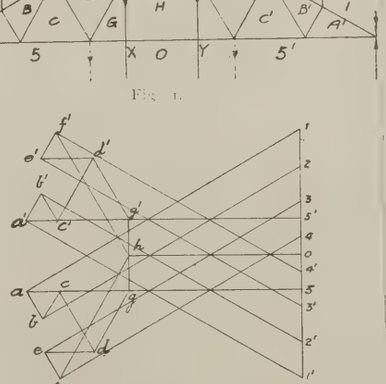
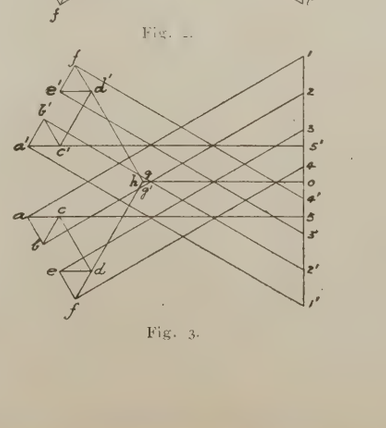


Fig. 1.


Fig. 2.


Fig. 3.

Qualifying for Registered Plumber.

SEVEN KINGS.—A.V.J. writes: "What is the usual course to pursue in order to become a Registered Plumber? And where in London (or preferably in Ilford) can the requisite tuition be obtained?"

Apply to Mr. W. R. E. Coles, Adelaide Buildings, London Bridge, E.C. for particulars of the examination qualifying for Registered Plumber, and ask at the same time whether he will kindly inform you where you can obtain suitable instruction. Enquiry should also be made at the nearest technical institute and at the East London College.

HENRY ADAMS.

Architects, Builders, etc., in Parliament.

CRICCIETH.—J.E.G. writes: "I should be glad to know the names of all the architects and builders who are at present members of Parliament."

A glance through "Dod's Parliamentary Companion, 1908" (Whittaker and Co., 3s. 6d. net), reveals the following cases that are more or less relative to the enquiry. In each case the constituency represented is given between parentheses. Mr. A. C. Morton (Sutherlandshire), architect and surveyor; Mr. J. E. Seal, F.R.I.B.A. (Cheltenham), architect; Mr. T. B. Silcock (Wells), a partner in the firm of Silcock and Reay, architects and surveyors, Bath and London; Mr. A. Finlay (North-East Lanarkshire), structural engineer and steel bridge builder; Mr. C. C. Hyde (Wednesbury), vice-president of S. Pearson and Co.; Sir W. D. Pearson, Bart. (Colchester), head of the firm S. Pearson & Sons; Sir D. F. Goddard (Ipswich), civil engineer; Mr. A. Lupton (Sleaford), civil and mining engineer, and Mr. J. F. Mason (Windsor), chairman of Mason and Barry. Mr. W. Wilson (Westhoughton) and Mr. Hedley Vivian (Birkenhead) are described as carpenters and joiners; Mr. S. Collins (Kennington) is a stone merchant and contractor; Mr. T. W. Dobson (Plymouth) is a Croydon timber merchant; and Mr. Batty Langley (Attercliffe) is a well-known Sheffield timber merchant. Mr. R. W. Essex (Cirencester) is a well-known wall-paper manufacturer; and Mr. H. Greville Montgomery (Bridgewater), is, of course, the founder of the Building Trades Exhibition. Possibly there are others.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Coal Residues in Reinforced Concrete.

In the House of Commons recently, Mr. Ridsdale asked the President of the Local Government Board if he was aware that the use of coal residues in reinforced concrete for building purposes had been forbidden throughout Germany on account of its danger; whether such materials were in common use in this country; and, if so, what steps, if any, he proposed to take? Mr. John Burns, in a printed reply, stated: I have no official information as to the use of the materials referred to being prohibited for building purposes in Germany. I have, however, seen some statements in the newspapers to this effect. I am aware that these materials are in common use in this country, and I propose to obtain some further information as to the result of such use, and also as to how the matter has been dealt with in Germany.

A Valuable Aid-book.

It is not our custom to review books in the leader columns, but we feel that the subject of this note is of sufficient importance to warrant special attention being directed to it here. Messrs. Marsh and Dunn's large book on reinforced concrete is now well-known, and a recognised standard text-book. Notwithstanding its large size, it can be referred to fairly conveniently, but, of course, for everyday pocket-book service it is unwieldly, and in frequent consultation engineers doubtless must find that it wastes a certain amount of time. To remedy this, the authors, Messrs. Charles F. Marsh, M.I.C.E., M.Am.Soc.C.E., M.Inst.M.E., and Mr. William Dunn, F.R.I.B.A., have issued a small "Manual of Reinforced Concrete and Concrete Block Construction," which has just been published by Messrs. Archibald Constable and Co., Ltd., price 7s. 6d. net. The object of this manual is to provide in a concise and handy form for everyday use, for the solution of everyday problems, the necessary information required in the design, construction, and supervision of reinforced concrete work. The authors have been very painstaking, and their work deserves every praise. It will undoubtedly be found of very great value by engineers. Any criticisms that we may offer are not designed to depreciate the value of the work, but purely with the object of pointing out what seem to us to be directions in which it might, in future editions, be made of still greater value. The book is divided into seven parts—(1) materials, (2) construction, (3) waterproofing and fire-resistance, (4) loads, bending moments, etc., (5) calculations, (6) hollow concrete blocks, and (7) tables, diagrams, and general information. The chapter on materials is an admirable summary, but in regard to the information furnished on special reinforcements we think those reinforcements which are not in use in this country should be omitted. It was valuable to give them in the larger book, but in this handbook they are of no value. In the chapter on construction the information regarding moulds and false work is of far too general a character; there is room for some real practical information, giving some typical details of form construction, and memoranda regarding the strength of timber, etc. We think it rather a pity that the set of instructions issued by one specialist company to their superintendents, inspectors, and foremen should have been reprinted. The information applies more or less to the particular type of construction which this firm employs, and the matter savours somewhat of an advertisement, whereas we feel sure the authors could have written a set of instructions that would have been more serviceable to the general professional public. As regards waterproofing and fire-resistance, the former is dealt with shortly, but the latter has rather too much space devoted to it. The chapters on loads, bending moments, calculations, etc., are decidedly the best part of the book. Since the third edition of their large volume was published, the report of the Reinforced Concrete Committee appointed by the Royal Institute of British Architects has been issued, and the authors have generally followed the recommendations contained therein, recalculating and re-drawing the tables and diagrams given in the larger book on the basis of the Committee's suggestions. In their larger work many of the tables are of great service in saving labour in making calculations, and these have been gathered together in the present handbook, while many new tables and diagrams have been given, which increase its value considerably. The authors display much originality in the drafting of such tables and diagrams, and they deserve the thanks of those who have made a special study of the subject. We are inclined to think that the chief value of their work is in this direction, and that it gives the volume the foremost place for purposes of instruction and frequent consultation. Continental authors exhibit perhaps more originality in regard to the theory, and some have undertaken a great deal of experimental investigation that is most important, but they have omitted to put their information into a practicable and serviceable form. It has been left for Messrs. Marsh and Dunn to digest the theories and experiences of others, and to summarise and co-ordinate them for the ready consultation and use of architects and engineers. The summary of methods and calculation is short, but it is not made unintelligible by too much abbreviation; just sufficient seems to be given for the arguments to be followed by anyone who has made a study of the subject in larger works, while to those who are not very familiar with it sufficient clue is given to enable them to search out a fuller argument in the bulkier treatise. The only material objection we have to make to the authors' treatment is that we think a set of symbols might have been chosen which would be a little more intelligible than those adopted. The authors, we suppose, felt it advisable to continue to use many of the symbols they adopted in the larger work; and it would certainly seem inconvenient, in referring from one to the other, to have an entirely fresh set of symbols. But there will have to be some standardisation in the matter before long, and if a list were made of the symbols used by various authors, a majority would be found in favour of certain symbols which would be entirely different from those employed by Messrs. Marsh and Dunn. We think they would be well advised in future editions of their larger work, and in this smaller one also, to radically alter their shorthand. In respect to the information on bending moments we might say that formulæ should be given for other systems of loading, as also for what is known as the "mushroom" system of cantilever construction, and the allied subject of independent foundations to columns. The information provided in respect of calculations for arches is not very clear, and we think it could be rewritten so as to be much more direct and more intelligible. For comparison, we would cite the treatment of the subject in Turneaure and Maurer's "Principles of Reinforced Concrete Construction." The chapter on hollow concrete blocks is rather disappointing. It is too short to be of much service, and the authors seem to have obtained their information from American sources. All the information they give consists of quotations, and the practical value of the chapter is very little. The tables, diagrams, and general information at the end of the book are, however, all very valuable.

The Milan Catastrophe.

The collapse of a reinforced concrete building at Milan, which has caused some little trepidation in the minds of the public casually interested in this form of construction, seems to have occurred when the structure was being tested. It is very regrettable that so many were killed by the collapse, and, on the face of it, it seems to be foolish that any risks should have been run by having the men about the work when such a test was in progress. But the contractors must be excused somewhat, because they could not have had any idea that the structure was so dangerous, and may have thought that any signs of weakness would have made themselves apparent soon enough to have allowed means to be taken to prevent any collapse. At the time of writing we are not in possession of full details, but it seems evident that there must have been grave defects to have caused such a sudden collapse. The ordinary test is not designed to discover such errors in construction. It should be realised that a test on a reinforced concrete structure cannot be severe enough to represent the maximum loading for which the structure was designed, for the test takes place before sufficient time has been given for the construction to mature and gain its maximum strength; indeed, a test may show that a structure will sustain a load equal to that which it will be called upon to sustain when completed and in service, but at that point it may be just upon collapse and may have no adequate factor of safety. In short, a test can never take the place of thorough

inspection and careful workmanship in the construction, which latter give far greater safeguards than any tests. Some contractors are very fond of making tests after a building is constructed, with the object of proving to the architects, engineers, or owners, how good their work is, but they often take the precaution that the test load is not in any way a practical test. For instance, a load is often placed upon one small panel of a continuous monolithic floor, with the result that a very good showing is made for that particular floor panel; but as the load is really transmitted over adjacent floor panels the actual strength proved is very little. All sorts of schemes are adopted in regard to these tests, and the reports which are circulated to the press generally contain the results, but no details whereby the value of the tests may be determined. Tests of this kind only make one suspicious of the work of such constructors, and those who have specialised in the subject are inclined to question whether proper care has been displayed in construction, for they cannot help wondering whether these tests are not perhaps intended as blinds to disguise such facts. Tests conducted by specialists without the supervision of independent experts, indeed, may be generally dismissed as valueless. A systematic test may be of some value, and this collapse at Milan may be regarded as a warning that we should not run risks, but should take such precautions in the application of loads that there may be no risk of life.

COKE-BREEZE AND CLINKER CONCRETES.

Coke-breeze and clinker, as aggregates for concretes, have been extensively used by constructors for many years past, and though they have received favour in this way, there has recently been an outcry in certain quarters against the use of these materials, which have been condemned *in toto*, especially for reinforced work. We have had our attention again attracted to the subject by a letter from a firm of civil engineers, architects and surveyors, which we here print in full, together with the newspaper extract accompanying it.

Our correspondents say:—"Attention is drawn to a letter published in the 'Times,' copy of which we enclose. Like many other architects, we have specified cinder as an aggregate, and an alarming statement of this kind comes as a shock. Have you any expert experience in the matter with which you could furnish us?"

Extract from the "Times," June 17th, 1908.

'CINDER CONCRETE.—Mr. Albert E. Bullock, of 43, Chancery Lane, W.C., has written in regard to an extract from the "BUILDER" of April 18th, published in the "Times" Engineering Supplement of April 29th, which states that a law has been passed in Berlin applying to the whole of Germany forbidding the use of coal residues as an aggregate for concrete. Mr. Bullock says that 'the danger of using cinders as the aggregate in concrete has long been recognised by experienced architects and engineers in England, but until legislation prohibits the use of the "breeze," as it is commonly called, the practice will continue. Not only does the contact of the cinders with steel deteriorate the effective power of the latter, but the "breeze" itself decomposes eventually to a powder. Metal lath partitions of cinder concrete construction have been known to be entirely useless in twelve months after erection. A floor in Germany failed after three years, although it is said to have resisted ten cwts. to the foot at the outset, the "breeze" having quite perished. It will be interesting to know the experience of your readers on this material. In the opinion of the writer, it will only require a few years to bring about a series of disasters which will result at least in the insurance companies refusing to insure against accident in so-called fireproof buildings constructed with cinder concrete and steel. It rightly falls within the provinces of the Local Government Board and the London County Council to insert clauses in the Model By-laws prohibiting the use of cinder concrete in floor construction in future, but as all these things can only happen by Act of Parliament, doubtless, as usual, the gate will be shut after the horse has scaped.'

Another correspondent sends us an enquiry asking:—

"What are the characteristics of good coke-breeze for concrete? What are the merits of boiler ash or slag now largely used as 'breeze' for concrete as compared with real coke-breeze? Also as regards destructor ash. Is either fit for floors, lintels, etc., which have to take strain? Can iron reinforcement be safely used (as regards risk of chemical decomposition) in breeze-concrete?"

Our opinion on the matter is as follows:—

Definitions.

First, it is necessary to define what is meant by the terms "cinder," "breeze," and "clinker," because they are used in a rather loose manner. In the United States concretes of this class are known generally under the term "cinder concrete," but while this relates at one degree of the scale to what we term "clinker," it may include at the other end of the scale the very objectionable ashes from ordinary domestic fires, which are full of dust and unburnt coal. Anything in the nature of fine dust is deleterious to the setting of the Portland cement, while coal has been stated by some persons to have caused concrete to disintegrate, the reason advanced being that the coal gives off gases which shatter the concrete. Personally, we think this latter reason is entirely inadequate, because concrete is not so impervious that such gases, generated in the small quantities that they would be, could not escape; moreover, even if they could not escape, in actual practice they are present in such a small quantity that they would not possess sufficient explosive force to shatter the concrete.

As to whether the decomposition of coal by the evolution of such gases is of such nature that it causes increase in volume, which expansion fractures the concrete, this may be a possible explanation, and we see some reason perhaps in thinking that this may have caused flaking on the surface of concrete lintels, which we believe were the examples that have been referred to as evidence of this action of coal. But, so far as we have been able to ascertain, it was not stated that in these particular examples the mass of the concrete was disintegrated, whereas, on the other hand, we have seen an example of concrete that has been made for many years containing a considerable quantity of small particles of coal mixed with the aggregate, and no deleterious action has taken place.

The small unburnt, or partially burnt, pieces of coal and coke obtained by sifting ashes in dust-yards are often termed

"Pan Breeze."

Although sifted, they are still full of dust, and the coal and ashes contain sulphur, soluble alkalies, etc., which affect the setting of the Portland cement, and may cause disintegration after the concrete has set and hardened for a time. Ashes from domestic grates are therefore treacherous material, but though we strongly warn everyone against them, we would not condemn any material outright, because it is just possible that, in certain circumstances and with some special treatment, it may be possible to prevent or counteract the evil defects generally inherent in the material.

Coke-breeze is very different from pan-breeze; it is really small coke obtained from gas works. It is, however, of various sizes, and if very fine it may contain much dust, which is harmful—as all dust is—to the strength of concrete. Coke-breeze, too, may contain a large quantity of sulphur, though, as a rule, the amount of sulphur is so small as to be negligible. Sometimes, also, coke-breeze is not properly stored at the yards, and so gets mixed with a quantity of fine coal, to which objection must again be taken.

"Clinker."

"Clinker" is a term used widely for several varieties of ashes, more or less vitrified. Some consist of the ashes obtained from the fire-boxes of railway locomotives and stationary engines. The fuel used in such fires is not the best quality coal, and it often contains a considerable quantity of limestone and sulphur. The former becomes calcined by burning into the form of quicklime, which of course is highly objectionable, and probably will cause disaster to concrete made therewith. The sulphur is perhaps left behind in a condition which results in the formation of sulphurous or sulphuric acid, highly injurious to Portland cement.

But when clinker is obtained from a proper furnace, such as the fires of boilers under forced draught or high temperature, and from dust-destructors, the material is often excellent; the ashes have then become thoroughly vitrified, and if limestone has been present it has acted only as a flux under such high temperature, and no longer remains as quicklime. Such furnace clinkers, however, while in the majority of cases excellent material, need to be watched, for they may be sometimes obtained from destructors burning refuse which contains chemicals or ingredients that may be extremely harmful to Portland cement. We know, for instance, of one case of clinker obtained from a destructor in a large provincial town which gave a crushing strength with a concrete made in the proportion 1 : 2 : 4 of 2,000lbs. to the sq. in. at one month, but fell off to a crushing resistance of half that amount at the end of three months, and if these experiments had been continued still further depreciation would probably have been shown. On the other hand, some clinkers are so vitrified and hard that they would provide concrete of very high crushing resistance, probably giving up to 3,000 to 4,000lbs. per sq. in., proportioned 1 part cement, 2 sand, and 4 clinker.

Clinker may contain dust, and contractors sometimes obtain it from destructors immediately it is turned out, so that it is still hot when brought on the work and used. Naturally a hot material like this is most harmful to the Portland cement, and very often prevents it setting.

Clinker is usually of large size and needs to be broken or crushed for fine work, such as floors, etc.,

Relative Merits of Coke-breeze and Clinker.

Having now surveyed the character of the materials passing under the names of "coke-breeze" and "clinker," we may consider their use for concrete, their advantages and disadvantages.

Both clinker and coke-breeze are (1) light in weight, (2) porous, (3) possessive of what is known in the trade as "suction."

Coke-breeze possesses these qualifications in a greater degree than clinker.

The lightness is an advantage in certain circumstances, as, for instance, where floors have to be of a certain thickness but are not required to be of great strength. For this reason these aggr

gates were often favoured with the older type of concrete floor reinforced with light steel joists, which practically sustained the entire load, the concrete not being called upon to provide compressive resistance, as in the modern type of reinforced concrete.

Concrete made with coke-breeze frequently acts like a sieve, allowing water to penetrate it readily. It is favoured for partitions, because it will take nails. The porosity may and may not result in the rusting of any steel reinforcement that may be embedded therein, but it depends upon the treatment of the materials. Before dealing with this aspect, we may briefly refer to the third characteristic, namely, the suction.

Coke-breeze and clinker have been favoured by artificial stone manufacturers for many years past because the external facing or skin of finer material used to form the surfaces of artificial stone blocks is found to unite well with the core of coke-breeze or clinker concrete, and has no tendency to crack or flake on the surface. In the manufacture, also, damage is occasionally done to the arrises, and these defects can be repaired with little trouble where such backing is employed. Of course, the facing will adhere thoroughly to a backing of harder and more impervious material, if it is all cast at one operation. Coke-breeze and clinker, however, are not only economical and light in weight, but possess the advantage of "suction."

"Suction."

This question of suction is very important to the proper treatment of coke-breeze as regards protection of the embedded steel against corrosion, etc. Formerly, coke-breeze and clinker were employed alone, without the admixture of sand, the cement forming but a small proportion, and as there were so many interstices and insufficient finer particles in the materials to fill the cavities, a concrete resulted which was full of hollows and was somewhat of the nature of a sponge, or volcanic scoria, or pumice stone. The materials, too, were employed dry, or with a very insufficient wetting, the result being that the suction that they possessed quickly withdrew the moisture from the mixture, and the concrete never set properly, nor hardened by maturing, by being kept in a well-wetted condition that is so essential for the production of good concrete. The compressive resistance of such concretes therefore was extremely weak, and it is not surprising that sometimes floors constructed with such concretes decayed and almost fell to powder in a few years, while the steelwork embedded therein rapidly corroded, because it was not covered with any cement, and water, moisture and air could penetrate directly thereto.

Some years ago a reader of this Journal forwarded to us a sample of concrete, and of the rust removed from the embedded steel joists, from the decking at the shore end of Southend pier. This we found to be coke-breeze concrete of the very worst kind, and the corrosion that had been expedited by the sea-air and occasional wetting with salt water was considerable.

The Necessity for Thorough Wetting.

With the idea of producing a stronger concrete, and at the same time a more impervious concrete, it has become the practice nowadays to employ a proportion of sand with coke-breeze or clinker. This fills the interstices and improves the quality of the concrete. But it is important in using these aggregates to thoroughly saturate them with water before mixing with the cement and sand in the usual way, in order to avoid the "suction" withdrawing the moisture. The mixture must not be what is termed "dry" by reinforced concrete constructors: it should be of a slushy character, known generally as a "wet" mixture: it should quake like liver under the ramming, and the surface should almost swim with water. A large proportion of cement needs to be used, and the mixing should be thoroughly well done. The cement then penetrates into the whole of the mixture, and when rammed around the steel coats it with a film of cement grout, which is in itself a safeguard for many years, even if the remainder of the concrete be extremely porous, which, if made as we state, it will not be. We have plenty of examples to show the resistance which a thin wash of cement applied upon the steel affords against corrosion. Sand should always be added, so as to increase the density and compressive resistance, and make the concrete more impervious to moisture.

Coke-breeze and clinker possess the property of being more resisting against fire than ballast concrete, which splinters under heat, though this tendency is somewhat overcome if the concrete is crushed small. Coke-breeze, although it resists fire, does not flake and shatter as ballast concrete does, but is worn away a good deal (though apparently no more than ballast concrete) by water played thereon from a fire-hose. The old-fashioned coke-breeze concrete, however, was by no means fire-resisting, masses of coke-breeze having in the past been set on fire and burnt like a coke fire. We have known an instance of a plumber's stove upon a roof constructed of concrete burning a hole therein and dropping on to the floor below.

Conclusions.

We are aware of the law referred to above that has been passed in Berlin forbidding the use of coal residues as aggregate for concrete, but though the subject is a thorny one, and in regard to which many diverse views are held, we are inclined to think that the dangers in the use of coke-breeze (with which pan-breeze or cinders, often termed "breeze," must not be confused) and clinker are not so great as to warrant official prohibition of the use of these two materials, which are economical and can be used to good advantage with thorough safety.

We think that it is possible to frame certain regulations which shall ensure good concrete being made with such materials.

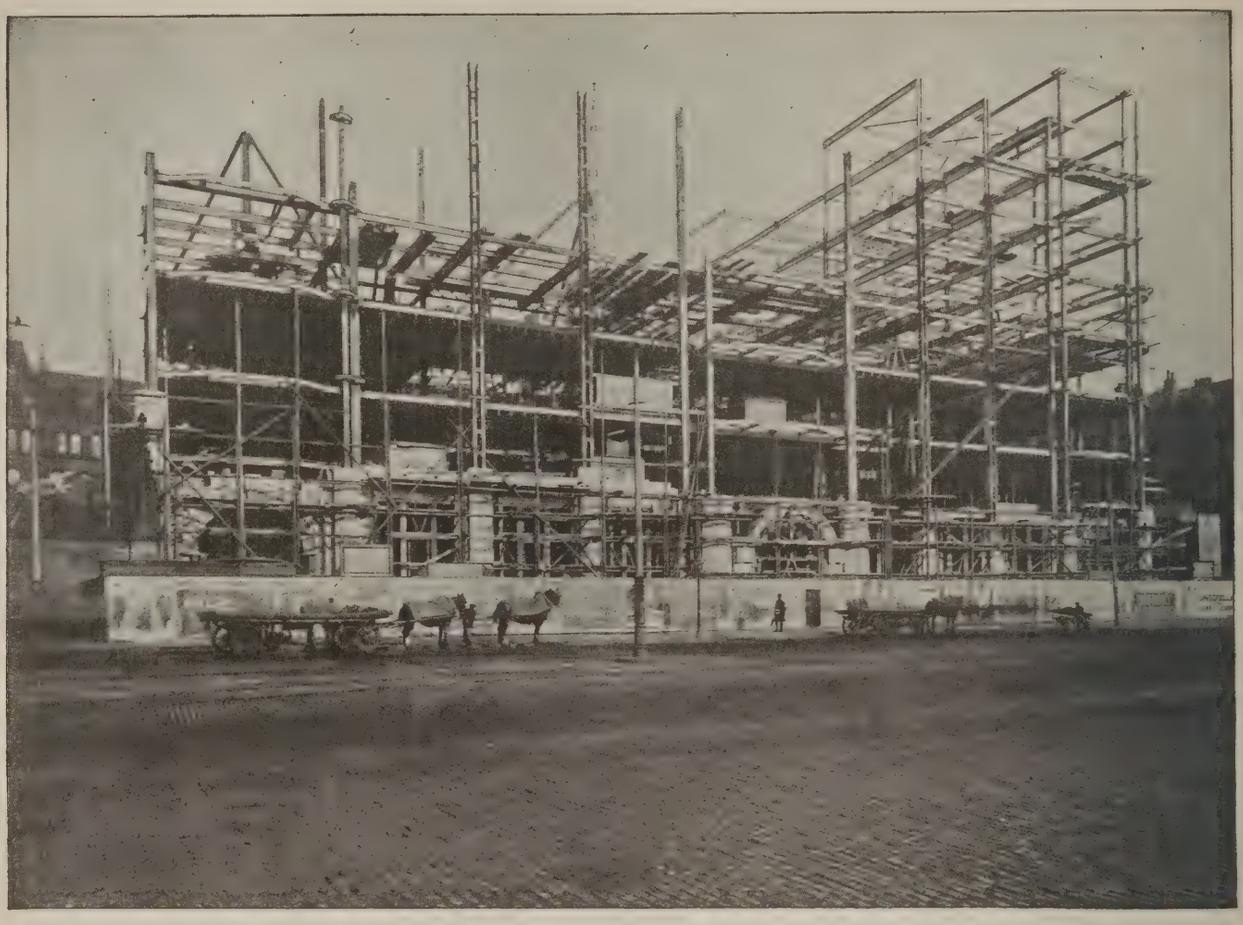
There has been too much disposition in the past to make regulations to secure the safety of structures built by the most ignorant and inexperienced builders with the worst materials, whereas the regulations should be framed to secure good workmanship and not to hamper those desirous of erecting efficient and sound constructions at an economical figure.

TOWER BUILDINGS, LIVERPOOL.

The large block of office premises known as Tower Buildings, Liverpool, is now in course of construction from the designs and under the supervision of Mr. Aubrey Thomas, architect, of Liverpool, on the site of the old Tower Buildings built at the bottom of Water Street. The main frontage faces the river, overlooking the Overhead Railway and extending from Water Street to St. Nicholas Church.



TOWER BUILDINGS, LIVERPOOL, IN COURSE OF ERECTION.



TOWER BUILDINGS, LIVERPOOL: VIEW SHOWING STEEL FRAME.

with a width of 220ft. The elevation to Water Street is 110ft. long. When completed the building will have a basement and eleven storeys in the centre, with nine storeys at each end.

As will be seen from the accompanying views, the building is of steel skeleton frame construction, the whole of the floors being carried by the frame, which also carries the external walls of Doulton's "Carrara" ware with brick backing. The steel frame rests upon solid foundations, about 1,300 tons of steel being employed. The whole of the steelwork is being erected with the aid of a 5-ton electric derrick crane having a gib 85ft. long, assisted by three smaller cranes. All drilling, riveting, etc., is being carried out by means of electrically-driven machinery.

The general contractors for the steelwork are Messrs. Redpath, Brown and Co., Ltd., whose works are at Trafford Park, Manchester, and who also have works in Edinburgh, Glasgow, and London. The erection is being carried out by sub-contractors, Messrs. G. H. Goodier and Co., of Bridgeman Street, Bolton.

The floors, roofs, and staircases, as well as the staircase walls and a great proportion of the partition walls, are constructed by the Kleine Patent Fire-Resisting Flooring Syndicate, Ltd. This type of construction with reinforced bricks was fully described in our issue of June 17th last in connection with our article on the new Westminster Trust Building, where the same floors are used throughout. Similar speed of construction by the Kleine Syndicate was observable in this case. The staircases in Tower Buildings, however, represent a novel and most interesting feature. The landings are constructed on steel joists cantilevered from the walls. This construction does away with the necessity of cranked strings, and as the Kleine carriage is built from landing to landing, no chase is required in the stair-walls, and consequently their strength is not impaired.

The area of floors in this building is about 17,000 yards, and their rapid construction and the assistance which the floors gave to the other contractors was greatly appreciated by the latter.



KLEINE FLOORS IN COURSE OF CONSTRUCTION.

SOME RECENT STEEL-CAGE BUILDINGS IN SAN FRANCISCO.

Since the conflagration which destroyed practically all of the business part of San Francisco in April, 1906, a large number of commercial and office buildings have been constructed on the devastated area. The more important of these buildings, at least, have been designed to conform not only to the general requirements of advanced practice, but also to combine fire-resisting qualities with a considerable resistance to seismic disturbances. As many of these buildings correspond in their general features, a brief review of a group embracing various heights and styles and adapted to occupation for various purposes will serve to show the types that have been erected.

Nearly all of these buildings have been constructed in open spaces where all of the former structures have been destroyed and completely removed, and the new ones had in general the advantage of being built without serious restriction from adjacent property and without special difficulties involved in the construction of their foundations.

Types of Foundations.

The San Francisco building law makes each owner responsible for the safety and integrity of his own foundations, regardless of adjacent operations, and it has therefore been considered good judgment, in cases where there was believed to be a possibility of deep foundations for the construction of very heavy structures adjacent, to safeguard the new building as much as possible from settlement or undermining which might be threatened by future operations. The general practice has been to make the excavation to be a little beyond ground water level and when solid satisfactory soil was found at that level to construct on it grillages of steel I-beams embedded in concrete, or footings of reinforced concrete proportioned to reduce the maximum load on the soil to about 4 tons per sq. ft. Where the soil is wet and soft, the foundations have generally been made with wooden piles cut off below water level, capped with concrete footings, often enclosing steel I-beams, and proportioned for a load of 15 to 20 tons per pile.

No Limit of Height.

Since the earthquake and fire, and up to 1907, the maximum height of buildings was limited to one-and-a-half times the width of the street, which resulted in a nearly uniform average of about 100 ft., or eight storeys above the curb and one story below it. This restriction has been only recently removed, and no height being now prescribed, some of the latest buildings are being designed and constructed up to fourteen storeys. None have yet been built, however, as high as the Spreckles Building, which is 310 ft. from the curb to the top of the dome. This building is about 75 ft. square and seated on a solid continuous platform, nearly 100 ft. square and 25 ft. below the surface of the ground, composed of two crossed tiers of full length steel I-beams, set close together and embedded in a mass of concrete 4½ ft. thick, with the columns securely anchored by heavy tension bars in beams in the lower tier.

Wind Pressure.

The building law requires provision for 30 lbs. wind pressure on all vertical surfaces and provides that the unit wind stresses may be increased 50 per cent. above the dead load stresses, thus allowing them to be 18,000 lbs. per sq. in. of the steel. Unit stress in the steel columns is taken at 12,000 lbs. per sq. in. up to $L \div R = 90$, above which they are reduced in accordance with the column formula. The usual allowance is made for a diminished percentage of the total load of the floors considered simultaneously transmitted to the columns from the top downward.

A group of fifteen building erected since the disaster by the Thompson-Starrett Co., New York, have fronts varying from about 50 to 140 ft. in length, with a height varying from four to fourteen storeys. Nearly all of them have stone or terra-cotta fronts and reinforced-concrete side and rear walls and reinforced-concrete slab construction for floors and roof.

Of all the buildings in San Francisco contracted for since the fire

the Eyre Building,

at Kearney and Sutter Streets, was the first one to be completed. It has fronts of 56 and 66 ft., and is eight storeys and basement in height. The street fronts are of cut granite, with carved trimmings in the lower storeys, terra-cotta trimmings above, and a steel and terra-cotta cornice. The framework is of very simple standard construction, with closed rectangular two-storey riveted columns and I-beam girders and floor beams. The column and girder connections are made with gusset plates to give stiffness against wind pressure. All steelwork is completely enclosed in concrete. That for the columns has a minimum thickness of 3 ins., and is reinforced and secured by small horizontal rods, about 12 ins. apart vertically, with their ends twisted together at the corners of the column.

The foundations are steel I-beam grillages seated on concrete footings about 4 ft. below the curb level and receive their column loads through standard cast-iron pedestals with grouted bearings on their top flanges.

As it was anticipated that deep foundations may hereafter be constructed on the adjacent plot, the integrity of these foundations was safeguarded by the construction of a concrete retaining wall below the cellar floor. A sheeted trench 120 ft. long was carried down to a depth of 40 ft. below the curb with considerable difficulty. In it was built a wall 25 ft. high with a uniform thickness of 5 ft. The sheeting was pulled on both sides of it and the trench was back-filled and rammed, so that little apprehension is felt from the development of unbalanced pressure induced by any future excavation in the neighbouring plot.

The retaining wall and foundations were made with 1 : 2½ : 5 concrete, Portland cement and 1½-in. broken stone, mixed in a Ransome machine at street level and delivered through a chute into the wall trench, the machine being moved along as required from end to end of the trench. The concrete for the foundations, cellar floor, and retaining walls, was delivered in 1-yd. steel buckets handled by a guyed derrick with a 60-ft. boom of 10 tons capacity.

The derrick was at first placed near the centre of the lot in the bottom of the excavation, and after the foundation work was completed was moved up from storey to storey with every second tier of beams. It commanded the whole area of the building and both street fronts, and was thus able to handle all material, and to unload and erect all of the 500 tons of structural steel in the building.

The contract for this building was awarded in August, 1906; excavation was commenced on October 1st, and the setting of the grillage beams was commenced about the middle of January, 1907. The erection of the steel framework was completed February 16th, the outer walls were finished about May 1st, and the building was ready for tenants July 1st. Mr. L. B. Dutton was the architect.

The Welch Estate Building.

Another steel-cage building is the 54 by 127 ft. 7-storey structure on California Street, for the Welch Estate. The soil here is a 10-ft. fill, with the water-level 9 ft. below the curb, and the three longitudinal rows of columns are seated on steel grillages with concrete footings supported on and enclosing piles from 25 to 30 ft. long, driven to a refusal of 2 or 3 ins., in open sheet-pile coffer-dams, cut off below water level and loaded to a maximum of 15 tons each. The tops of the grillages are below the unobstructed cellar floor, which is itself 6 ins. above water level. The reinforced-concrete cellar retaining walls and the cellar floor are waterproofed in the usual manner with tarred felt.

The structural steel weighs about 600 tons, and is of simple standard design, with details corresponding to those already described for the Eyre Building. It was erected with an average force of about 20 men in about 60 days by a single centrally located stiff-leg derrick, with a 60-ft. boom of 10 tons capacity. The derrick was raised every second tier in the same manner that is customary for a guyed derrick, the unshipped boom serving as a gin-pole to hoist the mast, stiff-legs and sills, which were handled without being taken apart. The derrick was usually shifted in about 4 hours by a force of 6 men, and when in service was anchored by screwed clamps to the erected girders. It was operated by a double-drum Lidgerwood hoisting engine permanently located in the cellar. The boom commanded the street and unloaded the steel from wagons there, often erecting the columns and girders without rehandling, and at other times storing them temporarily on the upper tier in positions convenient for erection as required.

In this building all of the walls are of brick, which in the street front was laid from an exterior scaffold suspended by Manila tackles from 12-in. by 16-in. horizontal beams about 25 ft. long and 8 ft. apart, laid on the finished roof with their ends anchored to the girders, and the opposite ends cantilevering about 8 ft. beyond the front wall girder and passing through the cornice framework to support the outside suspension tackles.

Construction was commenced about the first of March, the foundations were completed in April, the steelwork was all erected by July 1st, 1907, the exterior wall was finished early in October, and the building was ready for tenants January 1st last. Mr. O. G. Traphagen was the architect.

The Metropolitan Bank Building.

Another new building is that for the Metropolitan Trust and Savings Bank, on Market Street. This building, which is fourteen storeys in height, has about 900 tons of structural steel in its framework, which was completed in 60 days by an average force of 40 men. Its steel columns have cast-iron bases seated on concrete footings at a depth of about 14 ft. below the curb. The exterior walls are supported at every floor by special girders, which have such deep and rigid con-

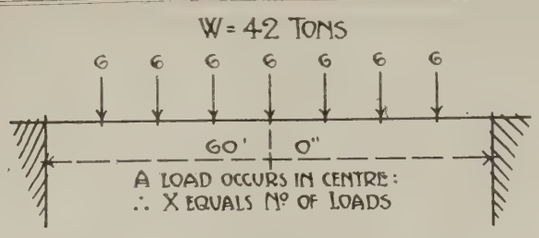


FIG: 1

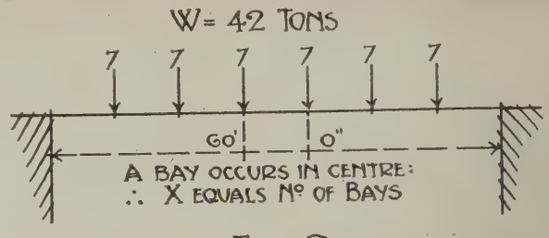


FIG: 2

nections to the columns that special wind bracing is considered unnecessary.

The cellar excavation, 12 ft. in depth, was protected by hand-driven wooden sheathing and is enclosed by a massive monolithic-concrete retaining wall, without reinforcement, which was cast in forms built up like those usually adopted for buildings, and removed after its completion. The wall does not depend for its strength on bracing provided by beams and girders at street level, as many basement retaining walls do, but has independent stability due to its own weight and strength and a base with a width of one-fifth of its height. All of the excavation and erection work was handled by a single stiff-leg derrick, and neither the design nor construction was of unusual character. Mr. L. B. Dutton was the architect.

The Schmidt Building.

This building is of eight storeys. It has cast-iron column pedestals seated on I-beam grillages, and has reinforced-concrete floor slabs, cut-stone front walls and red brick rear walls. The steel framework is of standard construction, except that in every lower tier the wall columns support lattice-girder wall beams about 5 ft. deep, with their top flanges just clearing the window sills. Their deep web connections to the columns give great transverse rigidity to wind stresses and vibrations, and are relied on to provide adequately for any earthquake shocks to which the building may be subjected. In the eighth and ninth tiers the lattice girders are replaced by plate girders 30 ins. deep. The interior floor beams and girders are of the usual I-beam type, of maximum spans of about 16 ft., and have web and flange connections to the columns.

During erection the principal front was provided with a protecting platform over the pavement, which was used for the contractor's office, storage and stone cutting. The front walls were laid from platforms suspended by steel ropes from cantilever beams anchored to the upper tier of I-beams. The platforms extended continuously around the two sides of the building and were moved up together. All bricks and concrete were hoisted by hod elevators operated in a tower constructed in the middle of one front of the building on the sidewalk. This building contains about 500 tons of structural steel, erected by the general contractor, as in the other cases mentioned. Its steel erection was completed in 45 working days. Mr. Albert Pissis was the architect.

For all the buildings here described the general contractor was the Thompson-Starrett Co., New York, Mr. George Simpson chief engineer, and Mr. Louis R. Bowas superintendent in change. The structural steel was made at the Pencoyd plant of the American Bridge Co.

A SHORT CUT TO BENDING MOMENTS ON SYMMETRICALLY LOADED BEAMS.

By D. W. Robertson.

When a beam is subjected to a series of equal loads which divide the span into equal bays—for instance, in the case of a beam carrying the small joists of a concrete floor—the draughtsman is very apt to neglect the elaborate methods of finding bending moments, and to consider the loading as "distributed." This practice errs on the wrong side—that of underestimating the bending moment, and although the discrepancy in the case of a large collection of loads may be slight, the designer should endeavour to arrive at the exact amount of work required to be done by his beam, and any give-and-take in the selection of the section can then be done with greater freedom.

By a very simple and labour-savin formula, the equal and equally distribute loads on any beam can be resolved into a equivalent distributed load, and th found, there is no difficulty in arrivin at the maximum bending moment. Th total load bears a fixed ratio to the equ valent distributed load, according to th number of small loads into which the tot is divided.

The formula is as follows :—

$$D = \frac{W(x+1)}{x}$$

where D = equivalent distributed loa and W = total actual load.

When a *load* occurs at the centre of t span, as in Fig. 1, x = number of *loads*

When a *bay* occurs at the centre of t span, as in Fig. 2, x = number of *bays*.

The formula for arriving at the ma mum bending moment thus becom

$$B.M = \frac{WL(x+1)}{8x}$$

The following examples will be eas followed :—

Fig. 1 shows a beam with seven loa of 6 tons each. A *load* occurs in the ce tre of the span; therefore x = number loads, = 7.

$$B.M = \frac{WL(x+1)}{8x} = \frac{42 \times 60 \times 8}{8 \times 7} = 360 \text{ ft.-tons.}$$

Fig 2 shows a beam with six loads 7 tons each, and a *bay* occurs in the ce tre; therefore there are seven bays, x = B.M. is accordingly 360 ft.-tons, the sa as before.

At first sight this seems strange, Figs. 3 and 4 show graphically that t is correct, the maximum bending mome being equal, the difference being that Fig. 3 the maximum is only reached

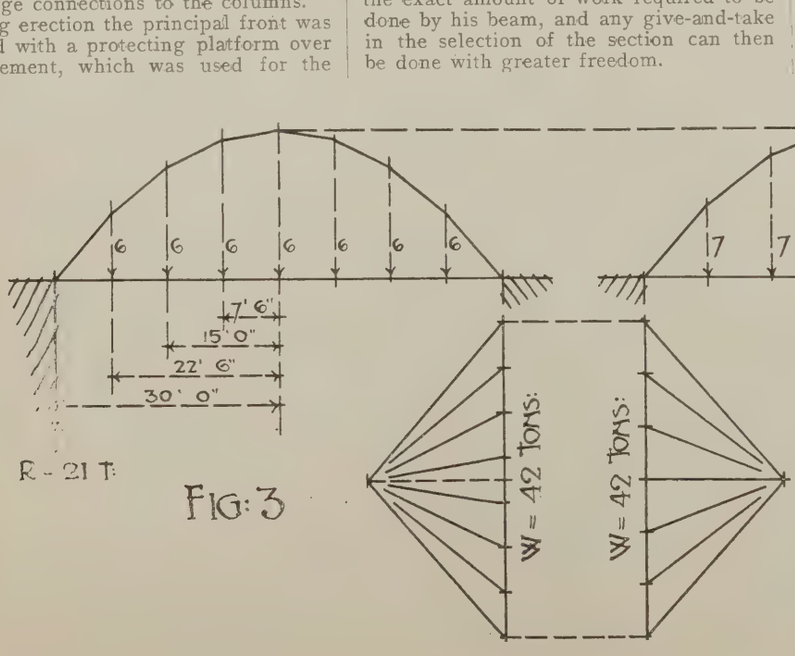


FIG: 3

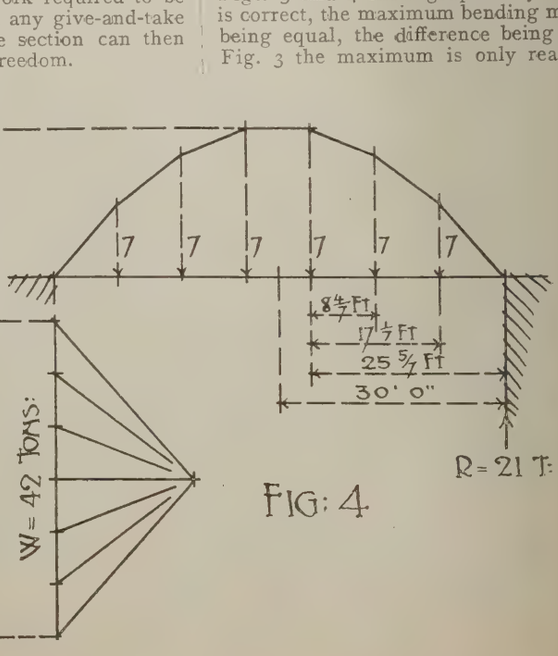


FIG: 4

he centre of the span, whereas in Fig. 4 t is constant over the length of the cen re bay.

This curious result will be found to pply in all similar cases, comparing two oads of value $\frac{W}{2}$ with three loads on the ame beam of value $\frac{W}{3}$, or any number, ay twenty loads of value $\frac{W}{20}$, with wenty-one loads value $\frac{W}{21}$.

The above examples may be proved by rdinary methods :—

In Fig. 3, B.M = 21 × 30 − (6 × 6″ + 6 × 15′ 0″ + 6 × 22′ 6″) = 630 − 270 = 360 ft.-tons, as before.

In Fig. 4 (moments about A) B.M = 21 × 25$\frac{5}{7}$ − (7 × 8$\frac{4}{7}$ + 7 × 17$\frac{1}{7}$) = 540 − 180 = 360 ft.-tons.

It will be seen that no number of concentrated loads can be accurately taken s a distributed load, and that the usual ext-book diagram showing a distributed oad on a beam represented by a number f spheres placed close together is to be ondemned as inaccurate and as misleading to the student.

THE STRENGTHENING OF REINFORCED CONCRETE COLUMNS.

By Henry Lossier.

(Translated from the French.)

It sometimes happens that the height f existing reinforced concrete constructions must be increased, which operation ises the often very delicate problem of rengthening columns already in istence.

The regulations of the French Governent of October 20th, 1906, do not permit resses exceeding 640-lbs. per sq. in., corresponding to a shortening of 0.008—0.012 . per yd., for ordinary concrete without lateral reinforcing. Under a shortening of 0.02 to 0.04 ins. per yd., the richest ncrete will collapse.

Two cases can arise : (1) If a column is eady loaded up to the maximum for hich it is calculated, any further ortening must be avoided; therefore, te only admissible solution is to let any ditional load be carried by the new nstruction entirely without connection th the existing column; (2) if, on the ntrary, the column carries only a part its normal load, it may undergo a rther shortening without exceeding the fe limit. In such case a strengthening the column in the proper sense of the rd may be obtained by efficiently conrcting it with a new column adjoining surrounding it.

The latter solution, however, can very rely be adopted by the ordinary method of nforcing, because the new concrete is a state of tension, owing to its adhesion the old concrete, which opposes its inking. The effect of the strengthening would commence only when the existing column was exposed to stresses nerally exceeding the safe limit, so that t help comes too late.

t follows that any strengthening which es not resist the lateral bulging of the ncrete is unable to solve the question the strengthening of reinforced conte columns already in existence.

On the contrary, the spiral system of nforcing invented by M. Considère ers a simple and rational solution of s problem. As a matter of fact, alled concrete can resist before crushg shortening up to 0.78—1.18 ins. per , and even up to 4.2 ins. when heavily nforced with spirals.

The strengthening of a column is carried out by putting it inside a suitably spiralled cylinder, after roughening its surface in order to secure a sufficient adherence between the new and old concrete. As has been explained at the beginning of the present article, the new concrete is put in a state of preliminary tension owing to the opposition which the old concrete offers to its shrinking. Therefore, when the strengthened column is loaded, the old core must experience a shortening sensibly equal to the nominal shrinking of the concrete before the new crust begins to help it. This shortening, which is nearly 0.008—0.01 in. per yd., causes a supplementary compressive stress of 0.008 × 1.3 tons per sq in.—0.01 × 1.3 tons per sq. in., which is no inconvenience to a concrete surrounded by a crust of spiralled concrete submitted to no stresses. Moreover, the initial tension of the external crust reduces the compressive stresses imposed on it, and consequently reduces the stress on the spiralled reinforcement.

This clearly shows that a column the core of which has set previously to the external crust is in a better condition of resistance than a column made in one piece.

It may be observed, further, that the great difference of pressure in the new and in the old concrete will completely disappear as soon as the limit of elasticity of the second is attained, owing to the rapid decrease of the co-efficient of elasticity, which is reduced to 1-10th its value.

The extension of the workshops of a French motor-car company at Levallois-Perret, near Paris, offers an interesting example of the strengthening of reinforced concrete columns by spiralling.

Fig. 1 is a section of the building showing the addition which has been made from the second floor upwards.

Figs. 2, 3, and 4 show respectively the sections of the columns of the basement, ground floor, and first floor previous to their strengthening. These columns are reinforced by longitudinal bars with cross ties in the ordinary way, 16 ins. apart.

In the following table are given the loads which these columns can safely carry, calculated in accordance with the French Government regulations. For this it has been assumed that the sections of

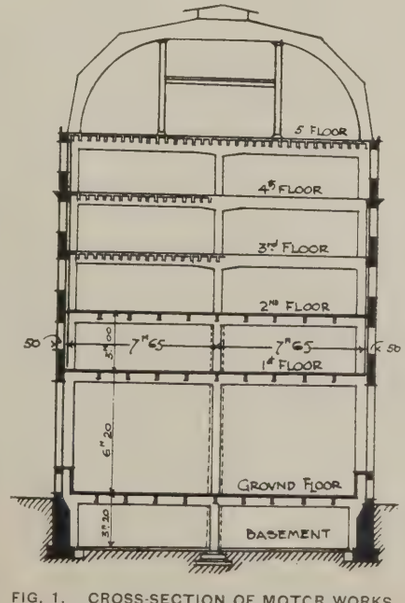


FIG. 1. CROSS-SECTION OF MOTOR WORKS AT LEVALLOIS-PERRET, NEAR PARIS.

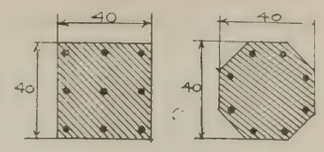


Fig. 2.

Fig. 3.

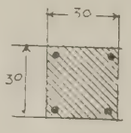


Fig. 4.

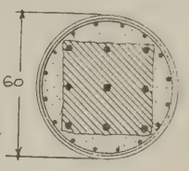


Fig. 5.

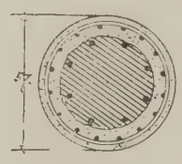


Fig. 6.

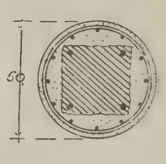


Fig. 7.

steel are equivalent to sections of concrete from 8 to 15 times larger, according as the diameter of the rods varies from 1-10th to 1-20th of the smallest dimension of the concrete. The co-efficient of equivalence is 11.5 for the first and second, and 8 for the third columns.

	Column of Basement.	Column of Ground floor	Column of first floor.
1. Sectional area of concrete	248 sq. in.	204.6 sq. in.	139.5 sq. in.
2. Sectional area of steel	7.98 ,,	7.13 ,,	4.09 ,,
3. Do. reduced to concrete	91.45 ,,	82.15 ,,	32.55 ,,
4. Total sectional area (1 + 3) ..	339.45 ,,	286.75 ,,	172.05 ,,
5. Safe load per sq. inch	0.285 tons.	0.285 tons.	0.285 tons.
6. Total safe load (4 × 5)	96.74 ,,	81.72 ,,	49 ,,

When, however, the new part of the building is finished the loads put on these columns will be respectively 215.63 tons, 131.1 tons, and 146.65 tons, and they would subject the columns without strengthening to pressures equal to 0.635 tons per sq. in., 0.635 tons per sq. in., and 0.855 tons per sq. in.

From the above developed considerations, and owing to the fact that the method of construction, which is further described, has allowed the load acting upon the columns during their strengthening, to be greatly reduced, the same methods of calculation have been applied to the strengthened columns as for columns entirely built at one time.

The molecular stresses thus obtained, after strengthening in the columns (sections of which are shown by Figs. 5, 6, and 7), are recorded in the following table :—

	Column of Basement.	Column of Ground floor	Column of first floor.
Diameter of column	23.6 in.	22.45 in.	19.7 in.
1. Sectional area of concrete ..	438.18 sq. in.	395.4 sq. in.	304.26 sq. in.
2. Sectional area of steel	10.77 ,,	9.92 ,,	6.2 ,,
3. Do reduced to concrete (2) × 15	161.55 ,,	148.80 ,,	93.0 ,,
4. Total sectional area (1+3) ..	599.73 ,,	543.4 ,,	397.26 ,,
5. Total load supported	215.63 tons.	181.1 tons.	146.65 tons.
6. Compressive str ss per sq: in. (5.4)	0.36 ,,	0.337 ,,	0.37 ,,

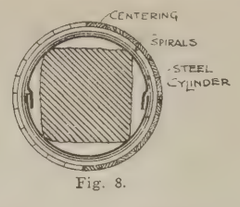


Fig. 8.


Fig. 9.

Fig. 10.

The ratio of these stresses to the stress of 0.285 tons admitted for concrete unreinforced laterally is :—

(6 : 0.285 tons)	1.26	1.18	1.30

This is to say, spiralling must increase the resistance of concrete by :—

	26%	18%	30%

Dividing these figures by the coefficient of efficiency of spiralling, which, according to the regulations laid down by the French Minister of Public Works, is 32, we have :—

Percentage of spirals required	0.8	0.6	1
,, ,, ,,	1.5	1.3	1.5

The increase in the dimensions of the columns causes an increase of the coefficient of efficiency of the longitudinal armouring.

Carrying out the Work.

As the columns are interrupted by the floors, the spirals could only be wound directly round the columns. For this purpose, after chipping the surface of the column, a steel cylinder, consisting of two halves clamped together *in situ*, was put around it. On this cylinder spirals of about $\frac{3}{8}$in. diameter rods were wound (Fig. 8).

After removal of the cylinder, the longitudinal bars completing the meshwork were inserted, the centering was placed, and the column was concreted in.

In such a case as the present it is impossible to adopt the usual method of connecting two consecutive pieces of spiral by bending their ends to the centre of the column (Fig. 9); therefore the continuity of the spiralling was ensured by winding the ends around the existing column, in which they were anchored by hooks penetrating from $1\frac{1}{2}$ to 2 ins. (Fig. 10).

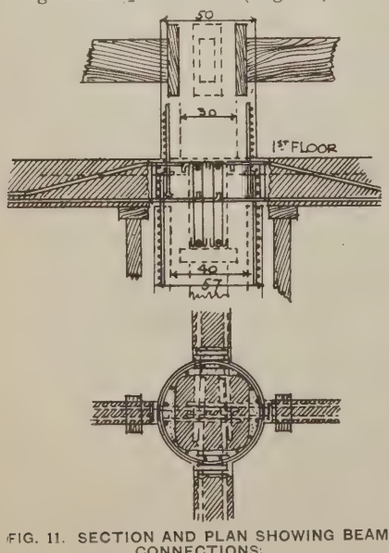


FIG. 11. SECTION AND PLAN SHOWING BEAM CONNECTIONS.

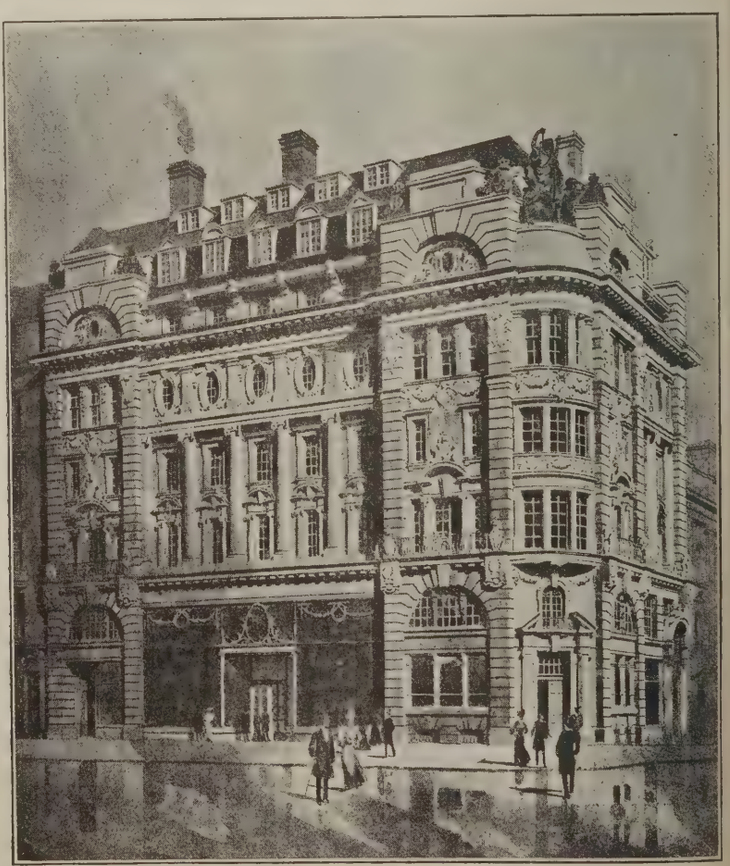
The reinforcement was carried through the floors as follows :—After having carefully propped up the girders, a circular hole was made through the concrete of the floor around each column, the diameter of the hole slightly exceeding that of the reinforcement (Fig. 11). The spirals were then introduced through the reinforcing of the girders, and the hole was then concreted in. The propping of the floors considerably reduced the load acting on the existing columns during their strengthening. 4 to 1 concrete was used.

A PAMPHLET ON REINFORCED CONCRETE.

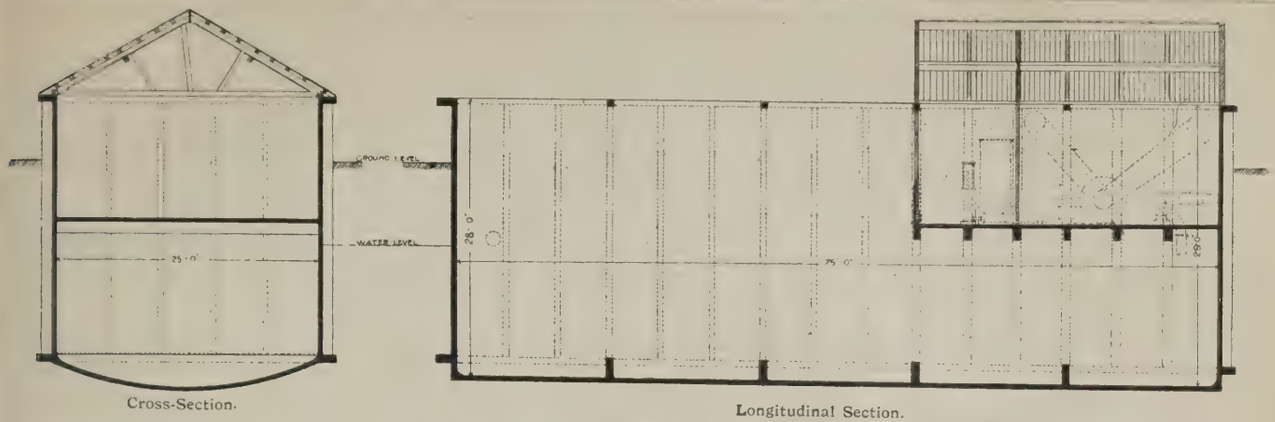
We have received an interesting pamphlet from Messrs. D. G. Somerville and Co., the specialist engineers and contractors of 72, Victoria Street, London, S.W., showing examples of recent works executed by them in reinforced concrete and structural steelwork. These works include the following : The Town Quay, Southampton; St. Charles' College Chapel, Notting Hill; Messrs. Carwardine's premises in Kingsland Road, London; the covering-over of the District Railway between St. James's Park and Victoria Stations; the National Telephone Co.'s new premises at Paddington; Messrs. Saunders's premises in Berners Street; Norwich Union Insurance Buildings, Piccadilly, W.; Messrs. Edison and Swan's works at Ponders End; and Messrs. McVitie and Price's new works. The illustrations are well reproduced, and the pamphlet should be kept by engineers as a useful record of actual work ca out. Messrs. Somerville and Co. made a special study of reinforced crete, and they have had a great de practical experience. They keep a of expert engineers, superintendents, trained workmen, and have an elab and extensive plant.

New contracts for reinforced con and structural steelwork which have secured by Messrs. Somerville are follows :—Large residence at West Co further extension to Ediswan wo galleries and floors for Electric L Co., London; Anglo-South-Ame Bank, Old Broad Street, Lon National Telephone premises, Deptf

MESSRS. EDWIN J. PEARCE AND CO. inforced concrete specialists, of De M fort Chambers, Horsefair Street, Le ter, have contracts in hand at presen the construction of fire-resisting floors strong-room in reinforced concrete new bank at Beeston, as well as fir sisting floors at the new County Sch Leicester. They have also executed following contracts : — Fire-resi floors at the Co-operative Bakery, Eaton, and at new hunting-box, Scalf stables at Rempstone and Derby; w block floors at Council schools at D Melton and Bagworth, and at a new at Long Eaton; artificial stone and yards of Granolithic paving at new factory, Coventry; fireproof staircases landings at Bulwell; farm buildings, geries, etc., at Scarlton Scroop.


NEW BUILDING FOR THE NORWICH UNION LIFE INSURANCE CO. NOW BEING COMPL AT THE CORNER OF ST. JAMES'S STREET AND PICCADILLY, LONDON. ERNEST RUNTZ AND FORD, FF.R.I.B.A, ARCHITECTS.

The reinforced concrete floors and roofs of this building, and the fireproofing of the steelwork, w executed by Messrs. D. G. Somerville & Co.

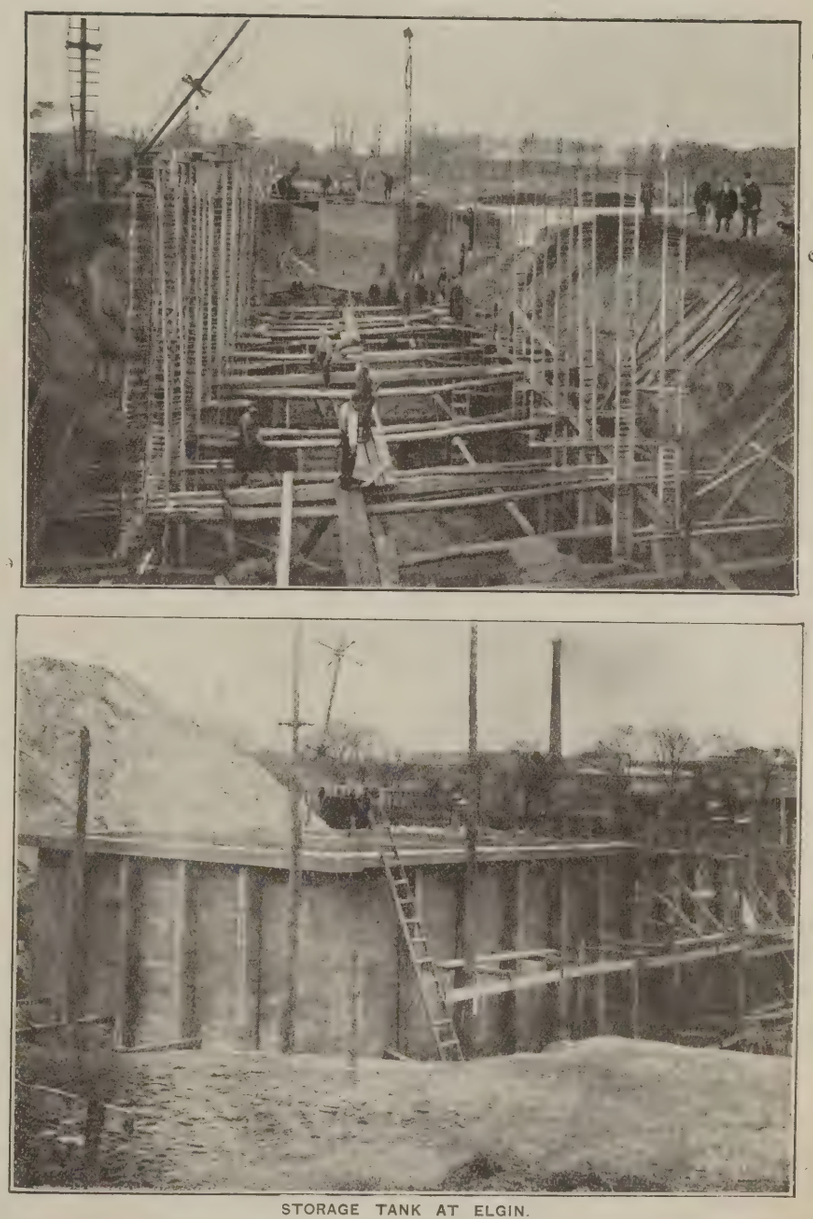


Cross-Section.

Longitudinal Section.

A STORAGE TANK AT ELGIN.

We illustrate herewith a storage tank in reinforced concrete on the Coignet system which has been constructed for the Burgh of Elgin, under the direct supervision of the burgh engineer, Mr. Acton A. Turiff. The contractor and licensee for the Coignet system was Mr. James Newlands, of Elgin. Owing to the treacherous nature of the ground, which is composed of sand to a great depth, and also on account of the under-pressure of water, it was thought advisable to adopt reinforced concrete for this work instead of ordinary heavy masonry. It will be noticed that the bottom of the tank is in the shape of an inverted arch, in order to resist any under-pressure of water. The general dimensions of the work are—length 75ft., width 25ft., height about 28ft. A floor has also been constructed inside the tank in order to carry gas engines and pumps. The tank is covered with an ordinary wooden gable roof. Several hundred feet of channelling have also been erected in connection with this work. The section of the channel is 30ins. by 30ins.



STORAGE TANK AT ELGIN.

TESTS ON CONCRETE CUBES.

As addenda to the paper on "Concrete and Reinforced Concrete" published in our last "Concrete and Steel Section," Mr. E. P. Wells gives the following interesting record of tests made with cubes of concrete :—

The concrete was made in the proportion of 5 to 1, namely, Spurn gravel $\frac{3}{4}$ to $\frac{1}{8}$, 3 parts; Spurn sand, $\frac{1}{8}$ down, 2 parts; cement (made by Messrs. G. and T. Earle, Ltd), of Wilmington, Hull, known as "pure rotary") 1 part. The amount of water used was 7 per cent.

The cubes were made 6ins. by 6ins., and in all cases were in a series of three; therefore the crushing strengths given are averages, and do not by any means represent the highest in either case.

The series kept in air and under normal conditions crushed at the various periods, the results being in tons per sq. ft. : seven days, 196 tons; one month, 312 tons; three months, 364 tons; six months, 456 tons; and twelve months, 479 tons.

The other tests, which are regarded as standard—that is, kept in water—gave the following results : At the periods of seven days, 226 tons; one month, 416 tons; three months, 528 tons; six months, 604 tons; and twelve months, 612 tons per sq. ft., or 9,520 lbs. per sq. in.

With reference to the twelve months' test, the following are the results of the three cubes : 584, 620, 632, or an average of 612 tons per sq. ft. With regard to the twelve months' tests of concrete kept in air, the highest result was 500 tons, so that, practically speaking, the highest when in air is, roughly, 20 per cent. less. I have no doubt in my mind that the air tests will eventually come up to the concrete when kept in water, but it will take a long period before this happens.

When the cubes were made, 1½in. briquettes from the same gauging were also made to see whether there was any ratio between the crushing and tensile, but, owing to the nature of the gravel, it was very difficult to get the tensile test of any value by reason of the presence of, in some cases, a large pebble on the outside face of the briquette. Still, the following may be of interest :—Air tests : seven days, 189 per sq. in.; one month,

265; three months, 317; six months, 405; and twelve months, 375.

The tests in water over the same periods were: 287, 431, 429, 435, and 390.

In my experience, I have found that the only reliable method of obtaining a fair average tensile test is to make them in series of twenty, as, in the case of three briquettes one low one completely capsizes the average, and this was particularly noticeable in the twelve months tests, because two of the briquettes, in both the air and the water tests, gave considerably higher results than any that were obtained at six months.

The best tests will clearly show you how valueless the tensile tests are, and that to find out the true value of concrete one must adhere to compression tests only.

THE MANHATTAN BRIDGE, NEW YORK.

The new Manhattan Bridge, New York, now being constructed, is a cable suspension bridge, designed to bear an enormous load—it is claimed, in fact, to be the heaviest bridge in the world.

The bridge will have a river span 1,470 ft. in length from centre to centre of the towers, and two side spans each 725 ft. long connecting with the anchorages. The latter are built exceptionally strong in order to withstand the heavy pull of the cables, which is put at 30,000 tons. The four towers are 280 ft. high, and are reared upon cast-steel pedestals, 42ft. long, 22ft. wide, and 6ft. high, which rest upon granite and concrete piers. The bridge will rise 135 ft. above mean high-water, it will have a width of 120 ft., and will be two-decked. Each floor will carry four railway tracks, and the lower floor, in addition, a wide roadway and foot-paths, the latter borne on cantilever extensions of the floor beams projecting from the outer trusses. The weight of the steel used, including anchor chains, cables and suspended span is 42,000 tons. Each tower is calculated to bear a maximum load of 32,000 tons, estimating the extreme possible congestion of the bridge, with the tracks lined with full cars and the roadway and footpaths crowded with vehicles and pedestrians, at 8 tons per linear foot. The average working load which the bridge is designed to bear is put at half, or 4 tons to the linear foot.

The four main cables from which the superstructure is to be suspended will be composed of 9,472 galvanized steel wires of 3-16in. diameter, woven into 37 strands, giving the completed cable a diameter of 21¼ ins. The cost of the cable work alone is placed at over £300,000.

The superstructures, forming the two floors of the bridge, will be hung from the main cables by means of vertical suspender cables, and will consist of four trusses, each 24ft. deep from centre to centre of chords, carried through planes in the lower parts of the towers and extending the entire length of the bridge. The upper truss chord will be fixed nearly 24 ft. above the lower, and both will be connected every 18 ft. by vertical braces. The trusses weigh 18,500 tons, and are to be tested to withstand a working stress of 40,000 lbs. to the sq. in. Nickel steel, as well as carbon steel, has been largely used in their erection.

The final cost of the bridge, including the land for the long approaches, is placed at between £4,000,000 and £4,400,000. It is expected to be completed by December, 1909.—(From the "Times.")

THE WATERTIGHTNESS OF CONCRETE.*

Some American Tests.

By Sanford E. Thompson, M.Am.Soc.C.E.

These permeability tests were made to determine the effect of adding various percentages of hydrated lime to concrete of different proportions. The specimens were similar in a general way to those designed by the writer for previous tests, as described in the "Proceedings" of the American Society for Testing Materials, Vol. VI., p. 373, but were of much larger size; in fact, they were considerably larger than have hitherto been customary in permeability tests. The blocks of concrete were 20 ins. in diameter by 16 ins. thick, and the water was introduced into the centre of the block through a pipe.

The proportions of concrete selected were those which are customarily used in concrete construction, except that a slight excess of sand was taken in proportion to the stone, to ensure homogeneous specimens, thus avoiding the possibility of stone pockets, which are more liable to occur in small-size specimens than in practical construction.

The materials, which are more fully described later in the paper, are quite representative, so that the results obtained are applicable to usual conditions in construction work. The cement was Lehigh brand; the crushed stone was conglomerate rock, which resembles trap in its characteristics and tests; the sand was a good coarse bank sand. The hydrated lime was Pine Cone brand made by the Rockland-Rockport Lime Co.

The percentages of hydrated lime to add were selected after a careful study of the materials and the proportions, the plan being to use larger percentages of lime with the leaner concrete mixtures because these contained more voids to be filled. The proportions of concrete and the percentages of lime selected by this preliminary study were as follows:

Proportions of concrete.	Hydrated lime.	Proportions of concrete.	Hydrated lime.	Proportions of concrete.	Hydrated lime.
1 : 2 : 4	0	1 : 2½ : 4½	0	1 : 3 : 5	0
,,	4%	,,	6%	,,	8%
,,	7%	,,	10%	,,	14%
,,	10%	,,	14%	,,	20%

Conclusions.

The following conclusions are drawn as the result of the experiments:

1. Hydrated lime increases the watertightness of concrete.

2. Effective proportions of hydrated lime for water-tight concrete are as follows:

Portland cement.	Sand.	Stone.	Hyd. lime.
1 part	2 parts	4 parts	8%
1 ,,	2½ ,,	4½ ,,	12%
1 ,,	3 ,,	5 ,,	16%

These percentages are based on the weight of the dry hydrated lime to the weight of the dry Portland cement.

3. The cost of large waterproof concrete structures frequently may be reduced by employing leaner proportions with hydrated lime admixtures, and small structures, such as tanks, may be made more watertight.

4. Lime paste made from a given weight of hydrated lime occupied about 2¼ times the bulk of paste made from the same weight of Portland cement, and is therefore very efficient in void filling.

Although the character of the sand and stone used in the concrete will affect the best percentage of lime to use, the present materials are representive of average materials throughout the United States, so that the results should be of general application. Coarser sand would naturall require slightly larger percentages c lime, and finer sand, that is, sand havin a larger percentage of fine grains whic pass a sieve with 40 meshes to the linea inch, would be apt to require less lime since sands containing considerable fin material produce more watertight a though a weaker concrete.

A study of the curves which are give later in the paper suggests that for coarse sands than used in the experiments, or i cases where the water pressure must b applied in one month or less after laying the percentages given above may be in creased by about 25 per cent., while fo many classes of work 25 per cent. les than the above percentages will be sati factory.

For mortar in proportions correspon ing to the cement and sand in the diffe ent concretes, the same percentage hydrated lime would naturally be sele ted: thus 1 : 2 mortar corresponds to 1 2 : 4 concrete, 1 : 2½ mortar to 1 : 2½ 4½ concrete, 1 : 3 mortar to 1 ; 3 : 5 co crete.

Increasing the proportions of stone t say, 1 : 2 : 4½, 1 : 2½ : 5, or 1 : 3 : 5½, shou have no effect on the percentage hydrated lime to be selected, but f watertight concrete it is always advisab to have a slight excess of mortar to avo stone pockets.

Fig. 1 (see next page) shows grap cally the effect of the hydrated lime the watertightness of the concrete.

Fig. 2 shows a section of the mouldin box in which the specimen blocks we made. Instead of using a wooden moul the sides were formed by two pieces wrought iron bent to half-circles a bolted together. These rested on a pla platform to form the bottom of the mou until the concrete had set. The ceme and hydrated lime were first thorough mixed to give a uniform colour, then t sand was added and mixed dry. T stone was finally added and suffici water used to make a soft, mushy m such as would be adopted in constructi

Since previous tests by the wri showed that the top of a block as mould is much more watertight than the botto because of te fine material which ri to the surface, the specimens were ma in an inverted position, so that Fig shows the specimen upside down wh compared with its position in the perm ability test. The iron pipe fittings w so placed as to give a thickness of 8 i of concrete in all directions, and a s face for the water to strike against of sq. ins.—that is, a circle of 4 ins. d meter. The concrete in each specim weighed over 400 lbs.

Proportioning the Hydrated Lime.

Few tests have been made to determ the effect of the introduction of spec materials into concrete to increase watertightness. The percentages hydrated lime to use were determined applying the conclusions derived fr tests with graded concrete aggregates a the results of the tests indicate that m chanical analysis methods can be appl to the laying out of permeability tests

For the 1 : 2 : 4 proportions the perce ages of hydrated lime were selected p tially by judgment. From previous te by the writer, 2 per cent. of hydra lime had been found to increase the wat tightness of 1 : 2 : 4 concrete made w sand and gravel, and 4 per cent. of li to still further increase it. The minim percentage was therefore selected a per cent., and the maximum percent

*Summary of a paper read before the American Society for Testing Materials.

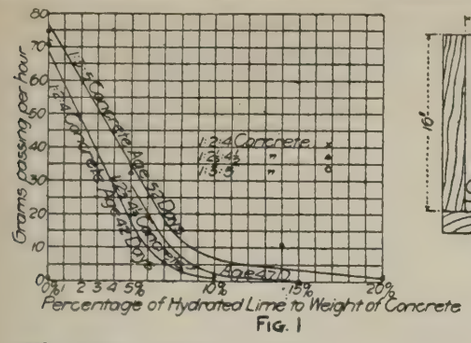


FIG. 1

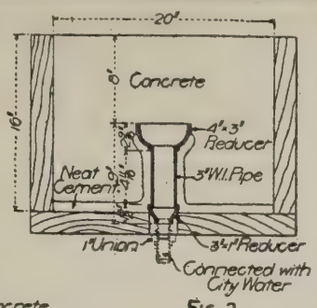


FIG. 2

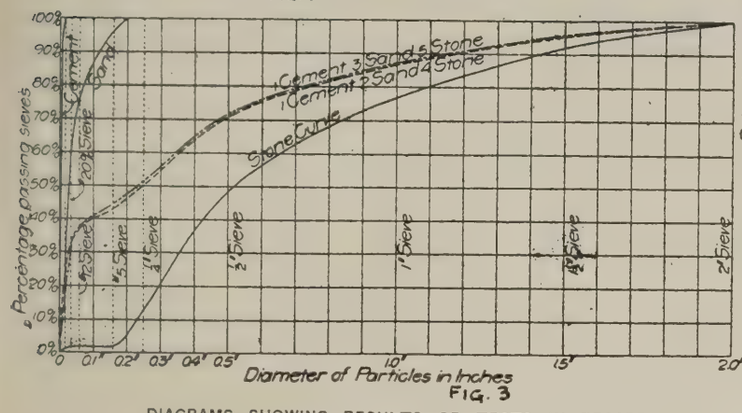


FIG. 3

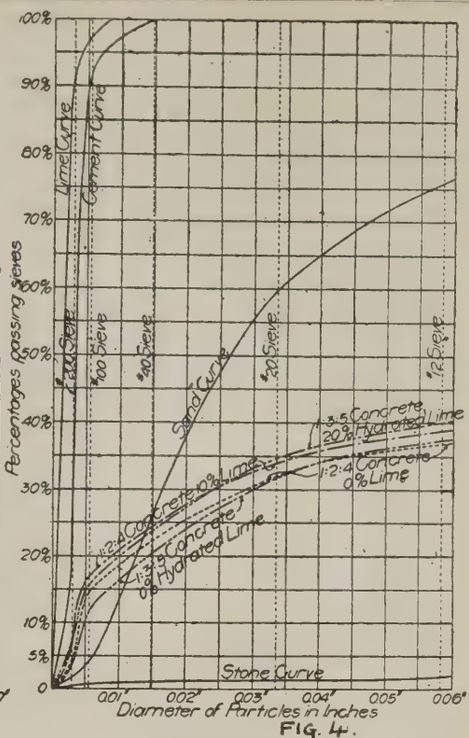


FIG. 4.

DIAGRAMS SHOWING RESULTS OF TESTS IN REGARD TO THE WATERTIGHTNESS OF CONCRETE.

r the 1 :2 :4 mix was taken as 10 per nt., so as to confine the results to com- ratively narrow limits. One intermedi- e percentage was also chosen, thus giv- ig 0, 4, 7, and 10 per cent. for the 2 :4 concrete.

Leaner concrete mixtures evidently re- dire more fine material for watertight- ss, because there are more and larger ids. Furthermore, tests in general in- cate that with a lean mix we can add ich more fine material without reducing e strength, and that this addition up a certain limit is beneficial not only r watertightness but also for strength.

For selecting percentages of lime for e 1 :2½ :4½ and the 1 :3 :5 concrete, hich would compare with the percent- ges selected for the 1 :2 :4, methods of chanical analysis were employed, the ject being to obtain mixtures for each these other proportions which would ve substantially the same sizes of par- les. In Fig. 3 the mechanical analy- s of the cement, sand and stone are otted, and a combination curve of these ree materials made for 1 :2 :4 and 1 :3 :5 concrete. The combined curves e simply the mechanical analyses of the xture of the three dry materials in the ven proportions.

Plotting the Curves.

The curves of the individual materials dicate the percentages passing the ves of various sizes. For example, cing the curve for the broken stone, hich is the lower curve, all the stone, 100 per cent., passes a sieve 2 ins. in ameter, 92 per cent. passes a 1½-in. ve, 76.5 per cent. a 1-in. sieve, and so The sand and cement curves are otted in a similar fashion.

Having plotted these individual curves, is possible to calculate the percentages l to plot combined curves showing mix- es of these three materials in any given portions.

The making of these combined curves quite simple. Thus, for example, to d the point on the 1 :2 :4 curve where it cuts the ordinate corresponding to the No. 12 sieve, the sums of the percentages of the individual materials at this same ordinate are taken in the proportions which they bear to the concrete mixture. All the cement is finer than the No. 12 sieve, and since the cement is one part of the seven parts in the mixture, one-seventh of 100 per cent. represents the percentage of cement in the mixture at the given ordinate. Similarly, since there are two parts of sand in the seven parts, the sand percentage at the No. 12 ordinate, 76 per cent., is multiplied by two-sevenths, and the stone percentage, 1.8 per cent., by four-sevenths, thus giving as the point on the No. 12 sieve ordinate in the combined curve :

1/7 × 100 per cent. = 14.3 per cent. = cement
2/7 × 76 per cent. = 21.7 per cent. = sand
4/7 × 1.8 per cent. = 1.0 per cent. = stone

37.0 per cent. = 1 :2 :4 mix

The other points in the curves are found in a similar manner.

Permeability depends more upon the gradation of the fine particles than of the coarse, and the finer material, that is, the left-hand portions of the curves, is therefore replotted in Fig. 4 to larger scale. Referring to the curves for 1 :2 :4 and 1 :3 :5 proportions, we notice that they are quite similar above, that is, to the right, of the No. 20 sieve, and that the greatest proportionate difference between them is below the No. 40 sieve. We may assume, therefore, that the particles lying below the No. 40 sieve are those which chiefly affect the watertightness. Therefore, the finer sieves, No. 100 and No. 200, must be chiefly used in studying the percentages of lime to add.

Several percentages were tried, and it was found that to make the 1 :3 :5 curve most nearly similar to the 1 :2 :4 concrete, 10 per cent. of lime must be added to the 1 :3 :5 mix. The curves of these two mixtures, together with the curves of concrete with no lime, are shown in Fig. 4. The other proportions were also plotted in the same way, but are omitted in the diagram for the sake of clearness.

Practice to be followed for Watertight Concrete.

A paper on permeability is incomplete without reference to the general principles of construction which must be followed to produce a watertight concrete. The concrete materials may be perfectly graded and the proper proportions of cement and of hydrated lime used, and then if the concrete is poorly mixed, mixed with insufficient water, or improperly placed, or if joints are left in the mass, the wall will invariably leak.

In the first place, the mixture must be thorough, and in the second place, sufficient water must be employed to give at least a "mushy" mix, so that it will settle into place with only a small amount of ramming.

Fully as important as the mixture is the bonding of the concrete between two days' work. For a small structure which must be watertight, it is advisable to place the concrete continuously, allowing no joint whatever, and not even permitting the concrete to stiffen up between the batches. Even an interruption of an hour in the middle of a hot day has been known to form a joint which will allow water to pass. If continuous work is impracticable, the old surface of the concrete must be thoroughly cleaned of all dirt and laitance or partially set cement, so as to expose the concrete. A layer of neat cement paste of soft consistency, or else of 1 :1 mortar, should be then spread upon the old concrete after thoroughly wetting it, and the new concrete laid before this mortar has stiffened.

The placing of the mortar or paste, however, does not preclude the necessity of thoroughly cleaning the surface, for if any of the laitance or partially set cement is left on the old concrete, it will form a joint under the new mortar through which water will pass.

A long wall or a conduit may require longitudinal reinforcement to prevent temperature cracks, and therefore leakage through them.

The Concrete Institute.

Much pleasure has been expressed amongst those interested in concrete and reinforced concrete that the fourth vice-presidency of the Concrete Institute has been accepted by Sir Douglas Fox, J.P., past-president of the Institution of Civil Engineers. The other vice-presidents, it will be remembered, are Sir Henry Tanner, Sir William Preece, and Sir William Mather. The membership of the Institute already exceeds 200. We understand that the first full council meeting is taking place next week, under the presidency of the Earl of Plymouth (formerly First Commissioner of Works), so that general meetings, presentations of papers, and discussions may be expected to start in the early autumn. An interesting fact in connection with this Institute is that a large number of its members are either members or associates of the Institution of Civil Engineers.

MR. H. TILLSTONE has been appointed borough surveyor of Brighton in succession to Mr. Alfred Weller, deceased.

A REINFORCED CONCRETE BRIDGE.—Messrs. D. G. Somerville and Co., the well-known reinforced concrete engineers of Westminster, have secured the contract for the construction of Peckelden Bridge, Chilham, Kent, in reinforced concrete, for the East Ashford Rural District Council, the system of reinforcing being with the Kahn Trussed Bar. The engineer to the work is Mr. H. P. Maybury, county surveyor and engineer to the Council.

THE DRIVING OF FERRO-CONCRETE PILES.—During the construction of the large jetty now in course of completion in Swansea Harbour under the superintendence of Messrs. C. S. and W. P. Meik, a large number of Hennebique reinforced concrete piles, 14 ins. square, have been driven by means of a 50 cwt. monkey falling from the height of 10 ft. With a monkey of this weight and exceptionally high drop, each blow represents the force of 56,000 ft.-lbs., which testifies to the good design of the piles. The concrete was mixed in the proportions of one part Portland cement to 4 parts of granite chips, suitably graded, and cubes of the material when tested at the age of two months were found to possess the ultimate compressive strength of 4,000 lbs. per sq. in.

A NEW AUTOMATIC ELECTRIC PASSENGER LIFT has been installed by Messrs. Archibald Smith and Stevens, of Battersea, at the new building which has been erected for the National Pension Fund for Nurses in Buckingham Street. The lift was used by the King and Queen at the recent opening ceremony. In the cage are button pushes corresponding to the floors served. Momentary pressure of any button will send the cage to the corresponding floor, where it stops automatically, while the lift can also be brought to any floor by pressing a button on the landing, provided that it is not already in use by another passenger, because when the lift is in use all the controlling buttons are dead, and no door can be unlocked or opened unless the cage is standing opposite that particular door. Eight lifts of this type have recently been erected by Messrs. Archibald Smith and Stevens at the new "Morning Post" building.

New London Buildings.

The following were among the applications under the London Building Act, 1894, that came before the London County Council at their meeting yesterday. Consent or refusal, as recommended by the Building Act Committee, is indicated in italics in each case:—

Erection of buildings on the eastern side of Stamford Hill, Hackney, to abut also upon the southern side of Upper Clapton Road, on the further application of Mr. H. C. Webster, on behalf of Lady William Cecil (*consent*).

Erection of an iron and glass covered way in front of No. 81, Finchley Road, Hampstead, on the application of Messrs. W. Densham and Sons, on behalf of Mr. J. Stockford (*consent*).

Conversion of an existing bay-window into a shop front at No. 8, Kennington Park Road, Kennington, on the application of Mr. E. H. Payne, on behalf of Messrs. A. Beattie and Co. (*consent*).

Erection of an iron and glass covered way in front of No. 17 Bolton Gardens, Kensington, on the application of Messrs. H. G. Lancaster and Co., on behalf of Mr. O. Langenbach. The Council will be prepared to consider an amended application accompanied by a plan showing the sides of the covered way unenclosed and also showing it to be set back to the entrance steps so as to be in line with the covered ways at Nos. 19 and 20, Bolton Gardens (*refusal*).

Erection of an iron and glass shelter in front of the premises of the Civil Service Co-operative Supply, Limited, No. 28, Haymarket, Strand, on the application of Mr. F. T. Verity, on behalf of the Directors of the Society. It is not the practice of the Council to permit the erection of shelters at premises used for the purpose for which the building in question is intended (*refusal*).

Erection of a shop front at No. 161, Brompton Road, Kensington, to abut also upon Lloyd's Place, on the application of Messrs. Stanley Jones and Co. (*consent*).

Erection of a one-storey addition at the rear of No. 17, Kensington Square, Kensington, at less than the prescribed distance from the centre of the roadway of South-end, on the application of Messrs. J. Poole and Son, on behalf of Sir C. Hubert Parry (*consent*).

Erection of an addition at the rear of No. 27, Victoria Road, Kensington, at less than the prescribed distance from the centre of the roadway of Canning Passage, on the application of Messrs. W. Wise and Son, on behalf of Lieut.-Col. Cottell (*consent*).

Erection of a one-storey addition at the rear of No. 75, Whitechapel Road, Whitechapel, at less than the prescribed distance from the centre of Black Lion Yard, on the application of Mr. W. G. Brown, on behalf of Mr. J. Carnever (*consent*).

Erection of a building at less than the prescribed distance from the centre of a roadway at the rear of Nos. 42, 44 and 46, Princes Road, Plumstead, on the application of Mr. J. E. Edward (*consent*).

Erection of a building to be used as a church room adjoining St. Stephen's Church, Hampstead, with a boundary wall at less than the prescribed distance from the centre of the footway leading from Haverstock Hill to Pond Street, on the application of Mr. E. A. Pearce, on behalf of the building committee of St. Stephen's Church room. The solicitor is to take such steps as may be necessary to protect the Council's interests (*refusal*).

Erection of a building on the eastern side of Christian Street, Commercial Road, St. George-in-the-East, southward of No. 10, and at less than the prescribed distance from the centre of the roadway of the street, on the application of Messrs. Mark King and Son, on behalf of Messrs. T. M. Fairclough and Sons. The Council is prepared to consider an amended application for permission to retain the forecourt boundary at less than the prescribed distance from the centre of the roadway of the street, during the pleasure of the Council, provided such application be accompanied by a plan showing the building as to be kept back 20 ft. from the centre of Christian Street (*refusal*).

Erection of a factory building on the north-western side of Somers Place, Norwood, on the application of Mr. R. Milnes, on behalf of the trustees of the Stockwell Orphanage (*consent*).

Erection of an addition at No. 22A, Praed Street, Paddington, with an irregular open space at the rear, on the application of Messrs. Thomas and Thomas, on behalf of Messrs. T. Holland and Son (*consent*).

Erection of buildings on the western side of Buckingham Palace Road, St. George, Hanover Square, northward of Eaton Lane, with an irregular open space at the rear, on the application of Mr. J. E. Trollope (*consent*).

Erection of an addition to the chapel at the rear of No. 127, Uxbridge Road, Hammersmith, on the application of Mr. C. M. Quilter, on behalf of the Rev. E. G. C. Parr (*consent*).

Erection of an oriel window and a balcony in front of buildings, to be erected upon the site of Nos. 9 and 10, Marble Arch, St. Marylebone, on the application of Mr. F. W. Foster (*consent*).

Erection of an electricity generating-station on the northern side of Narrow Street, Limehouse, on the application of Mr. M. W. Jameson, on behalf of the Stepney Borough Council (*consent*).

Coming Events.

Monday, July 13, to Saturday, July 18.
ROYAL SANITARY INSTITUTE. — Annual Congre Cardiff.

Monday, July 13, to Monday, July 27.
ROYAL INSTITUTE OF BRITISH ARCHITECTS. Exhibition, at the Old Water Colour Societ Gallery, Pall Mall East, of M. Jean Hulo Grand Prix de Rome Drawings of the Restorati of the Ancient Fortified Port of Selinus, lent the French Government.

Wednesday, July 15.
BUILDERS' BENEVOLENT INSTITUTION.—Sixty-fi Annual General Meeting, 31 and 32, Bedfo Street, Strand, at 5 p.m.

Thursday, July 16.
JUNIOR INSTITUTION OF ENGINEERS.—Visit to t new Luton works of the Davis Gas Stove Co pany.

Friday, July 17.
ARCHITECTURAL ASSOCIATION.—Annual Exhibiti of Drawings, 18, Tufton Street, Westminster, fr 3 to 6.30 p.m.

Saturday, July 18.
ARCHITECTURAL ASSOCIATION.—Summer visit Knebworth and Welwyn.

Wednesday, July 22.
NORTHERN ARCHITECTURAL ASSOCIATION.—Ann Excursion, to Northallerton.

Bankruptcies.

G. KNIGHTS, builder, Hanwell. R.O., July 3.
J. J. GRUNDY, surveyor, Forest Hill. A June 16.
C. DUCKHOUSE, heating engineer, Smethwi R.O., July 3.
G. RACE AND SONS, builders, Stockton-on-T R.O., July 1.
R. J. H. J. ILES, builder, Fulham. Adj., M 18. (Amended notice.)
J. AND W. PADDINGTON, contractors, Colden C mon, Hants. Adj., June 16.
T. W. CLITHEROE, journeyman carpenter, builder. R.O. and Adj., July 4.
G. G. ASH, builder, Alvaston. Gross liabilit £7,282. Estimated surplus of assets, £1,567.
J. PITTS, builder, Birmingham. Gross liab ties. £8,214. Estimated surplus of assets, £180.
T. SMURTHWAITE, builder and contractor, N castle. Gross liabilities, £20,426. Assets, £3,0
E. W. SPIERS AND E. SPIERS (trading as Spi and Son), builders, St. John's Wood. Adj., July
A. C. RIDDALL, builder's joiner, Hackbrid Surrey. First meeting, 132, York Road, S.E., J 15, at 12. P.E., C.C., Croydon, July 16, at 11
B. W. DOWELL, contractor, Hammersmith. R July 3. First meeting, Bankruptcy Court, J 17, at 12. P.E., Bankruptcy Court, July 30, 11.30.
B. KNIGHT, builder, Petersfield. R.O., July First meeting, O.R.'s, Portsmouth, July 15, a P.E., C.C., Portsmouth, July 27, at 11. A July 1.
C. HAYNES, builder, Clacton. First meeti Great Eastern Hotel, Liverpool Street, E.C., J 15, at 11.30. P.E., Law Courts, Colchester, J 24, at 11.30.
E. B. HAYWARD, builder, West Worthing. R June 30. First meeting, 4, Pavilion Buildi Brighton, July 15, at 12. P.E., C.C., Brigh July 23, at 11. Adj., July 1.
L. WILLIAMS, builder and contractor, Swan R.O., June 29. First meeting, O.R.'s, Swan July 18, at 10.45. P.E., Town Hall, Swan July 31, at 11.30. Adj., June 29.

Insurance.

Subscribers to "The Builders' Journal" entitled to a Free Insurance for £500. E subscriber should apply for this, sending postcard with the name of the newsa with whom the order has been placed. S scribers can also obtain a General Accid and Sickness Insurance (the "Lighthou policy) at a reduced premium, which cludes the Annual Subscription to Journal. A pamphlet giving full particu can be obtained free on application.

Free £500 Accident Insurance Coup have been sent to the following:—

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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Barnsley.—For supplies in connection with the sewage works, etc., for the Corporation. Mr. J. Henry Taylor, M.I.C.E., borough surveyor, engineer:—

Contract No. 4.—Supply of about 1,300 yds. of 20 in. diameter cast-iron pipes.

L. P. Winby and Co., Tothill Street, London, S.W.	£2,168	2	6
R. Maclaren and Co., Glasgow	1,963	5	7
Yarrow and Co. (Bolton), Bolton	1,746	12	4
Newton, Chambers, and Co., Chapeltown, Sheffield ...	1,703	12	8
Cochrane and Co., Middlesbrough	1,658	13	11
Cochrane and Co., Dudley ...	1,635	7	4
Clay Cross Co., near Chesterfield	1,604	11	7
J. Oakes and Co., Alfreton ...	1,602	18	5
Stanton Iron Co., Nottingham	1,596	4	2
Staveley Coal and Iron Co., near Chesterfield	1,565	12	11
Holwell Iron Co., Ashfordby ...	1,558	6	1
Sheepbridge Coal and Iron Co., Chesterfield	1,482	15	3

Coalville (Leicester).—For the erection and completion of stables, warehouses, cart-sheds, cottage, etc., in Margaret and Owen Streets, Coalville, for the Coalville Working Men's Co-operative Society. Mr. T. I. McCarthy, architect, Central Chambers, Coalville. Quantities by architect:—

Maule and Co.	£3,598	0	0
Berrisford and Dolman	3,530	0	0
Bradshaw Bros.	3,985	6	6
E. Morley and Son	3,449	0	0
Haycock and Sons	3,397	0	0
S. Hickman	3,363	0	0
Barker and Sons	3,339	0	0
E. Orton	3,249	0	0
E. Fox	3,235	0	0
Griffin Bros.	3,224	10	0
G. Hodges	£3,219	0	0
A. B. Moss,* Coalville ...	3,100	0	0

*Accepted.

Crowborough. — For the erection of a house, Whinfell, Crowborough, for the Hon. Mrs. Brougham. Mr. R. G. Hammond, architect, Strand, London:—

Norris and Co.	£3,280
J. Leney and Sons	3,250
W. Smith	3,245
Strange and Sons	3,020
Connor Bros.,* Crowborough	2,777

*Accepted.

Darenth (Kent).—For the execution of the annual cleaning and painting works at Darenth Asylum, for the Metropolitan Asylums Board:—

W. Durant and Son, Rotherhithe	£7,766	0	0
G. H. Gunning and Sons, Erith	5,714	15	8
A. Roberts and Co., Kensington	6,269	0	0
Dolman and Mathews, Poplar	6,195	0	0
T. Knight, Sidcup	5,829	0	0
G. H. Gunning and Sons, Erith	5,064	0	0
S. Wiles and Sons, Erith ...	5,064	0	0
B. E. Nightingale, London, S.E.	4,612	0	0
M. McCarthy, Clapham Park, S.W.	4,014	0	0
Vigor and Co., Poplar	3,870	0	0
J. J. Richards, Brixton ...	3,737	6	8
Scott and Branton, Greenhithe	3,304	14	6
W. Hussey, S.W.	3,206	0	0
E. Proctor and Sons, Plumstead	3,113	0	0
L. Kazak,* 3 and 4, Station Road, Belvedere	2,695	18	6

Engineer-in-chief's estimate, £2,750. *Recommended for acceptance.

Enfield.—For erecting extensions to the Grammar School for Boys, for the Governors of the Grammar School. Mr. H. G. Crothall, architect, Middlesex Guildhall, Westminster:—

Treasure and Son	£6,696
G. Neal	6,615
W. Johnson and Co.	6,583
W. J. Renshaw	6,549
J. Barker and Co.	6,540
Mattock Bros.	6,533
F. G. Minter	6,49[illegible]
A. Porter	6,461
J. Dorey and Co.	6,387
F. Gough and Co.	6,362
G. E. Wallis and Son	6,348
W. Lawrence and Son	6,262
A. Fairhead and Son	6,233
H. Knight and Son*	6,155

*Recommended for acceptance.

Enfield.—For erecting the county school for and technical institute, for the Middlesex C Council. Mr. H. G. Crothall, architect t Middlesex Education Committee, Middlesex hall, Westminster:—

A. Porter	£13,5
J. Barker and Co.	13,4
G. Neal	13,4
G. Minter	13,3
W. J. Renshaw	13,3
G. E. Wallis and Son	13,0
W. Johnson and Co.	12,5
Mattock Bros.	12,5
F. Gough and Co.	12,4
J. Dorey and Co.	12,4
W. Lawrence and Son	12,4
H. Knight and Son	12,4
A. Fairhead and Son	12,3
Treasure and Son*	12,3

*Recommended for acceptance.

High Wycombe (Bucks.).—For rebuilding Union Baptist Church, for the Trustees. Thurlow, architect, High Wycombe, Bucks. ities by the architect:—

Barker and Co.	£5,877 ...
J. Darlington	5,771 ... £
Y. J. Lovell	5,697 ...
J. Mead	5,695 ...
C. H. Hunt and Son ...	5,521 ...
H. Flint	5,487 ...
G. H. Gibson	5,425 ...
R. Cleaver,* Northampton ...	5,260 ...

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Leake.—For the sewerage and sewage d for the parish of Sutton Bonington, for the R.D.C. Messrs. Sands and Walker, eng Milton Chambers, Nottingham:—

T. Smart, Nottingham	£6,063 17
H. Bennett, Mansfield	5,031 0
Hawley and Sons, Ilkeston ...	4,926 7
Edwards and Co., London, W.C.	4,594 19
W. J. Jackson, Wanstead Park, Essex	4,483 0
C. Chamberlain, Leicester ...	4,215 1
J. E. Barker, Loughborough ...	4,200 0
Moss and Sons, Loughborough	4,112 0
J. T. Ball, Barrow-on-Soar ...	4,095 0
F. W. Southorn, Nuneaton ...	3,992 0
A. Palmer, Leicester	3,978 0
J. Chapman, Leicester ...	3,959 0
A. Jewell, Market Harborough	3,914 0
J. Thraves, Stapleford ...	3,700 0
A. Price and Co.,* Castle-Boulevard, Nottingham	3,596 1

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(*Tenders continued on page viii.*)

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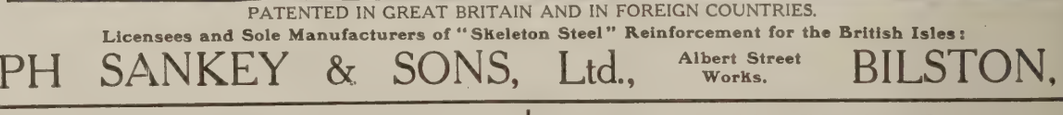
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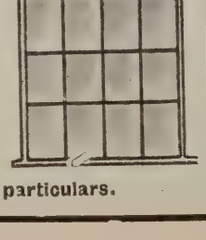
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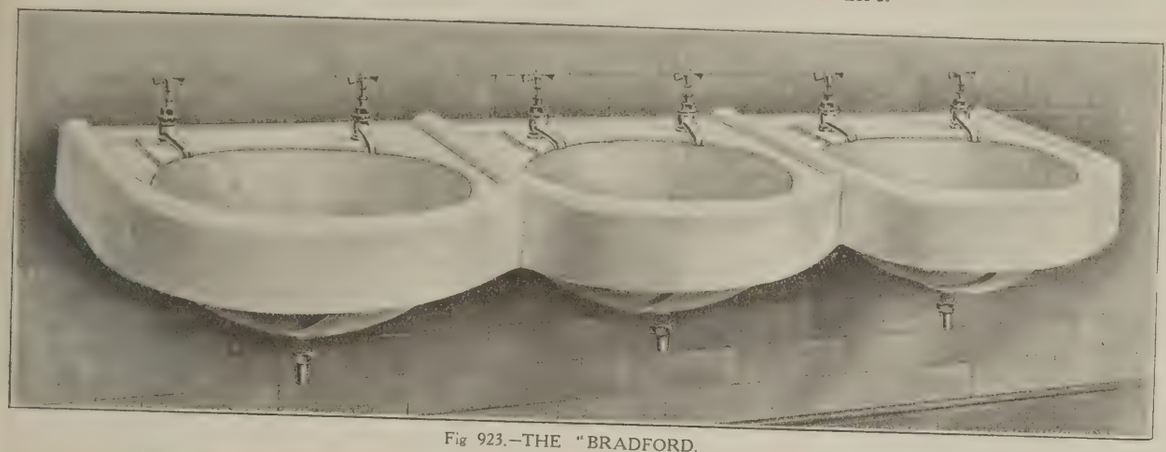


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NEWCASTLE: 4, Northumberland St.

(*Tenders continued from page vi.*)

London.—For annual cleaning and painting work at the Eastern Hospital, for the Metropolitan Asylums Board:—

J. H. Bywaters, 77, Clarendon Road, Notting Hill	£2,617 0 0
A. Roberts and Co., Kensington	2,035 0 0
Dolman and Mathews, Poplar	1,960 0 0
Welbking and Co., Hackney	1,894 0 0
J. W. Jerram, Crown Works, East Ham	1,745 0 0
E. Proctor and Sons, Plumstead	1,705 17 8
M. McCarthy, Heidelberg, Clapham Park, S.W.	1,626 0 0
Vigor and Co., Poplar ...	1,572 0 0
B. E. Nightingale,* London, S.E.	1,356 0 0

*Accepted.

Engineer-in-chief's estimate, £1,536. *Recommended for acceptance.

London, E.—For the erection of St. Jude's Hall, and Sunday School, West Ham, for the Rev. Canon Pelly, M.A. Percy K. Allen, architect, Tunbridge Wells. S. Cecil Addison, surveyor, St. Margaret's, Twickenham:—

W. J. Clemens	£3,559
Alex. Bothwell	3,540
G. J. Hosking	3,387
J. Grover and Son	3,308
E. Lawrance and Sons	3,296
J. Jarvis and Sons	3,180
A. E. Symes	3,179
W. J. Maddison	3,149
J. T. Luton*	3,147

*Accepted.

Architect's estimate, £3,250.

London.—For heating and special ventilation in some of the shops at the tramways central car-repair depot, for the London County Council:—

	Specified requirements.	Alternative schemes.
Jas. Keith and Blackman Co., Farringdon Avenue, E.C.	£2,525 3 3	—
Musgrave and Co., Victoria Street, S.W. ...	2,158 13 1	—
The Standard Engineering Co.,* Queen Victoria Street, E.C. ...	—	£1,477
Davidson and Co., Victoria Street, S.W. ...	1,447 10 0	£1,520

("Messrs. Davidson and Co., although submitting the lowest offer, are unable to guarantee the specified temperatures in portions of the building unless additional screens or walls are built. We understand that, apart from the additional cost involved, the erection of such screens would interfere with the working of the depot. The Standard Engineering Co. submit a quotation for an alternative scheme which is £29 10s. higher than Messrs. Davidson and Co.'s offer, but this firm give the required guarantee for temperature and steam consumption.")

London, S.W.—For the erection of a new fire-station in substitution for the Waterloo Road Station, for the London County Council. Mr. W. E. Riley, F.R.I.B.A., superintending architect:—

Charles Wall, Limited, 4, Lloyd's Avenue, E.C.	£12,127
Holloway Brothers (London), Ltd., Belvedere Road, S.E.	11,900
Higgs and Hill, Ltd., South Lambeth Road	11,830
E. Lawrance and Sons, City Road, N.	11,716
Spencer, Santo and Co., Westminster	11,699
Kirk and Randall, Woolwich ...	11,674
W. Smith and Sons, Harleyford Road	11,580
Patman and Fotheringham, Ltd., Islington	11,538
F. and H. F. Higgs, Herne Hill...	11,462
G. Munday and Sons, Trinity Square, E.C.	11,457
J. Carmichael, Wandsworth	11,187
H. L. Holloway, Deptford	10,949
Works Committee's estimate* ...	10,674
Architect's revised estimate, £11,400.	

*Recommended for acceptance.

Leyton.—For the erection of houses at Leyton, N.E. Mr. Herbert Riches architect, 3, Crooked Lane, King William Street, London, E.C.:—

Courtney and Fairbairn	£3,497
T. Osborn and Sons	3,144
J. W. Jerrom	2,999
Sheffield Bros.	2,700
Rowley Bros.*	2,304

*Accepted.

London.—For the construction of tramways from Dulwich Library to Forest Hill (roadwork and platelaying), for the London County Council:—

W. Muirhead and Co., London, E.C.	£31,613 6 6
J. G. White and Co., London, E.C.	30,277 13 6
Fry Bros., Greenwich	29 992 17 2
R. W. Blackwell and Co., Westminster, S.W.	28,459 8 9
Dick, Kerr and Co., London, E.C.	28,126 6 7
J. Mowlem and Co., Westminster, S.W.	£28,120 0 0
W. Manders,* Leyton	27,431 10 1

Chief engineer's estimate, £30,298 11s. 4d.

*Recommended for acceptance.

Portsmouth. — For erecting new warehou sheds, etc., for Messrs. W. Boots and Co., Po mouth and Chatham. Plans, specifications, quantities prepared by Mr. W. Bates White, Fawcett Road, Southsea:—

G. J. Davis	£3,400
J. Harding	3,195
E. and A. Springings	3,180
W. and R. Light and Sons	3,177
H. Jones	3,174
J. Crockerell	2,995
H. Buckett	2,995
F. Privett	2,987
J. Croad	2,975
M. Colthemp*	2,900
J. Mitchell (withdrawn)	2,760

*Accepted.

Royston. — For erecting homes for little g Royston, for the National Refuges for Home and Destitute Children. Mr. R. G. Hamm F.R.I.B.A., architect, 16, Essex Street, Stran

Courtenay and Fairbairn	£7,654
Gimson and Co.	7,214
Hunt	7,015
W. Saint	6,958
Sindall	6,940
Mattock and Parsons	6,666
Ward and Sons	6,647
Jacklin and Co.,* Royston	6,433

*Accepted.

Sunningdale (Berks).—For executing altera and additions to "The Ridge," Sunningdale, Sir Harry Samuel. Mr. R. G. Hammond, a tect, Strand, London:—

Mattock and Parsons	£1,93
H. Charman	1,73
Norris and Co.,* Sunningdale ...	1,57

*Accepted.

Tibshelf.—For erecting new Wesleyan Ch for the Trustees. Mr. J. E. Goodacre, archi 4, Stockwell Gate, Mansfield:—

Basworth and Lowe	£1,221 0
F. Lee	1,180 0
Vallance and Blythe	1,165 0
Harris and Hunt	1,155 0
J. Beckett	1,140 0
G. Frisby	1,125 0
A. E. Bristowe	1,115 17
T. Barlow and Co.	1,100 0
Evans Bros.	1,090 0
Cartledge and Parr,* Mansfield	1,050 0

*Accepted.

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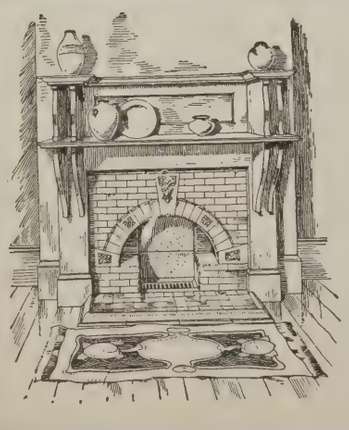
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 17. HUDDERSFIELD.—Erection of new lockrooms in Oakes Road, Lindley. Particulars from the architect as below. Tenders to be delivered not later than July 17 to J. Berry, Architect and surveyor, 3, Market Place, Huddersfield.

July 17. SKELMANTHORPE.—Erection of new lock rooms at Skelmanthorpe. Particulars from the architect, as below. Tenders to be delivered later than July 17 to J. Berry, Architect and surveyor, 3, Market Place, Huddersfield.

July 17. DUDLEY.—Small Building Extension to the Dudley Union Workhouse, and providing fittings, etc., in accordance with plan and specification prepared by Mr. E. G. Coslett, architect, Dudley. Particulars on deposit of half-a-guinea from Gaius W. Coster, clerk to the Guardians, Union Offices, St. James's Road, Dudley, to whom tenders, endorsed "Tenders for Structural Alterations," are to be sent not later than 10 a.m. on July 17.

July 17. MERTHYR TYDFIL.—Erection of four pairs of semi-detached villas at the Walk, Penydarren Park, Merthyr Tydfil, for the Grove Building Club. Particulars with T. Edmund Rees, architect and surveyor, Gernant, Merthyr Tydfil. Tenders, endorsed "Grove Building Club," to be sent to the Secretary, Mr. James Lever, accountant, 39, High Street, Merthyr Tydfil, not later than 6 p.m. on July 17.

July 17. WALKER-ON-TYNE. — Erection of stables and other buildings in Lamb Street, Walker. Plans and specifications at the office of the Walker Co-operative Society in Lamb Street. Tenders to be addressed to the Walker Co-operative Society, Ltd., and delivered at the Society's office not later than on the morning of July 17, marked "Tender for Stables, etc."

July 18. BARNETBY (Lincs.).—Erection of extensions and improvements to business premises at Barnetby, Lincolnshire. Particulars with W. H. Brotherick, P.A.S.I., architect, Scunthorpe, to whom tenders are to be delivered not later than July 18.

July 18. KING'S LYNN.—Erection of sanitary offices, etc. (Technical Institute). Painting and glazing (Highgate School). Particulars with H. E. Howard, Education Office, King's Lynn, to whom tenders are to be delivered not later than July 18 next.

July 18. VERWOOD (Dorset).—Erecting a new bridge with brick abutments and steel superstructure over the stream at Ford, Verwood, Dorset. Particulars with the Surveyors, Messrs. Fletcher, Son and Fletcher, Wimborne. Tenders to be sent not later than July 18 next, endorsed "Tender for Bridge, Verwood."

July 18. KILKEEL (Co. Down).—(1) Erecting pier, and (2), laying a pipe at Kilkeel Harbour. Particulars with the Harbour Constable at Kilkeel, or at the County Surveyor's Office, Downpatrick. Each work is to be tendered for separately. Tenders, endorsed "Kilkeel Harbour," to be lodged in the County Surveyor's Office, Downpatrick, before noon on July 18.

July 18. LLANDWROG.—Erection of new Sunday school, Chapel House, etc., etc., and alterations to Bwlan C.M. Chapel, Llandwrog. Plans and specification at Minawel, Llanwnda. Tenders, marked "Tender for Bwlan," to be sent to Mr. Edmund Jones, Pengwern, Llanwnda, not later than 2 p.m. on July 18

July 18. BRYNMAWR.—Erection of twenty houses, for the Brynmawr Building Club. The contract is to be completed in nine months. Particulars with H. B. Jones, architect and surveyor, Brynmawr. Tenders, endorsed "Tender," are to be delivered to Mr. Richard Jones, 96, Worcester Street East, Brynmawr, not later than July 18.

July 18-20. MONEYMORE. — Erection of a private residence, at the Loup, Moneymore, Co. Derry, for the Rev. Eugene McAleavey, P.P. Plans and specification may be obtained till July 18, at the Parochial House, Moneymore. Sealed tenders to be lodged not later than July 20, with J. V. Dornan, C.E., architect, Belfast Bank Chambers.

July 20. BRADFORD. — Erection of St. Laurence's Mission Hall, Bolton Woods, Bradford. Plans with Horace E. Priestley, M.S.A., 17, Bertram Road, Manningham. Tenders by July 20.

July 20. MANCHESTER.—Erection of a plumbers' workshop at Monsall Hospital. Drawings may be seen, and specification and bill of quantities obtained, at the office of the city architect, Town Hall, Manchester. Tenders to be delivered at the above office not later than 9 a.m. July 20.

July 20. TREALAW.—Erection of 16 houses, at Trealaw for the Miskin Manor Building Club. Particulars with A. O. Evans, Williams and Evans, Architects, Pontypridd, or No. 8, Madeline Street, Pontygwaith. Tenders to be sent to the Secretary, Mr. Evan Davies, 8, Madeline Street, Pontygwaith, not later than July 20.

July 20. BELDORNEY (Aberdeen).—Erecting a gamekeeper's cottage, at Beldorney, Glass, Aberdeenshire. Plans and specifications may be seen at the Gardener's Cottage, Beldorney. Mr. James Morrison, Glenbeg, Glass, will meet intending offerers on July 17, between 12 and 2 o'clock, to point out the site, etc. Offers will be received by Messrs. Cochran and Macpherson, Advocates, 152, Union Street, Aberdeen, up to July 20.

July 20. GOSPORT.—Taking out quantities for a new school to be erected in Grove Road, Gosport. Applicants should state in their application (a) previous experience in preparing bills of quantities, (b) length of time required for the work, (c) remuneration required. Approximate cost of the works, £4,500. Applications, endorsed "Quantities," must be delivered not later than July 20, to G. R. Walker, secretary, Education Offices, Gosport.

July 20. CARDIFF.—1. Alteration of laundry at Cardiff Workhouse. 2.—Enlargement of Hospital at Ely Homes; according to plans and specification prepared by Mr. Edwin Seward, F.R.I.B.A., Queen's Chambers, Cardiff, from whom bills of quantities may be obtained in either case on payment of £2 2s. Tenders to be sent not later than 10 a.m. on July 20, 1908, endorsed, "Tender for Laundry Alteration" or "Hospital Enlargement," as the case may be, to Arthur J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff.

July 20. BIRMINGHAM.—Erection of a tramway depot in Miller Street, for Birmingham Corporation. Tenders to be delivered not later than noon on July 20, to the Chairman of the Tramways Committee, Council House, Birmingham, and endorsed "Tender for Tramway Depot." Fair wages clause.

July 20. PRESTON.—Alterations to Holme Slack Farm, Deepdale. Particulars at the office of the borough surveyor, Town Hall, Preston, to whom sealed tenders, endorsed "Tender for Alterations, Holme Slack Farm, Deepdale," must be delivered not later than July 20 Fair wages clause.

July 21. DERBY.—Construction and fixing complete of a movable American maplewood floor at the Reginald Street Baths, Derby. Plans, specifications, etc., may be seen, and bill of quantities and form of tender obtained on application at the office of John Ward, M.Inst.C.E., borough surveyor, Borough Surveyor's Office, Babington Lane, Derby. Tenders, with quantities fully priced out, and endorsed "Tender for New Floor, Reginald Street Baths," to be sent to the Town Clerk, 15, Tenant Street, Derby, not later than 9 a.m. on July 21. A sample of the timber proposed to be used must be submitted with the tender.

July 21. PONTYPRIDD.—Erection of a three-department school for the accommodation of 250 boys, 250 girls, and 250 infants. Particulars with Mr. P. R. A. Willoughby, A.M.I.C.E., surveyor to the Council, Municipal Buildings, Pontypridd, on payment of £5 5s. Bill of quantities must be sent under separate cover, with the name of the person tendering on the outside, to the surveyor. Tenders, endorsed "Maesycoed School," to be sent not later than July 21.

July 21. NEATH.—Erection of a vestry to seat 200, together with boundary walls, at Maesymarchog, Onllwyn, near Neath, for the Trustees of the Welsh Independent Congregation Chapel, Onllwyn. Particulars with T. E. Richards, A.R.I.B.A., Architect, Pontypridd. Also with the Secretary, Mr. Ll. Richards, Glanrhydd House, New Road, Seven Sisters, to whom tenders should be delivered on or before July 21.

July 22. RINGWOOD.—Erection of a new Council school. Particulars with Mr. W. J. Taylor, county surveyor, The Castle, Winchester. A deposit of two guineas will be required for a copy of the bills of quantities and form of tender. Deposits must be made by cheque, payable to the Hants County Council, and crossed "Bank of England," or particulars will not be sent. Tender to be endorsed "Ringwood Council School," and to be delivered not later than 10 a.m. on July 22, to H. Barber, clerk of the County Council, The Castle, Winchester.

July 22. BLACKPOOL.—Erection of a police Station at Hawes Side Tenders, endorsed "Hawes Side Police Station," addressed to the Chairman of the Watch Committee, care of John S. Brodie, Borough Engineer and Surveyor, Town Hall, Blackpool, should be delivered not later than 10 a.m. on July 22. Fair wages clause.

July 22. RUSTINGTON.—Erection of a new entrance lodge at Millfield, Rustington, Sussex, in accordance with drawings, conditions of contract, and specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, Metropolitan Asylums Board. Drawings, conditions of contract, specification, and form of tender, may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £1. Tenders to be delivered at the office of the Board not later than 10 a.m. on July 22.

July 23. MENAI BRIDGE.—Alterations and repairs to the Council school, Menai Bridge. Plans and specifications may be inspected at the office of Jos. Owen, F.R.I.B.A., county architect, Menai Bridge. Tenders, sealed and endorsed "Menai Bridge Council School," to be sent in to Mr. R. H. Williams, secretary of Education, Education Offices, Llangefni, by not later than 9 a.m. on July 23.

July 23 RHOSNEIGR. — Erection of a new Council school at Rhosneigr, for the Anglesey Education Committee. Plans and specifications may be inspected at the office of Jos. Owen, F.R.I.B.A., county architect, Menai Bridge, Exchange Chambers, Holyhead. Tenders, endorsed "Rhosneigr Council School," to be sent in to Mr. R. H. Williams, Secretary of Education, Education Offices, Llangefni, not later than 9 a.m. on July 23.

July 23. NANTWICH.—Alteration of existing gas fittings, and supply and putting in of new fittings at the Nantwich Workhouse. Particulars from the Master of the Workhouse at Nantwich, where a copy of the specifications may be seen. Tenders, marked "Gas Fittings," to be sent not later than July 23, to C. E. Speakman, clerk to the Guardians, Poor Law Offices, Nantwich.

July 23. LEIGH-ON-SEA.—Extensions at the gasworks, for the U.D.C., comprising the erection and completion of a new retort-house, exhauster-house, boundary wall, approach, and other works. Particulars at the office of Mr. J. W. Liversedge, Assoc.M.Inst.C.E., engineer and surveyor to the Council, Council Offices, Leigh-on-Sea, on payment of a deposit of £3 3s. Tenders, endorsed "Gasworks Extensions," to be sent not later than July 23, to W. Carlyle Croasdell, clerk to the Council, Council Offices, Leigh-on-Sea.

July 24. SLEAFORD.—Erection of a Wesleyan school chapel, Grantham Road, Sleaford. Quantities with Mr. A. E. Lambert, architect, 22, Park Row, Nottingham, on payment of a deposit of 10s. Plans can be seen at 24, Jermyn Street, Sleaford. Tenders to be delivered to the Secretary, Mr. J. Chatwin, 24, Jermyn Street, Sleaford, before 10 a.m. on July 24.

July 24. PENGAM.—Erection of an infectious diseases hospital near Pengam. Particulars with Mr. P. Vivian Jones, P.A.S.I., architect and surveyor, Hengoed, with whom plans may also be seen. A deposit of £3 3s. is required for the quantities and specifications. Tenders to be sent not later than July 24 to Frank T. James, clerk, 134, High Street, Merthyr Tydfil.

July 25. SOUTHMOLTON.—Erection of class-rooms at the United Schools, Southmolton. Particulars at the school, on application to the Master. Tenders to be sent to Mr. J. Kingdon, East Street, Southmolton, not later than July 25.

July 25. DUNFERMLINE. — Alterations to miners' cottages, Fordell Village. Tenders wanted for the mason and brick, carpenter and joiner, plumber, slater, plaster and cement works, for the Trustees of the late Right Hon. W. G. M. Henderson, of Fordell. Particulars with Thos. Hyslop Ure, architect, 42, Carnegie Street, Dunfermline, with whom tenders are to be lodged not later than July 25, by 10 a.m., marked outside, "Fordell Cottages."

July 27. NEW HERRINGTON (Durham). — Erection of two cottages adjoining the Recreation Ground of New Herrington Workmen's Club. Plans and specifications at the Club premises. Tenders to be sent not later than July 27 to W. Hill, Secretary, New Herrington, Fence Houses, Co. Durham.

July 27. HORNCASTLE.—Erection of a Grammar School at Horncastle, in Lincs. Bills of quantities and form of tender with Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln, not later than July 8, on payment to them of two guineas. Drawings and conditions of contract may be inspected at the offices of the architects. Tenders to be delivered to H. Tweed, clerk to the Governors, 6, Lindsey Court, Horncastle, before 10 a.m. on July 27.

No date. SOUTHMEAD (Bristol).—Erection of blind school, at Southmead, near Bristol. Drawings and form of contract may be inspected upon written application to the architect, Mr. Edward Gabriel, 42, Old Broad Street, London, E.C., or at 12, Orchard Street, Bristol. Application for bills of quantities and form of tender must be addressed to the superintendent, Rev. H. T. G. Kingdon, School of Industry for the Blind, Queen's Road, Clifton, Bristol, and on payment of the sum of £1 1s. (not returnable) they will be forwarded.

July 27. WILLESDEN.—Extension of existing subway at the London and North-Western Railway, and other works in connection therewith, in the parish of Willesden, for the Metropolitan Water Board. Particulars at the offices of the engineer-in-charge, at "The Firs," Southern Road, Fortis Green, Finchley, N. Particulars from the engineer on the production of an official receipt for the sum of £5, which must be deposited with the accountant at Savoy Court, Strand, W.C. Tenders, enclosed in sealed envelopes, addressed to the clerk, Metropolitan Water Board, Savoy Court, Strand, W.C., and endorsed "Tender for Subway," must be delivered at the offices of the Board not later than 10 a.m. on July 27.

July 28. DURHAM.—Erection of Council schools Wolsingham, West Auckland, Bowburn, and Harlow Green. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained as follows:—Wolsingham (for about 500 scholars), at the office of Mr. F. H. Livesay, architect, Newgate Street, Bishop Auckland. West Auckland (for about 650 scholars), at the office of Messrs. Vaux and Mark, architects, 29, Norfolk Street, Sunderland. Bowburn (for about 450 scholars), at the office of Mr. H. T. Gradon, architect, Market Place, Durham, Harlow Green (for about 476 scholars), at the office of Mr. J. W. Rounthwaite, architect, 13, Mosley Street, Newcastle-on-Tyne. Sealed tenders (endorsed with name of school) are to be sent, not later than July 28, to A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

July 29. RICKMANSWORTH.—Erection and completion of a new County Council infants' school at Mill End, Rickmansworth. Particulars at the County Surveyor's Office, Hatfield, upon payment of two guineas. Tenders, endorsed "Tender for New Infants' School, Mill End, Rickmansworth," to be delivered not later than 5 p.m. on July 29 to Urban A. Smith, County Surveyor, Hatfield.

August 5. NAAS.—Erecting seventy-two cottages in pairs, for labourers, and 160 single cottages, including fencing, and fencing thirty-nine half-acre plots additional. Particulars with D. J. Purcell, clerk of Naas Council, Naas, or at the office of the Council's engineer, Francis Bergin, Esq., 36, Westmoreland Street, Dublin, where copies can be had on payment of 2s. 6d. Tenders to the clerk, as above, not later than 3 p.m. on August 5.

August 6. SWANSEA.—Erection of new offices on the Eastern Side of the Prince of Wales Dock Lock, for Swansea Harbour Trust. Particulars at the office of the Trustees' Engineer, Mr. A. O. Schenk, M.Inst.C.E., Harbour Offices, Swansea. Tenders, marked "Tender for New Offices," to be delivered before 10 a.m. on August 6, to Talfourd Strick, clerk, Harbour Offices, Swansea.

August 7. RHONDDA.—Provision and erection of temporary iron school buildings at Cymmer and Tylorstown, for Rhondda U.D.C. Particulars with Mr. Jacob Rees, architect, Hillside Cottage, Pentre, Rhondda. Tenders to be sent to the Chairman of the Building Committee, at the Council Offices, Pentre, Rhondda, not later than August 7.

No date. STANLEY.—Alterations and additions to St. Joseph's Catholic Elementary Schools, Stanley. Names, with a deposit of £1 1s., to be sent to Brodrick Lowther and Walker, architects, 77, Lowgate, Hull.

No date. BALLYSHANNON (co. Kildare).—Extending, providing screen and cooking range, and erecting porch for Ballyshannon National School, co. Kildare, in accordance with plans and specifications of Board of Works, which may be inspected at the Presbytery, Suncroft, Curragh Camp.

No date. COLNE.—Carrying out of the following works in connection with the erection of public baths in Swan Croft:—1. Excavator, mason, and bricklayer's work. 2. Carpenter and joiner's work. 3. Slater's work. 4. Plumber and glazier's work. 5. Tiler's work. 6. Painter's work. 7. Ironfounder's work. 8. Heating engineer's work. Persons wishing to tender for any or the whole of the above works are invited to send in their names and addresses to Mr. T. H. Hartley, borough surveyor, Town Hall, Colne, who will forward quantities and form of tender in due course.

ENGINEERING.

July 17. GRIMSBY.—Supply of two new boilers of Cornish type, for heating the town hall, together with the required connections and alterations to existing system. Tenders, endorsed "Boilers, Town Hall," to be addressed to the Chairman of the Estates Committee, and delivered at the Town Clerk's office, West St. Mary's Gate, not later than noon on July 17.

July 18. BISHOP'S CASTLE (Salop).—Laying of about 548 lineal yds. of 3-in cast-iron water pipes, and other works connected therewith, for water supply to Bishop's Castle Parish Church, Salop. Particulars with A. Hamar, surveyor, 27, Welsh Street, Bishop's Castle, to whom tenders, endorsed "Tenders for Laying Water Main," are to be sent not later than July 18.

July 20. NOTTING HILL.—Erection of iron fire escape staircases, etc., at the St. Marylebone Infirmary, Rackham Street, Notting Hill. Tenders not later than 10 a.m. on July 20, to Henry T. Dudman, clerk to the Guardians, Northumberland Street, Marylebone Road, W.

July 20. CLEGGAN (co. Galway).—Construction in concrete of an extension to the present pier at Cleggan, county Galway, 165 ft. or thereabouts, in length, for the Board of Public Works. Particulars at the offices of the County Council, Galway, and from H. Williams, secretary, Office of Public Works, Dublin, to whom tenders are to be sent not later than 10 a.m. on July 20.

July 21. LONDON, W.—Supply of girder bridges 6 ft. to 20 ft. span, for the India Office. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by 2 o'clock p.m., on July 21.

July 23. WATFORD.—Sinking and lining a 30-in. borehole, and the execution of other work in connection therewith. Particulars with the engineer, Mr. D. Waterhouse, Council Offices, High Street, Watford. Schedule of quantities and form of tender from the engineer upon deposit of £2. Tenders, with schedule of quantities, endorsed "Tender for Borehole, Contract No. 1," to be sent not later than 9 a.m. on July 23, to H. Morten Turner, clerk to the Council, High Street, Watford.

July 23. PORT-GLASGOW.—Construction of a reservoir, filters, and storage tank, and supplying and laying cast iron pipes and other relative works. Particulars with the town clerk, as below, or at the office of the engineer, Mr. Archibald Leitch, C.E., 140, West George Street, Glasgow, on deposit of £1 1s. Tenders, endorsed "Tenders for Construction of Water Works," to be lodged not later than July 23, with Andrew Paton, Town Clerk's Chambers, Port-Glasgow.

July 27. BRIDGWATER.—Laying of 9,900 yds. or thereabouts, of cast-iron pipes, 2 and 3 in. in diameter, and other works appertaining thereto, in accordance with the drawings, specifications, and instructions of the engineer, Mr. W. Alexander Collins, Binford Place, Bridgwater, for the R.D.C. Particulars on payment of two guineas. Tenders, endorsed "Tender for Water-Supply Works," to be delivered at the Rural District Council Offices, in Bridgwater, on or before July 27, to T. M. Reed, clerk to the Council.

July 27. ENFIELD.—Manufacture and erection of a triple-expansion pumping engine, two Lancashire steam boilers, fitted with induced draught hot air economisers, superheaters, steam pipes, connections, and all appurtenant works. Also 15-ton traveller, iron flooring, etc., at Hadley Road, Well, Enfield, Middlesex. Particulars at the New River District Engineer's Offices of the Metropolitan Water Board, 173, Rosebery Avenue, Clerkenwell, E.C. Particulars from the engineer upon the production of an official receipt for the sum of £10, which must be deposited with the accountant at Savoy Court, Strand, W.C. Tenders, addressed to the Clerk, Metropolitan Water Board, Savoy Court, Strand, London, W.C., and endorsed "Tender for Engines, Hadley Road," to be delivered at the offices of the Board not later than 10 a.m. on July 27.

July 27. BRIDGWATER.—Supply of about tons of 2 in. cast-iron pipes and other cast to be made in accordance with the specificat of the engineer, Mr. W. Alexander Collins, Bin Place, Bridgwater, for the R.D.C. Particular the Rural District Council Offices, in Bridgw on payment of two guineas. Tenders, endo "Tender for Cast-iron Pipes," to be delivere T. M. Reed, clerk to the Council, Rural Dis Council Offices, in Bridgwater, not later than of July 27.

August 10. HORNSEA.—Supply of three-t 8 in. diameter, deep-well pumps, for the exten of the Council's Waterworks, at Hornsea. D ings may be inspected at the offices of the C cil's consulting engineers, Messrs. Maxted, K and Coles, Burnett Avenue, Hull, from whom specification and bills of quantities may be tained on payment of £1 1s. The engineers also, if required, provide copies of the drawi six in number, at a cost of 3s. 6d. for each d ing, which sum will not be returned. Tender be delivered by noon on August 10.

IRON AND STEEL.

July 29. LONDON, E.C.—Supply and deli of structural steel and ironwork for Howrah tion, for the East Indian Railway Co. Ten marked "Tender for Structural Work," to be not later than noon on July 29, to C. W. Yo Secretary, Nicholas Lane, London, E.C. For specification a fee of £1 1s. is charged, which not under any circumstances be returned.

PAINTING AND PLUMBING.

July 15. BATLEY.—Painter's work at the " man's Shelter," Batley. Particulars at the bor engineer's office, Town Hall, Batley. Tenders dorsed "Cabman's Shelter," to be sent not than July 15, to J. H. Craik, town clerk, Batl

July 16. CLAPTON, N.E.—Painting and re ing certain exterior and interior work at the E ney Electricity and Destructor Works, Mill Road, Clapton, N.E. Tenders, marked "Te for Painting at Electricity and Destructor Wo to be delivered personally, or by an authorise presentative, at a meeting of the Borough C cil to be held at the Town Hall, Mare St Hackney, N.E., on July 16, at 7 p.m. Partic with W. A. Williams, town clerk, Town Hall, Street, Hackney. Fair wages clause.

July 17. NORWICH.—Colouring, painting, w washing, etc., various schools, for Norwich cation Committee. Particulars upon payme 5s. per school. Tenders not later than noo July 17, endorsed "Tender for Colouring," Chas. J. Brown, architect and surveyor, C dral Offices, The Close, Norwich.

July 17. BEDFORD.—Painting a portion o outside of a workhouse in accordance with s fications, which can be seen at the Guard Offices, or at the workhouse. Tenders, end "Painting," to be delivered not later than 17, at the Guardians' Offices, 115, High S Bedford.

July 17. CANTERBURY. — Painting, re and other works, at the Kent County Lunatic lum, Chartham Downs, near Canterbury. Bil quantities on depositing £5, with W. J. Jenn architect, 4, St. Margaret's Street, Canterbur whom tenders are to be sent not later tha o'clock on July 17.

July 17. FLEETWOOD.—Painting and work to be carried out at the Fleetwood Thornton Council Schools during the sum vacation, for the Lancashire Education Comm in accordance with a specification to be see the office of H. Stonestreet, district clerk, E tion Offices, Fleetwood, to whom tenders a be sent not later than July 17.

July 18. BROOMHILL.—External painting repairs to the Broomhill Co-operative Soc premises at Broomhill and Red Row. Spec tions can be seen at the society's offices at Br hill. Estimates to be delivered on July 18 dressed to the Committee, sealed, and end "Tender for Painting"

July 18. CARDIFF. — Internal colouring painting at the Cardiff Workhouse, accordin specification, a copy of which, together wit form of tender, may be obtained from Arth Harris, clerk, Union Offices, Queen's Cham Cardiff, to whom tenders, with specificatio tached, must be returned endorsed "Tende Internal Painting, Cardiff Workhouse," not than 10 a.m. on July 18.

July 21. ENFIELD.—Paint work and decor at Fortescue Villas, Gentleman's Row, En Particulars with the architect to the Guard Mr. Stuart Hill, 106, Cannon Street, E.C. Ten marked "Tender for Paint Work, etc.," to be not later than 4 p.m. on July 21, to F. Sh clerk, Lower Tottenham.

July 21. WREXHAM.—Painting, colour-wa and repairs necesary to six Council schools the Denbighshire Education Authority. Pa lars on application to the Headmaster. Te to be delivered not later than 12 noon on Ju endorsed on the outside with the name o school for which the work is tendered, to W D. Wiles, county architect and surveyor, 42a, Street, Wrexham.

July 21. HULL.—Supply of plumbers' materials for the period ending December 31 next. The applicants must also be prepared to undertake such plumbing work as may be required. Particulars with Robert H. Winter, Solicitor, Clerk to the Guardians, St. Mary's Chambers, Hull, to whom tenders are to be sent not later than noon on July 21.

July 22. PORTSMOUTH.—Repairs to the windows of the Children's Home at Milton, Portsmouth. Repairs to the pediments and cornices and the lead gutters behind the pediments. Particulars with the architects (Messrs. Rake and Caswell, Prudential Buildings, Commercial Road, Landport). Tenders to be delivered to the Chairman at the Children's Home, Milton, not later than noon on July 22. Fair wages clause.

July 22. LONDON, N., and MARGATE.—Cleaning and painting work at—1. The Northern (Convalescent) Fever Hospital, Winchmore Hill; 2. East Cliff House, Margate, for the Metropolitan Asylums Board, in accordance with conditions of contract and specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief to the Board. Particulars at the office of the Board, Embankment, E.C., upon payment of a deposit of £1 in each case. Tenders to be delivered at the office of the Board not later than 10 a.m. on July 22.

July 22. DARTFORD.—Cleaning and painting works and repairs at Gore Farm (Convalescent) Fever Hospital, near Dartford, Kent, in accordance with conditions of contract and specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, Metropolitan Asylums Board. Conditions of contract, bills of quantities, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £1. Tenders to be delivered at the office of the Board not later than 10 a.m. July 22.

No date. CREWE.—Painting and decorating the interior of the Crewe Technical Institute. Specifications can be obtained from Director of Education, Municipal Buildings, Crewe.

No date. CREWE.—Cleaning and decorating Christ Church, Crewe. Names to be submitted to Mr. John Brooke, F.R.I.B.A., 18, Exchange Street, Manchester, from whom particulars may be obtained.

No date. GREENWICH.—Painting, decorating, and general repairs to the Roan Schools, to be carried out during the month of August. For specification and form of contract, apply to John Sainsbury Gilbert, surveyor to the Roan Schools, 10, Queen Street, Cheapside, E.C.

ROADS AND CARTAGE.

July 15. IPSWICH.—Supply of the following materials:—500 yds. of 3 in. straight shamrock or York kerbing, 150 yds. of 3in. circular Shamrock or York kerbing, 100 yds. 4in. circular granite kerb, 250 tons 4in. by 4in. limestone cubes, 150 tons French quartzite, hand broken to 2in. gauge, 500 to 1,000 tons crushed blast-furnace slag. Particulars with E. Buckham, borough surveyor, Town Hall, Ipswich. Tenders, addressed to the Paving and Lighting Committee, Town Hall, Ipswich, to be sent not later than 6 p.m. on July 15.

July 16. COULSDON.—Making up Purley Park Road, Coulsdon, for Croydon R.D.C. Particulars with Mr. R. M. Chart, Surveyor to the Council, Town Hall, Croydon. Tenders to be delivered not later than noon on July 16, to E. J. Gowen, Clerk of the Council, Town Hall, Croydon.

July 17. DALTON-IN-FURNESS.—Construction and completion of the kerbing, flagging, tar macadam, etc., of several streets. Particulars at the surveyor's office, Town Hall, Dalton-in-Furness. Tenders, endorsed "Street Works," to be delivered not later than noon on July 17, to W. Richardson, surveyor to the Council, Dalton-in-Furness.

July 20. SPENNYMOOR.—Making up of Grainger Street (North), and the back street between Back Post Office Street and Barber's Row, Spennymoor. Particulars with Mr. C. R. Spencer, Surveyor to the Council, Spennymoor. Tenders, endorsed "Street Works," to be sent to F. Badcock, Clerk to the Council, Spennymoor, not later than July 20.

July 20. PLYMOUTH.—Making up and completing streets, under Section 150 of the Public Health Act, 1875, namely: Blandford Road, Section I.; Ganna Park Road; Park Road, Section 3; Thornhill Road (part of). Particulars with James Paton, Borough Engineer, Municipal Offices, Plymouth, to whom tenders must be delivered not later than 5 p.m. on July 20.

July 21. WATFORD.—Making up of the following roads:—Queen's Avenue (525 yds. in length), Whippendell Road, Pt. II. (333 yds.), Haydon Road (248 yds.), for Watford U.D.C. Mr. D. Waterhouse, surveyor. Tenders, endorsed "Tender for Private Street Works," to be sent not later than noon on July 21, to H. Morten Turner, Clerk to the Council, 14, High Street, Watford.

July 22. HORWICH.—Sewering, levelling, paving, flagging, etc., of twelve new streets. Plans, sections, and specification may be seen at the office of the surveyor, Mr. Thomas Green, Public Hall, Horwich, from whom bills of quantities with form of tender can be obtained on deposit of £1. Tenders, marked "Tender for New Street Works," to be delivered not later than July 22 to Peter Taberner, Clerk, Council Offices, Horwich.

July 22. BIRMINGHAM.—Private street works in Cobden Place and Keyworth Place, off Edward Road, including tar macadam and blue brick paving, channelling, gullies, connections, etc., for the Public Works Committee of the Corporation. Particulars with Henry E. Stilgoe, M.Inst.C.E., city engineer and surveyor, The Council House, Birmingham, on deposit of £2. Tenders, endorsed "Tender for Private Street Works," addressed to the Chairman of the Public Works Committee, will be received not later than Wednesday, July 22.

July 22. DARTFORD.—Tar paving two airing courts, at the Gore Farm (Convalescent) Fever Hospital, Dartford, Kent, in accordance with Drawing, Conditions of Contract, and Specification prepared by Mr. W. T. Hatch, M.Inst.C.E., M.I.Mech.E., Engineer-in-Chief Metropolitan Asylums Board. Drawings, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £1. Tenders to be delivered at the office of the Board not later than 10 a.m. on July 22.

July 23. ENFIELD.—Making up the private roadway at the rear of Palace Parade, Church Street, Enfield, for Enfield U.D.C. Particulars with Mr. Richard Collins, the Council's surveyor, Public Offices, Enfield, Middlesex. Tenders not later than noon on July 23, endorsed "Tender for Roadway," to T. W. Scott, clerk to the Council. Fair wages clause.

July 28. BARKING. — Private street works at Howard, Shaftesbury, and Clarkson Roads, Barking Town, for the U.D.C. Particulars with Mr. Charles Ford Dawson, Surveyor to the Council, Public Offices, Barking. Tenders, endorsed "Private Street Works," addressed to the Chairman of the Highways and Buildings Committee, Public Offices, Barking, are to be delivered not later than noon on July 28, to H. Hargreaves, Clerk to the Council, Public Offices, Barking. Local labour. Fair wages clause.

July 29. RUNCORN.—Supply of broken stone, about 200 tons of 1½in. and about 300 tons of 2in. for road metal, to be delivered in such quantities as may be required; to be Penmaenmawr stone, or stone similar in nature and equal in quality, and to be broken into cubes of the above-named sizes. Tenders to state the prices delivered at the following places in Runcorn—namely:—Stone Croft, Top Locks, and Crane Wharf, Halton Road; and to be accompanied with samples of the metal to be supplied. Tenders to be sent, not later than July 29, endorsed "Tender for Road Metal," to the Chairman of the Highways Committee.

No date. GREENFORD.—Supply of about 500 to 1,000 tons of road gravel, picked chalk flints, and granite, to be delivered in or between the months of September, 1908, and January, 1909, for Greenford U.D.C. Tenders must be on the forms to be obtained from W. H. Read, F.S.I., surveyor, The Avenue, West Ealing.

No date. BINGLEY.—Sewering, pitching, and macadamising, etc., of Belgrave Road, Bingley. Particulars with H. Bottomley, surveyor, Town Hall, Bingley.

SANITARY.

July 21. BARNSTAPLE.—Construction of sewerage works at Bickington. Quantities can be had on deposit of one guinea at the office of Mr. E. G. Kingwell, surveyor, 85, Boutport Street, Barnstaple, which must be sent to the Chairman of the Parochial Committee, E. Pitts Tucker, Esq., Bridge Chambers, Barnstaple, not later than July 21.

July 23. LEIGH-ON-SEA.—Erection and completion of public conveniences, by contractors experienced in ferro-concrete work. Particulars at the office of Mr. J. W. Liversedge, Assoc.M.Inst. C.E., engineer and surveyor to the Council, Council Offices, Leigh-on-Sea, on payment of a deposit of £2 2s. Tenders, endorsed "Public Conveniences," to be sent not later than July 23 to W. Carlyle Croasdell, Clerk to the Council, Council Offices, Leigh-on-Sea.

July 28. SHREWSBURY.—Reconstruction of the sanitary fittings and plumbing at the Salop Infirmary. Particulars at the offices of the North-Eastern Sanitary Inspection Association, 9, Albert Square, Manchester, and at the office of the undersigned, at the Infirmary, on payment of £1 1s. Tenders, marked "Sanitary Fittings, etc.," to be delivered not later than the morning of July 28 to Joseph Jenks, Secretary, Salop Infirmary, Shrewsbury.

MISCELLANEOUS.

July 16. HANDSWORTH.—Making manual (woodwork) benches etc., and painting, distempering, etc., schools during the summer holiday. Specifications and drawings for the benches, etc., may be seen with J. E. Ingram, Secretary, Education Offices, Soho Hill, Handsworth, Staffordshire, to whom tenders endorsed "Woodwork Benches," or "Painting, etc., of Schools," are to be delivered not later than noon of July 16.

July 17. MARGATE.—Executing various works in connection with:—1. Painting, etc., Girls' Department, New Cross Street Schools. 2. Alterations to Doors and removal of Galleries, etc., at Salmstone and New Cross Street Schools. 3. Painting Exterior Salmstone Schools. Particulars at the Borough Surveyor's Office, Town Hall, Margate. Separate sealed tenders, endorsed as to which contract they refer, are to be delivered at the office of Mr. Leonard Hill, Secretary, 8, Cecil Square, Margate, not later than noon, July 17.

July 18. NORTH SHIELDS.—Supply of the following materials, etc., from October 1, 1908, to March, 1910, for Whitley and Monkseaton U.D.C.:—Glass, sash tools and brushes, paints, oil, etc., and sundries, Portland cement, timber, manhole covers, street gullies, and lamp pillars. Particulars with Mr. John Moore, Surveyor to the Council, Council Buildings, Whitley Road, Whitley Bay. Tenders, endorsed "Tender for ——," to be sent to Augustus Whitehorn, Clerk to the Council, 60, Saville Street, North Shields, not later than July 18.

July 22. NORWICH.—Supply of various goods and materials required to July 31, 1909, comprising:—Stoneware pipes, concrete flags, granite macadam, limestone chippings, cast-iron gullies, gully grates and frames, manhole covers, lamphole covers, lamp pillars, cast-iron water pipes, sluice valves, hydrants, hydrant, valve, and stop tap boxes, ferrules, bib cocks, stop cocks, tinned lead piping, pitch and creosote oil, Portland cement, ground lime, etc., etc. Particulars with the Surveyor, Mr. Thomas Green, Council Offices, Horwich. Tenders to be delivered not later than July 22 to Peter Taberner, Clerk, Council Offices, Horwich.

No date. MANCHESTER.—Supply and delivery of 65 porcelain wash baths for Bradford Baths, for the Baths Committee of Manchester Corporation. Forms of tender and full particulars may be obtained upon application at the City Architect's Office, Town Hall.

Publisher's Notices.

Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

	s.	d.
At all newsagents and bookstalls - -	8	8
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ACCURATE quantities prepared by London Surveyor of experience in shortest possible time. Reasonable terms. Provincial work undertaken. Jobs measured up and settled in town or country.—Surveyor, 441, Birkbeck Bank Chambers, Holborn, W.C. 3031

ADVERTISER (27), seeks re-engagement; ten years' first-class experience of estate building, management and repairs, etc.; qualified to prepare plans and estimates, including quantities for new works; ex. refs.—Y., 86, Coniston Road, Muswell Hill, N. 4407

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECT'S Assistant (24), desires engagement —seven years' varied experience; neat, expeditious draughtsman; honours construction and architectural certificates; excellent references; moderate salary.—Address, W. E. K., 34, Wingate Road, Hammersmith, W. 4375

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Fred Griffiths, 6, Bath Terrace, Hanwell, London, W. 4421

ARCHITECT'S Assistant, 9 years' experience; hon. mention, R.I.B.A., for design; working drawings, details, and competition drawings; London preferred.—Box 4434, Builders' Journal Office.

ARCHITECT'S Junior Assistant (21½) desires engagement; 5½ years' experience; working drawings, details, measuring up; levelling, surveying, etc.; assist with quantities; Inter. R.I.B.A.; moderate salary.—Box 4435, Builders' Journal Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, Builders' Journal Office.

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities, R.A. Exhibitor; expert perspectives.—Box 4409, Builders' Journal Office.

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Assistant (21), disengaged; five years' London and Provincial experience; working drawings, specifications, details, levelling, assist with quantities; five first classes in construction; highest references, 25s. — C. D. H., 7, King's Parade, Finchley, N. 4412

ARCHITECTURAL Assistant (34), sixteen years' splendid experience, first class designer and colourist, practical, and artistic, working drawings, perspectives, details, excellent references; salary to be arranged. — Box 4430, Builders' Journal Office.

ARCHITECT'S or Surveyor's Asistant, 14 years' experience in details, perspectives, quantities, surveying and levelling; good draughtsman; excellent testimonials; total abstainer; salary 45s.—Box No. 4438, Builders' Journal Office.

ARCHITECT'S Assistant, twelve years' experience, desires engagement; good draughtsman, designs, working and detail drawings, etc.; excellent references.—W. A. N., 17, Hugo Road, Tufnell Park, N. 4326

ARCHITECT'S Assistant (25), 6 years' experience, medallist and prize-winner; knowledge of quantities; good references; town or country.—Apply Box 4439, Builders' Journal Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, Builders' Journal Office.

ADVERTISER desires engagement in or near London; expert surveyor and leveller; just completed important survey in the North; plans, specifications, superintendence. — Box 4391, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (24), passed P.A.S.I. exam.; six years' varied London experience —working drawings, dilapidations, surveying, levelling, measuring and usual office routine; good ref.; salary 30s.—Box 4387, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (21), 4½ years' London and Provincial experience; Student R.I.B.A.; excellent refs.; experience more an object than salary; country preferred.—E. H. H., 68, Newbridge Hill, Bath. 4386

ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, Builders' Journal Office.

BUILDER'S Clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4373

BUILDER'S Clerk (21), good draughtsman, thorough practical knowledge of construction and details, certificates for geometry, building and carpentry, and joinery. Capable of assisting with estimates, and picking up decorative work.—Box 4,400 Builders' Journal Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, Builders' Journal Office.

CARPENTER-JOINER (31), seeks situation; good all-round man, good draughtsman, etc. Three years present job, now finishing. Town, country, and teaching experience. Excellent references.—G. K., 8, Tudor Road, Upton Park. 4313

CLERK of Works, contractors' manager, or general foreman disengaged, carpenter and joiner, practical in all details; smart, energetic, trustworthy, recently concluded large industrial undertakings; accustomed to large jobs. — Box 4341, Builders' Journal Office

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, Builders' Journal Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GENERAL Assistant (30), fourteen years' excellent all round experience, good knowledge of construction, sanitary science, and everything in building estate development; Surveyors' Institution and Municipal and County exams. £4 4s. and prospects of betterment.—Apply Box 4318, Builders' Journal Office.

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, Builders' Journal Office.

GENERAL Foreman wants job; town or country; carpenter; age 44; experienced new or alterations; good timekeeper and manager of men; highest references; moderate terms. — King, 4, Burgos Grove, Greenwich. 4225

IMPROVER or junior assistant (22), student R.I.B.A., excellent knowledge, practical building construction experience, supervising, neat draughtsman, surveying; assist quantities; small salary, specimens; good references.—Box 4090, Builders' Journal Office.

IMPROVER or junior assistant (21) desires position with architect or surveyor; working drawings, quantities, surveys, qualified P.A.S.I.; nominal salary.—R. R. F., 25, Queen Street, Hemel Hempstead. 4321

JUNIOR Draughtsman (19), desires re-engagement; assist generally; good refs.; town and country; shorthand; probationer; R.I.B.A. — C. Weston, The Laurels, Rotherfield, Tunbridge Wells. 4376

JUNIOR Assistant (20) requires situation in surveyor's or builder's office, 3 years' experience with London surveyor; can assist in abstracting, working up, variations, etc.; willing worker.—W. Cooke, 102, Faraday Road, Wimbledon, S.W. 4333

JOINER-MACHINIST, or general assistant; used to office, bench, or building work, planer, saw, spindle, mortise, or entirely bench; construction certificates; good draughtsman; abstainer; references.—Box 4419, Builders' Journal Office.

MANAGER to New York architect last seven years, 16 years' experience; expert in American fireproof construction, design, specifications and supervision, desires re-engagement. — Turland Goosey, 20, Primrose Hill, Northampton. 4448

MACHINIST, good all-round, wants job, town or country; take charge or otherwise, thorough knowledge of gas-engine; good refs.—T. S., 4, York Terrace, King's Road, Herne Bay. 4450

PRACTICAL machinist (joiner), used to elephant spindle, and first-class work; 10 years last place. —Cruse, Boxford, Newbury. 4405

QUANTITY Surveyor's assistant, just completing three years' articles, passed Intermediate of Surveyors' Institution; first class references, seeks billet in busy office; salary £7 per mensem.—Box 4346, Builders' Journal Office.

SURVEYOR'S Junior Assistant (19), Student S.I., served articles; good leveller, draughtsman and tracer; experienced in private street works, building, sewerage, water supply, etc.; excellent testimonials; small salary. — Box, 4284, Builders' Journal Office.

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THOROUGHLY competent builder's book-keeper and general assistant requires engagement, 15 years' experience in London with builders and shopfitters; good reasons for leaving present berth; excellent references. Age 32.—Apply Box 4414, Journal Builders' Office.

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THE ESTATES MANAGER AND AGENT to well-known public institutions. London estates (comprising over 1,000 properties), holding appointment, over 11 years, desires similar appointment in town or provinces, with view to improving his position; exclusive knowledge and experience in management of leasehold and troublesome weekly properties; thoroughly qualified architect and surveyor; administrative ability and experience in rent collecting; highest references. — Apply Box 4337, Builders' Journal Office.

TO ARCHITECTS.—An experienced Civil Engineer will advise upon and assist on drainage disposal, water supply and estate development; roads, surveys, levels, etc.—Apply Box 4121, Builders' Journal Office.

WANTED, architect and surveyor's assistant, shortly disengaged; thorough general experience; quick and accurate draughtsman; supervising; entire charge.—Box 4447, Builders' Journal Office.

WANTED at once, position as builder's manager, assistant, or general foreman; disengaged; smart, energetic; abstainer; references. — Box 452, 54, Broadway, Wimbledon. 4394

YOUTH (age 18) requires situation in builder's or surveyor's office. Desirous of learning estimating. Three years' previous experience.—Apply W. B., 8, Medley Road, West Hampstead, N.W. 4443

ur 22, 1908. Volume 28, No. 702.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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M Hulot's awings.

These magnificent drawings illustrating their author's conjectural restoration of the fortified of Selinus are now on view at the lly of the Royal Society of Painters ater Colours, and we advise those of aders who are interested in the sub- f architectural draughtsmanship to i themselves of the opportunity thus rd to inspect what are truly marvel- works of art. Prepared during the ed architect's tenure of the *Grand e Rome* the brilliancy of execu- isplayed in these drawings is little of wonderful, and whether the sub- elineated be represented by large- detail drawings, by exceedingly e and delicately rendered plans, by elevations, or by water-colour and perspective sketches, the impress of er-hand is always perceptible. Not- anding the vastness of the subject d by M. Hulot, his choice is a very one, as the old Sicilian town of s (which was conquered and de- l by the Carthaginians under Han- lin 409 B.C., then rebuilt as a city to the Carthaginians; and, finally, destroyed, never to be rebuilt, at se of the first Punic war) contains, dition to other remains of antiquity, ns of two groups of temples, situ- n the acropolis and the eastern hill city. All are completely ruined, e materials of each still remain in host perfect state of preservation, to the fact that the site has never ccupied since 250 B.C. The sculp- netopes from some of the temples long the most important examples ly Hellenic art, and the buildings lves, none of which are usually ered to be later than the 5th cen- .C., are of the greatest interest as nting the earliest known examples Doric style, and differing, in many nt details, from all other types. their archaic peculiarities are the iminution of the columns, the nar- atules over the metopes, and a cavetto, or necking, under the ypotrachelia. The great temple on the eastern hill of Selinus was rest peripteral temple of the whole c world, and was never quite com- although the whole of the main e was built. Among M. Hulot's gs there are various plans, eleva- d sections of the port and its forti- s, illustrating the existing remains e author's restorations among which is a beautifully executed bird's-eye view in pencil—in our opinion the finest drawing in the collection—of the city and acropolis. Other works of special interest include an immense tinted elevation of the south front of Selinus, and a very complete set of beautifully coloured and finished drawings of one of the temples (C) from the group on the acropolis, in which the author's restoration of its polychromatic ornamentation is very carefully rendered. M. Hulot also exhibits some charming examples of pictorial architecture, embodied in water-colour drawings of subjects from Palermo, the Chapelle Palatine and St. Clement's at Rome, and other buildings.

The Reconstruction of Victoria Station.

The recently-completed Victoria Station of the London, Brighton, and South-Coast Railway is a great improvement on its predecessor (constructed about fifty years ago), both in regard to the arrangements made for the convenience of passengers, and for those dealing solely with the traffic. The old station had a length of about 800ft., and a breadth of 230ft., whilst the new one (1,500ft. long and 320ft. wide) occupies an area of nearly 16 acres—an area about double that of the former station. Not only, however, has the capacity of the station itself been so enormously increased, but the means of access to it have also been greatly improved. Formerly the whole of the traffic, amounting sometimes to 700 trains (in and out) per day, had to be worked on two lines, one up and one down, but by widening Grosvenor Bridge the railway company has now been enabled to provide five lines as far as Battersea Park, beyond which there is a four-track road to Three Bridges. The existing façade to the station yard has been extended to the Grosvenor Hotel by a building (faced externally with red bricks and Portland stone, and containing 150 rooms) placed about 50ft. behind the line of frontage of the old station, to enable a covered area to be formed whereby passengers can be taken up and set down under shelter. The main line booking-hall (a spacious apartment 120ft. long and 70ft. wide, fitted with a booking-office enclosure containing 16 ticket issuing windows), the public waiting-rooms, and other offices are all placed under the hotel extension. An admirable feature of the new station appears in the arrangement made for the transit of passengers' luggage, which, instead of being wheeled in the ordinary way from the station entrances to the train, is conveyed by lifts to a series of subways adjoining the platforms, from which it is again raised, by other lifts, to the platform required. The comfort of the travelling public has been further considered and provided for by the erection of a large train indicator placed opposite the main booking hall. We understand that five of the platforms and three through lines are to be equipped and used in connection with the line, now in course of electrification, between Victoria and London Bridge.

An Old Strand Shop.

The *Daily Chronicle* regretfully records the fact that the old Georgian shop-front known as 107, Strand, which has been in the occupation of the family of its present tenants, Messrs. John Burgess and Son, for more than 130 years, is about to be demolished. The lease of the building, which is held direct from the Duchy of Lancaster, does not expire until 1914; but this interesting link with the past was bound to disappear sooner or later to provide space for the inevitable widening of the main artery between east and west. Many and varied have been the changes made in the Strand since the ancient shop with its collection of old-fashioned jugs and pots arranged behind the small window panes was first opened by the founder of the firm (one John Burgess, a Hampshire yeoman), and if only on this account the disappearance of another of the few remaining landmarks of an older and more interesting Strand will be deplored by all genuine lovers of our far too rapidly changing metropolis.

More Subways: An Architectural Opportunity.

The Paris Municipal Council's scheme for constructing subways at some of the more dangerous street crossings of their city is about to materialise. It has been decided to form immediately three subways—one in the Champs Elysées, another in front of the St. Lazare station, and a third at the junction of the Rue de Rivoli with the Boulevard de Sébastopol. Such facilities for the avoidance of accidents to foot-passengers are perhaps even more necessary in Paris than in London, the French driver being notoriously more reckless than the English, while the London policeman's masterly control of

traffic is admittedly inimitable. No details of the Paris scheme are yet to hand; and it remains to be seen whether the Paris Council will take advantage of an excellent opportunity of showing how, by enlisting the aid of the architect, and perhaps of the sculptor also, a street subway may be made to add to the æsthetic amenities as well as to the material convenience of a great city. Perhaps the underground passage itself is entirely hopeless from the architectural point of view, but there is no equally cogent reason why the approach to a subway should be no more than an unadorned hole in the ground. These approaches, obtruding themselves on the public gaze, and being more or less obstructive to those who do not desire to use them, ought to be made to offer "compensation and apology" by pleasing the eye to the full extent that the circumstances will allow. This principle has been hitherto neglected with respect to our own subways. Is it too late to urge it upon the attention of the promoters of the Blackfriars' subway?



BIRD'S-EYE VIEW OF THE FRANCO-BRITISH EXHIBITION.



BRITISH APPLIED ARTS PALACE: DETAIL OF WEST ENTRANCE.
JAMES B. FULTON, F.R.I.B.A., ARCHITECT. ALBERT E. HODGE, SCULPTOR.

SOME NOTES ON THE FRANCO-BRITISH EXHIBITI

As a piece of news, the Franco-B Exhibition at Shepherd's Bush is since stale, there having been such a to get the place opened (although a time it was nothing like finished), such a rush on the part of the daily to publish views of the buildings before the plasterers had finished work and before the grounds had bee out. As a matter of fact, however, only quite recently that the Exhi has been brought to what can be a finished condition, and even now is a considerable amount of work in gress, especially in connection with very large building—the Palace of rative Arts.

With exhibitions of all kinds this ness in bringing things to comp seems to have grown into a recog bad habit: it is always so, for exa with the building trades' exhibi Presumably, the reason is that the such a colossal amount of detail wo be done, and so many separate and firms to be dealt with, that it be impossible to keep everything up to which time, it must not be forgott always set as early as possible in to reduce the promoters' expenses d the preliminary days or weeks whe exhibition is in actual process of con tion, and to get as much out of the as soon and as often as is po Whether, in all cases, this is warran we are not prepared to say, but cert is that the Franco-British Exhibitio not in fit and proper order when the were first admitted in their thou Hence, we have been in no hurry t low the rushing lead of the daily but have taken time to survey the e tion at leisure, and when it can be as it ought to be seen.

The Plan.

The plan of the exhibition has widely circulated, and, we have no is familiar to most readers; hence not reproduce it here: at the same for the information of those who m have seen it, we may say that the p roughly, a long rectangle with the Stadium on one side, the ⊏-shape chinery halls on the other side, and end a semi-circular termination b by avenues radiating from a circus.

At the southern end of the rectar the "Court of Honour," comprising

group of buildings, in the Indian style, ranged around a lake which is spanned by numerous bridges. Then comes the Court of Arts, a very large square space, laid out with parterres, and having at the corners the palaces of British Applied Arts and French Applied Arts, the Palace of Women's Work, and the Palace of Music, with large buildings on either side devoted to the Decorative Arts and the Fine Arts. Next comes the Elite Gardens, with a great sunken band enclosures in the centre, parterres around, and the chief restaurants enclosing the whole. Between the Court of Arts and the Elite Gardens is a lake, spanned by a bridge, and from this was to have risen the Imperial Tower, 250ft. high. We understand, however, that some trouble occurred in regard to the foundations, and that the London County Council would not approve the erection of such a tower, though it is understood that this structure will be built after the close of the present exhibition (the impression is commonly abroad that all the buildings are to be pulled down after the close of the exhibition in October, but our information leads us to believe that nothing of the kind is contemplated, but that the place is to be treated as another Earl's Court—at least for next year). Shorn of the projected tower, this lake and bridge, with the stumpy-looking beginnings of the steelwork sticking up about 15ft., although masked with canvas painted over, is the most unsatisfactory feature of the exhibition, and, for all concerned, it is to be regretted that the tower could not be built as projected. The space beyond the Elite Gardens, which, as already explained, is laid out with radiating avenues from a central circus, is chiefly taken by the pavilions of the Colonies, Canada and Australia having erected especially large buildings.



CAFE PAILLARD. A. LEVARD, ARCHITECT.

The Architecture.

With this brief description of the general lay-out of the Exhibition, we may proceed to give a few notes on the buildings, considered from an architectural point of view. In taking count of such architecture we need to dissociate ourselves from the principles which bind us when considering architecture executed for the serious purposes of habitation or business. Exhibition architecture has a right to be what it likes, so long as it pleases the senses. Functional expression, logical construction, and all the shibboleths need have no place in its category. It can be riotous, unprecedented, profusely rich, and as irresponsible as a harlequinade. At the same time it cannot escape the consequences of such liberty. In the abstract it is easy to conceive buildings erected in that absolutely free manner, and, assuming that there is genius behind it all, the result might be superb from an exhibition point of view. In reality, however, we know that things are otherwise. We recall efforts of that kind at other exhibitions—for example, the Milan Exhibition—and we have the fact thrust upon us that while there is no imperative restraint imposed on the designer, the same fundamental qualities which go to make up great architecture in the actual world must be present in any exhibition architecture which is to be called great: that is to say, mass, proportion, outline, suitability to purpose, and, last of all, detail. In



BRITISH APPLIED ARTS PALACE: DETAIL OF SCULPTURE.

exhibition architecture, unfortunately, it is the last-named—detail—which generally dominates the whole, and the buildings in consequence are rococo, overladen with ornament, exuberant to the point of folly—an extreme only equalled by the "stately classic manner," such as we have seen at some of the exhibitions in the United States, where every building wore the frigid conventionality of official architecture.

At Shepherd's Bush there is no great architecture, but the English work is certainly better than the French, and of the English work we consider that the British Applied Arts Palace, by Mr. James B. Fulton, the French Applied Arts Palace, by Mr. Lionel G. Detmar, and the Palace of Decorative Arts, by Mr. John Belcher, A.R.A., occupy the front rank.

In the British Applied Arts Palace—rather a misnomer, surely, when the exhibits here, and in the French Applied Arts Palace, are solely gold and silversmiths' work, jewellery, and other work of a similar character—Mr. Fulton has been very successful in the placing of his plaster sculpture, especially in the case of the figures over the entrance facing the canal (see the view on page 54), and



FRENCH APPLIED ARTS PALACE. LIONEL G. DETMAR, A.R.I.B.A., ARCHITECT.





A View showing Steel Framework. *Photos : Birkett.*

BRITISH APPLIED ARTS PALACE. JAMES B. FULTON, F.R.I.B.A., ARCHITECT.

there is a coherence about the lower part of the building which is extremely pleasing, the arcading, with its festoons, being particularly good. In many parts, however, a glut of sculpture dominates the work, and there is a crowding of features on the tower and turrets which is not commendable. The sculpture on the building has been executed from models by Mr. Albert Hodge.

Domes.

The Fine Arts building (the architect of which was M. Charles Martello) is chiefly notable for its three domes. Here, it is evident, no precedents or principles of serious architecture can apply, the forms of these domes being wholly foreign to such principles; yet the outlines are distinctly good, especially the two side domes, which are quite away from anything of the wedding-cake order; but, below, the rest of the building is wild and ineffectual, with a play of curved lines that cannot be justified, while the great cartouches which break up from the cornice line are wholly incongruous. In general outline, however, it must be admitted that these domes are more successful than Mr. Belcher's on the Decorative Arts building. The sculpture on this latter building is well placed, and the quadriga as a central feature against the colonnade curving out to the wing pavilions, is effective; but, on the ground level, the arcading is bleak and the order attenuated.

The Palace of Women's Work (M. Lucet, architect) and the Palace of Music (Charles Martello, architect) are both freaks of design, though there is about the tower of the latter building a sort of wild fancy held within some coherence of general outline which is pleasing in its novelty. With all their faults, however, these buildings do not reach the limit of fatuous trifling which characterises many others in the exhibition, such as we see in the exterior of the Grand Restaurant (M. Thorimbert, architect), the bandstands, and the main entrance to Uxbridge Road. By comparison, the Royal Pavilion (M. Edouard Crevel, architect) and the Café Paillard (M. Levard, architect) are eminently sane; indeed, each of these buildings, and specially the Royal Pavilion, presents many good points.

The Canadian and Australian pavilions are both efforts in the customary exhibition

manner: that is to say, they pretend to be serious work, and signally fail in gaining our admiration because of their mediocrity; while of the numerous other pavilions, we may say that they include nothing of any account architecturally. A pretentious building has been erected for the *Daily Mail*, which houses some magnificent printing machinery and plant, and secures what it was designed to secure, *i.e.*, prominence and an air of importance. It is not good architecture, but it is more inspiriting than the little building which Mr. Reginald Blomfield has designed for the *Daily Telegraph*—a sort of last remnant of the Renaissance which looks deadly quiet among its flaunting, sparkling, vulgar neighbours.

The Court of Honour.

The Court of Honour, with its Congress Hall occupying a central site at one end, is unquestionably the most effective part of the exhibition, particularly when illuminated at night; but as an architectural composition it does not call for extended notice, because it is purely a reproduction of Indian buildings, and though wonderful in its execution—as anyone will admit on examination of all the minute fretted and pierced work which embellishes it—is not an architectural creation. Still, taking as it is—a piece of outside stage scenery—this Court is a very effective composition. The scheme is attributed to Mr. Imre Kiralfy.



BIRD'S-EYE VIEW OF THE STADIUM.

Of the other buildings we may notice the great machinery halls, exceedingly impressive with their forest-like steelwork, though ill-clothed architecturally (M. Duquesne was the architect), and the Education building, which has been erected from designs by Mr. Charles Gascoyne.

Other buildings also to be noted are the Pavilion of the City of Paris (by M. Bouvard) and the Pavilion of the Comptoir National d'Escompte de Paris (of which Mr. Ambrose M. Poynter is the architect).

In one corner of the exhibition is the Irish village—an interesting group with a round tower as a landmark, which tower, it may be mentioned, was very rapidly built by means of Stacey's hand-power winches, which give a continuous supply of material.

The stadium has already been dealt with in our columns (see the issue for January 29th last), and we need not therefore repeat the particulars already given; though, as indicating the magnitude of the work, we would mention that the overall dimensions are 1,000ft. by 594ft., and that seating accommodation is provided for more than 70,000 spectators. It it a truly great work in steel and concrete. (The concrete work was executed by the Empire Stone Co., with "Indented" bars for reinforcement.)

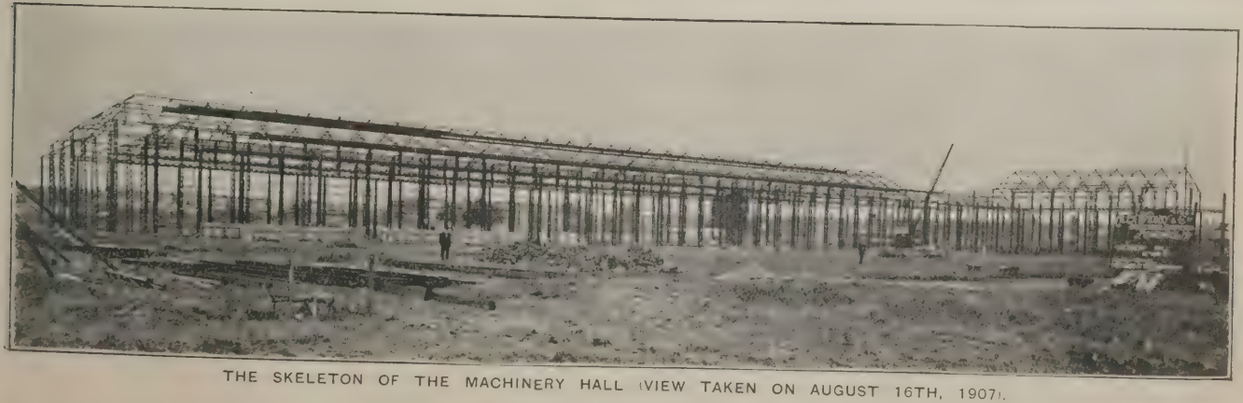
It will be noticed that we have spoken only of the exteriors of the buildings. The reason is that there are practically no architectural interiors (one or two exceptions will be noted later). The galleries are all plain straightforward apartments, top-lighted through skylights, and hung below with muslin, by which means the light is diffused very pleasantly.

The Steel Skeletons.

Having now given some account of the outside clothing of the exhibition buildings, we may deal with their skeletons—which, in truth, constitute the actual construction, for the plaster is of course a mere shell; though no less than 1,800 tons of it have been used. All the large buildings have a steel framework, and it will readily be appreciated that a very considerable amount of material has been required: the total figure, in fact, is put at 75,000 tons. As a filling between the steelwork, breeze concrete has been used for the walls, either laid *in situ*, or in the form of slabs. A large amount of work of this kind has been executed by Messrs. Thos. J. Hawkins



VIEW LOOKING DOWN ONE ARM OF THE MACHINERY BUILDING BEFORE COMPLETION.



THE SKELETON OF THE MACHINERY HALL (VIEW TAKEN ON AUGUST 16TH, 1907).



THE COURT OF HONOUR, IMRE KIRALFY, ARCHITECT.

and Co., of 109, Victoria Street, Westminster, who were employed to carry out the steel construction, concrete walling, flooring, etc., for many of the large buildings. The firm claim a big future for their "Hawko" concrete slab walls, and at the Exhibition they are able to point to excellent examples, for in several of the buildings their slabs have been carried up a height of 60ft., with steel reinforcement, the slabs being only 3ins. thick. The walls are built on concrete foundation walls. At intervals of 6ft. 8ins. the 3in. slabs are reinforced by light rolled steel joists, and by this means the load is transferred to the steel stanchions which support the roofs and which form the stiffening supports to the whole of the walls. Messrs. Hawkins claim that this method of construction, in addition to being fireproof and thoroughly durable, is the cheapest known form of walling.

Other firms which have carried out a great amount of constructional work at the exhibition are Messrs. Alex. Findlay and Co., Ltd., of Motherwell, and Messrs. Geo. Sands and Son, of Nottingham. Messrs. Findlay erected the huge machinery hall, which was designed by Mr. John J. Webster, M.I.C.E., of Westminster, and comprises two avenues each 661ft. by 130ft., connected by a block measuring 302ft. by 310ft. It is admirably lighted (on the "Eclipse" system of Messrs. Mellowes and Co., Ltd.), and houses a magnificent collection of machinery.

Messrs. Geo. Sands and Son erected the Australian, New Zealand, and other Colonial pavilions, as well as the main entrance to Uxbridge Road.

Messrs. Schweppes have erected a pavilion in open timber and plaster work, with old tiles on the roof, reproducing the shop in Bristol which was occupied in the eighteenth century by Jacob Schweppe, chymist, who first made soda water in 1787; and the Ardath Tobacco Co. have erected a pavilion comprising a miniature cigarette factory. Both these pavilions have been carried out by Messrs. Patman and Fotheringham, Ltd., from designs by Mr. H. W. Burton, architect, of 5, Bloomsbury Square, W.C.

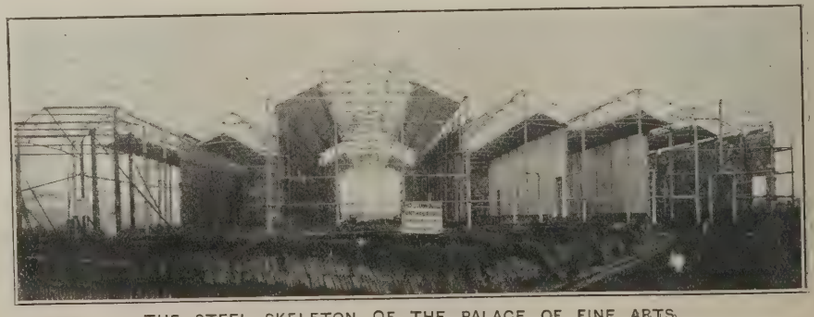
The exterior illumination of the buildings is a very large undertaking, some idea of which can be gained when it is stated that on the Court of Honour alone there are no fewer than 15,000 lamps.

As an item of separate interest, it may be mentioned that the fencing around the lawns of the Education Building is the speciality of Messrs. James H. Tozer and Son, Ltd., of York Mansion, York Street, Westminster; it is known as "Lock-Woven" steel wire fencing, most ingeniously made, very stiff and strong, and adaptable for any height.

The Exhibits.

It is not our intention to particularise the innumerable exhibits at this great exhibition, because the majority of them do not concern us. We may, however, pick out the things in which an architect or a builder would be interested.

Without question, the finest exhibit is the magnificent collection of pictures and sculpture, representing the English and French schools, which is gathered together in the Fine Arts building—quite a great collection, intensely interesting, and very well displayed. The pictures are all easel pictures, and, consequently, have no relation to architecture *per se*; hence we pass them with this brief reference. The sculpture comes nearer to us, though here again, almost without exception, the exhibits stand by themselves as *objets d'art* rather than having any relation to the mother art of architecture. But among them is a large model of the Queen



THE STEEL SKELETON OF THE PALACE OF FINE ARTS.



DOME ON THE FINE ARTS PALACE. CHARLES MARTELLO, ARCHITECT.

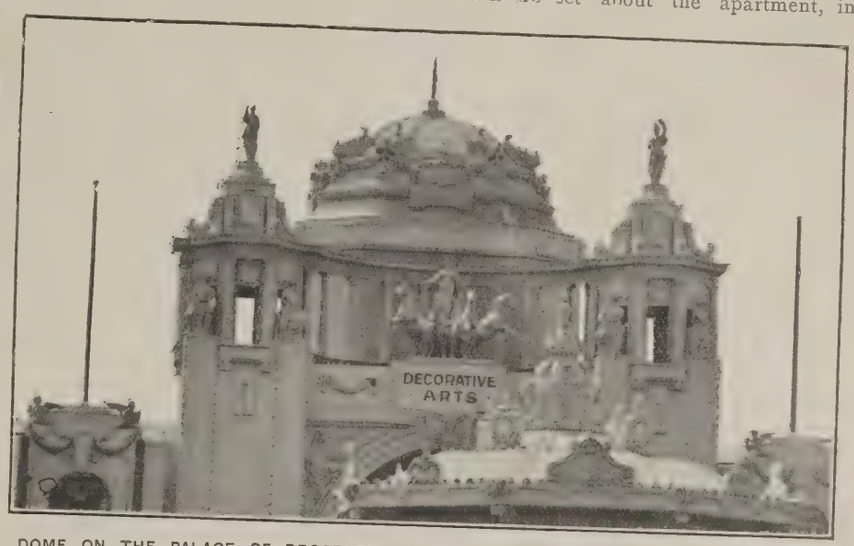
ictoria Memorial now in course of com- etion in front of Buckingham Palace, ıd this, as the work of Sir Aston Webb ıd Mr. Brock, claims attention. The ıodel, we judge, gives a greater breadth effect than the finished work will have. masses up extremely well, the sculp- re groups placed at four points on the circling walls, as well as those on the ain pedestal, being excellent. It is ther the practice to speak of Mr. Brock's ork as that of a sculptor accomplished technique, and possessing an acade- cal slickness of manner (like Mr. Water- use in painting), but devoid of imagi- tion. Yet, looking at this model, one ıst admit the strength of its grouping ıd the pleasing sweep of its lines, and are only wishful that the actual memo- l will display the same qualities.

n the British section of the Fine Arts lace is a collection of architectural de- ins by the majority of our best-known n. The work shown is not new to us, ing been exhibited before at one time another, but there is one thing about which recalls a very much needed alter- on in the Architectural Room at the al Academy: that is to say, this col- ion at the Exhibition includes photo- graphs of executed work as well as draw- ings, and the value of such inclusion is at once apparent. It cannot be too often repeated that the architect's drawings are nothing in themselves, being merely a means to an end—the actual building—and it is therefore the more to be regretted that the Academy council should persist in their ridiculous and short-sighted policy of excluding photographs from the annual exhibition at Burlington House.

In the French section we are surprised to find that Architecture is not at all adequately represented. There are a few *projets* hung on the walls, and some specimens of those wonderful restorations to which French architects devote such excessive attention, the examples here shown including some reproductions of the great baths of Diocletian; there are also on the tables some books giving large photographic illustrations of the Sorbonne and the new Gare d'Orleans: but the architectural section of this exhibit is conspicuously weak.

In the Decorative Arts Building.

After the Fine Arts come the Decorative Arts. For the most part the exhibits in the Palace of Decorative Arts comprise furniture of all periods, both English and French. For example, Messrs. Hampton show a reproduction (two-thirds the original size) of the great hall at Hatfield, with numerous old specimens of English furniture set about the apartment, included among which are a Renaissance oak chest (date 1535), an oak table from Blenheim Palace, a Gothic sideboard table (lent by Mr. Ernest George), and several old chairs. The collection of old furniture is, indeed, a most instructive one.



DOME ON THE PALACE OF DECORATIVE ARTS. JOHN BELCHER, A.R.A., ARCHITECT.



DOME ON THE FINE ARTS PALACE. CHARLES MARTELLO. ARCHITECT.

A very effective exhibit is that of Messrs. Pilkington and Co., who have a scheme carried out in various kinds of tiles, including some beautiful reproductions of Persian tiles, with rich blue colouring, and many varieties of lustre tiles, these latter being especially well shown, used in conjunction with siena marble and pavonazzo, in the fireplace (designed by Mr. Edgar Wood) which forms a central feature.

Another good exhibit is that of Messrs. John Line and Sons. Their stand (designed by Mr. E. Hollyer Evans) is panelled around with deal stained a dark brown colour, with a well-designed fireplace in the centre, above which is a beautiful piece of mural painting by Mr. W. J. Neatby, R.M.S., who has been retained by the firm to execute work of this character. The painting is wonderfully

rich, yet subdued in character, and merits attention as work of high quality.

The Bromsgrove Guild have a delightful exhibit, chiefly of lead figures and vases for the garden. These are executed with the true artist's touch. They have a freedom which comes as a relief to those wearisome cast-iron stock-in-trade patterns which have hitherto filled manufacturers' catalogues; yet there is no exuberance about them. Behind all, we see that restraining hand which makes for the most beautiful work—not the hand of the academic dabbler, but of the worker who knows the limitations and the possibilities of his material. So, too, with the other leadwork shown, including a fine rain-water-head and downpipe; while another feature of interest is a wrought-iron gate embellished with flowers, not made out of sheet metal, but forged out of the solid, in the manner of the Dutch work introduced into England and Scotland by William III. The work of the Bromsgrove Guild is also to be seen elsewhere in the Exhibition, namely, in the Grand Restaurant, where they have executed some beautiful plasterwork to the walls and ceilings, and in the Imperial Sports Club, where they have done work of similar high quality. Readers will no doubt have noticed what a quantity of work for the most important buildings in the Kingdom is being secured by this guild of artists, and we learn now that they are going far afield to the East and to the Colonies, having established a London export office at Fenchurch House, 5, Fenchurch Street, E.C., in which connection it may be mentioned that one of their recently executed contracts was the whole of the stained glass for the new Church of the Messiah at Montreal.

Other exhibits in the Decorative Arts building include those of Messrs. Carron and Co., who show their well-known grates, modelled on 18th century designs; Messrs. H. C. Cleaver, Ltd., who have an interesting stand showing the application of their "Tudoresk" panelling (for the manufacture of which, as well as for architectural woodwork in general and exhibition stands in particular, Messrs. Cleaver have recently erected a new factory at Park Royal, equipped with the most modern machinery); the Brilliant Sign Co., of Gray's Inn Road, W.C., who have an exhibit of letters, fascias, etc.; and the London Warming and Ventilating Co., who show stoves and grates burning anthracite.

In the long winding gallery that leads to the Exhibition grounds from what is called the main entrance in Uxbridge Road—a decided mistake in the plan, because only a mere handful of the thousands who visit the exhibition ever go through this interminable gallery—is a collection of British pictorial photography, including many architectural subjects by Mr. Arthur Marshall, A.R.I.B.A., Mr. Frederick H. Evans, Mr. John H. Gear, and Mr. S. G. Kimber. In these galleries also are to be seen housing and garden-city exhibits (both English and French—the former including plans and photographs of Letchworth, the Hampstead Garden Suburb, and similar suburbs at Ealing, Manchester, Wolverhampton, and Birmingham), and exhibits of work done in the French elementary and secondary schools. There are also, among the trade exhibits, a particularly good stand showing "Shannon" office files, desks, and furniture (the Shannon Company also have, elsewhere in the Exhibiton, a very fine exhibit representing a bank



TOWER OF THE PALACE OF MUSIC. CHARLES MARTELLO, ARCHITECT.

interior); and an exhibit by Messrs. Ozonair, Ltd., who show their apparatus for purifying and sterilizing air by means of ozone—as now adopted in many important buildings.

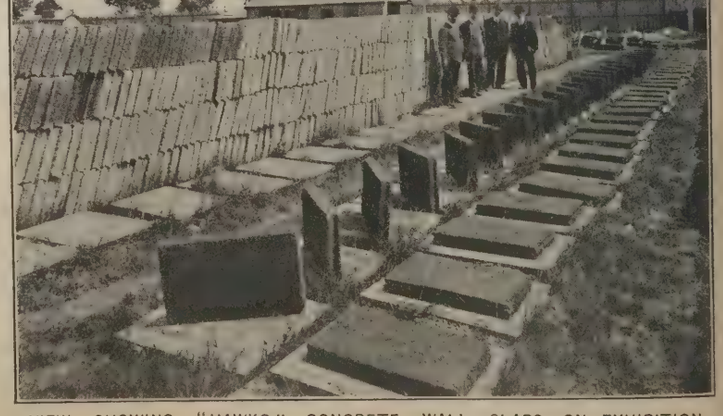
In the gallery adjoining the Court of Honour, on the east side, is a splendid collective exhibit of the Board of Education, the work shown having been sent from schools all over the Kingdom, and a very large model of Messrs. Debenham and Freebody's new building in Wigmore Street, the architects of which were Messrs. Russell and Wallace. On the other side of the Court of Honour, to the west, is the "English Garden"—with a foreground of grass and a background presenting open country, quite a remarkable piece of scene-painting on a colossal scale. Here, too, is a delightful old half-timber house—a genuine old Tudor house formerly at Ipswich—which Messrs. [illegible] and Reigate have re-erected to contain a most interesting display of furniture. Close by are the *Daily Mirror* cottage, a cottage constructed with "Frazzi" fire-resisting slabs.

Another interesting exhibit is the reproduction of "Old London" which has been devised and made by Mr. John B. Thorpe. The representation shows London as it was previous to the Great Fire of 1666, with Old London Bridge, Old St. Paul's, Bridewell Palace, Baynard's Castle, [illegible] the Fleet River, Charing Cross as a village between London and Westminster, the houses of the Friars, and many other most interesting features. The models are very effectively arranged and lighted, and the exhibit is certainly one which should be seen. In connection with this a "souvenir" has been written by Mr. Loftie.

Among the exhibits in the British section of the Machinery Building is that of Messrs. Wailes, Dove and Co., the well-known makers of patent "Bitumastic" enamels, coverings and solution for the prevention of corrosion on iron and steel, and for the protection and preservation of wood. Their stand shows a model of a midship section of a vessel, and a model workshop with smoke stacks, etc., all coated with different "Bitumastic" specialities, which must prove attractive to visitors who are interested in the important question of corrosion.

Another interesting exhibit in the British section of the Machinery Hall is that of Messrs. Chance Bros., of Birmingham, whose exhibit includes various types of prismatic glass for the better lighting of interiors.

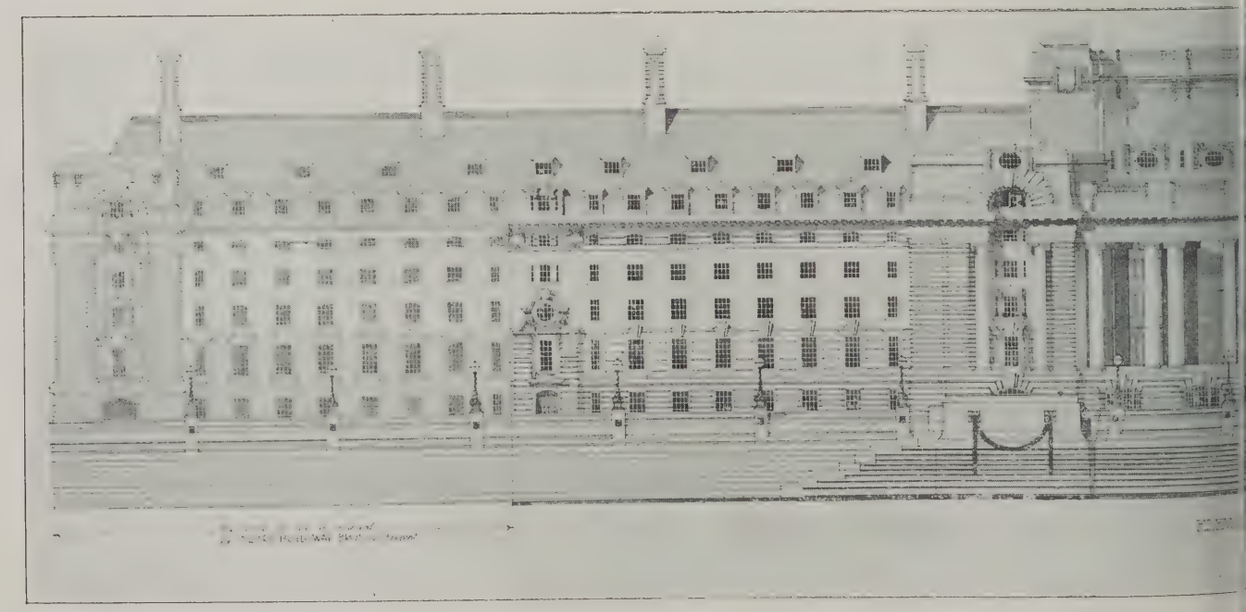
MR. H. T. CHAPMAN, assistant surveyor to the Lancashire County Council, has been appointed County Surveyor for Somersetshire, at a salary of £500, £250 for travelling expenses, and £20 for office expenses. There were 114 applicants for the position.



VIEW SHOWING "HAWKO" CONCRETE WALL SLABS ON EXHIBITION GROUND.



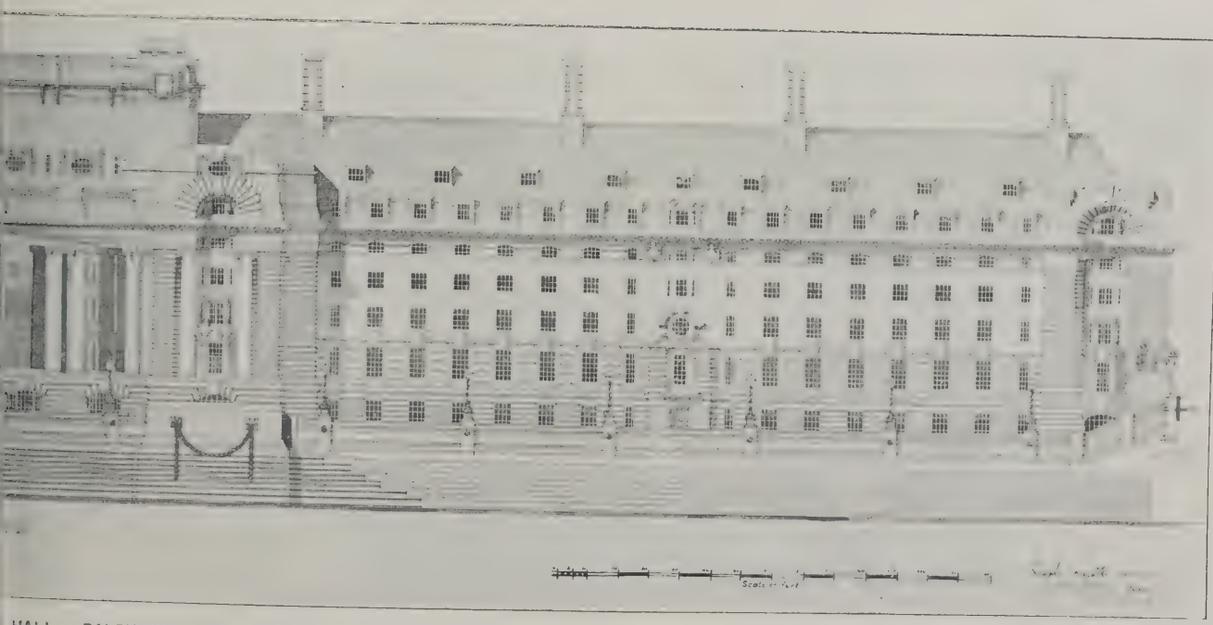
From a Water-Colou



THE REVISED DESIGN FOR THE LOND



e by C. W. Wyllie.



HALL. RALPH KNOTT, ARCHITECT.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Ancient Monuments.

Mr. Asquith has at last promised that the Government will appoint a Royal Commission to report on the preservation of ancient buildings and monuments in England. The Royal Academy, the Society of Antiquaries, the Royal Institute of British Architects and other societies have urged the right honourable gentleman to pursue this course, which has already been adopted in the case of Scotland, and promised in the case of Wales. Consideration will be given to a suggestion by Lord Balcarres that the three Royal Commissions should hold a conference in order that they might agree on a uniform system of classification, scheduling, and measurement of ancient monuments.

The New Law Courts.

There is to be no withdrawal from the decision to build upon the garden space lying to the west of the Law Courts. The new courts are estimated to cost £95,000, and Mr. Harcourt has satisfied himself that they are absolutely necessary.

Unemployment in the Building Trade.

Mr. Thorne asked the First Commissioner of Works whether he could see his way to put in hand all the work that had been sanctioned, with all the speed possible, in consequence of the thousands of men who were out of employment in the various sections of the building trade in London.

Mr. Harcourt, in reply, said he was as much interested as the honourable member in pushing on building work for the current year. Everything was being put in hand as speedily as circumstances permitted.

New Buildings at Woolwich.

Mr. Haldane has informed Lord Balcarres that the area of ground which it is proposed to enclose for the purpose of the new buildings for the Royal Army Medical Corps at Woolwich is about two acres, and the estimated outlay is £12,500.

Law Cases.

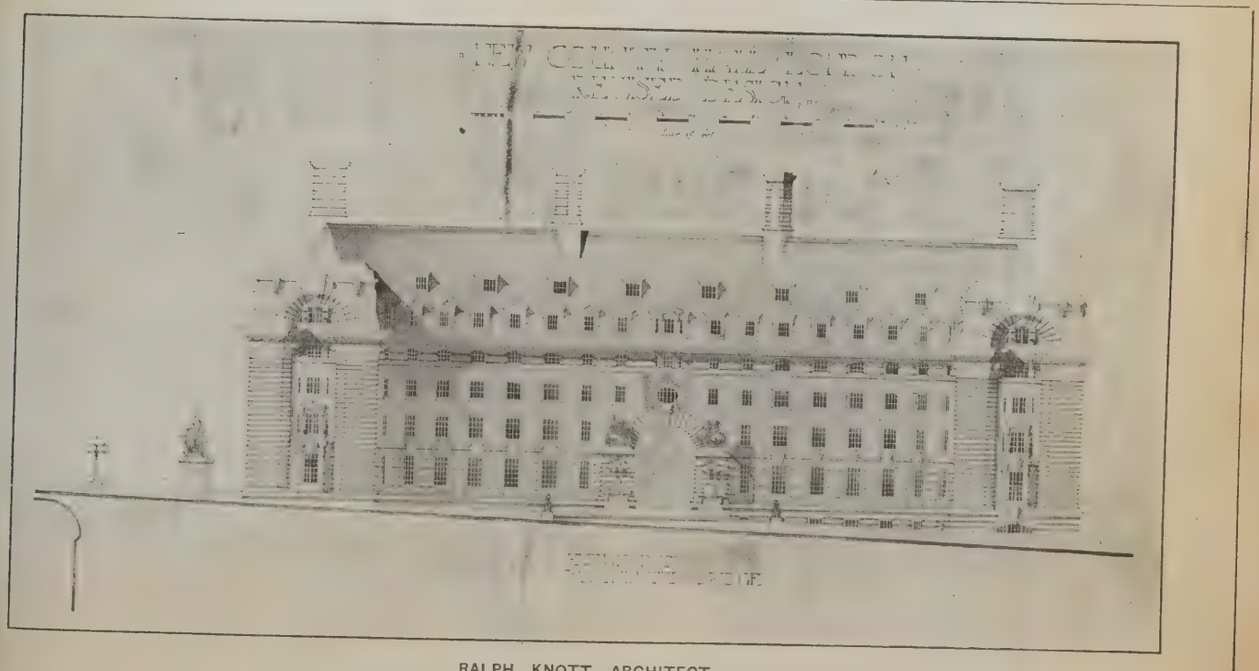
BUILDING BEYOND THE GENERAL LINE.—At Lambeth Police Court on July 9th the London County Council summoned Mr. Edwin Stephens, of Walworth, for erecting a certain structure beyond the general line of buildings without the consent of the council.—The defendant admitted that there was a technical offence. —Mr. Thomas Chilvers, representing the County Council, said the defendant was the proprietor of the Montpelier Music Hall, which was situated at the rear of the Montpelier public-house. In December last the defendant erected an iron and glass structure in front of the entrance to the music hall, in advance of the general line of buildings. The defendant did not give notice to the district surveyor of his intention to carry out the work. If he had done so, he would in all probability have saved all the trouble. An assistant in the architect's department of the council attached to the Theatres and Music Halls branch, who visited the place for the purpose of seeing whether the theatre regulations were being carried out, observed that the structure was being put up, and told the defendant he ought to get the consent of the council. The defendant, however, did not apply for consent. It was subsequently reported to the council by the town clerk of Southwark, and a letter was sent to the defendant, who afterwards made an application for the consent of the council to the retention of the structure, but the council refused their consent. These structures had been held to be structures within section 22, and in the circumstances he (Mr. Chilvers) could only ask for a penalty and an order for demolition. —Mr. Hopkins imposed a penalty of 40s., and 23s. costs, and made an order for the demolition of the structure.

ENGINEERS' CLAIM AND ARCHITECT'S COUNTER-CLAIM.—On July 6th, at the Notts Assizes, Messrs. Crossley Brothers, gas-engine manufacturers, of Manchester, claimed from Mr. E. Hooley, architect, of Long Eaton, £176, the balance of an account owing for making a gas-engine and plant. The claim was admitted, but there was a counter-claim of £143 for loss of rent and damages resulting from the alleged late delivery of the engine.—Mr. Hooley's case was that in consequence of Messrs. Crossley failing to deliver the engine in time he lost a substantial sum in the shape of rents from the letting of standings in the new lace factory he had erected at Long Eaton during the trade boom. Messrs. Crossley contended that the engine was delivered within a reasonable time. It was stated, however, that instead of the engine reaching Long Eaton on May 20th, as had been agreed upon, it did not arrive until July 16th. Messrs. Crossley contended that they were unable to get on with the order because there was no plan of the plant, and no arrangement with regard to the engine bed. Judgment was given for Messrs. Crossley for the full amount of their claim—£176—and for the defendant, Mr. Hooley, on the counter-claim, £106 15s.

Our Plate.

The Revised Design for the London County Hall.

In this issue we are able to give the revised design for the London County Hall, which has been prepared by Mr. Ralph Knott, on the suggestion of the assessors. The design was the subject of considerable discussion at last week's meeting of the Council, but was ultimately approved. On reference to the elevation which we published in our issue for February 5th last, it will be seen that a very material change has been made on the river front, the centre block having been largely reduced in projection, and carried up into an attic storey, the flight of steps leading down to the river having been omitted, and slightly projecting steps taken down on either side parallel with the terrace. The alteration is certainly an improvement; it adds dignity to the building, though, even as now remodelled, we do not consider the design to be really worthy of the great opportunity which is embodied in it.



RALPH KNOTT, ARCHITECT.

CONTRACTORS' SECTION

(MONTHLY.)

THE BEARING POWER OF SOILS, BUILDING MATERIALS, ETC.

By T. E. Coleman, F.S.I.

The weight-bearing capacity of different soils varies considerably, according to the nature of the ground. Hard rock naturally provides the best possible foundation for supporting heavy concentrated loads, but for ordinary structures coarse gravel or compact sand is a good firm foundation for building purposes. Clay possessing a stiff dense nature, and which is not subject to any variation or excess of moisture, also gives satisfactory results; but soft wet clay is unreliable as a weight-carrying medium.

When buildings are erected on made ground, they should have their foundations carried down to the solid ground below. Alluvial soils, quicksands, etc., have practically no safe weight-sustaining powers, and in such cases the foundations require special treatment, piles being usually driven for the purpose of providing the additional support required.

The following table shows the average *safe* loads which can be carried by various descriptions of ground:—

	Average safe load. Tons per ft. super.
Quicksands	nil.
Alluvial soils	½ to ½
Made ground (ordinary)	½ to ¾
Made ground (consolidated)	¾ to 1
Clay (soft)	¾ to 1¼
Clay (hard, compact, dry)	2 to 4
Sand fine (dry, compact)	1½ to 3
Sand, coarse (ditto)	4 to 6
Gravel, fine (compact)	3 to 5
Gravel, coarse (ditto)	4 to 6
Chalk, solid	3 to 4
Rock, soft, friable	3 to 5
Rock, ordinary	5 to 15
Rock, hard, compact	20 to 60

London Clay.

With regard to the supporting power of London clay, it is interesting to notice that the foundations of Cannon Street railway bridge subsided slightly under a load of 5 tons per ft. super., whilst a similar subsidence occurred in the foundations of Charing Cross Bridge with a load of 7 tons per ft. super. During the construction of the foundations of the Tower Bridge it was ascertained from actual experiment that 6½ tons per ft. super. was the maximum load which could be supported by London clay, and a load of 4 tons per ft. super. was assumed to be the maximum safe load to be carried by the foundations of the piers. The foundation load of the famous Eiffel Tower at Paris was limited to a maximum of 3 tons per ft. super.

In the United States considerable attention has been given to the supporting capacity of different soils, owing to the heavy concentrated loads which are carried by tall city buildings. The Manhattan Insurance building of New York is 20 storeys in height, or 360 ft. from street level to roof, and it is estimated that the actual load on the brick foundations of this building exceeds 12 tons per ft. super. The building laws of New York stipulate that the safe bearing capacity of different soils may be taken as follows:—

	Safe bearing capacity. Tons per ft. super.
Soft clay	1
Ordinary clay and sand together, in layers	2
Loam, clay, or fine sand, firm and dry	3
Very firm, coarse sand, stiff gravel, or hard clay	4

When a doubt arises as to the safe sustaining power of the earth upon which a structure is to be erected, the Department of Buildings may order borings to be made, and the sustaining power of the soil tested at the expense of the owner. All records of tests made are filed for reference in the Department of Buildings.

Compressive Strength of Building Materials.

Numerous experiments have been made from time to time to ascertain the actual compressive strength of ordinary building materials. The average results obtained by crushing bricks, small cubes of stone, concrete, etc., are here given. It will be observed that the ultimate crushing strength of bricks, building stones, etc., varies considerably according to their quality or description. For convenience of reference and comparison, the average crushing strengths are given in tons per ft. super, and also in lbs. per sq. in.

Average Crushing Strength of Bricks, Building Stones, Concrete, etc.

	Tons per ft. super.	Lbs. per sq. in.
Bricks.		
London stocks (yellow)	100	1,500
Peterborough common (red)	90	1,400
White gault, wire cut	140	2,100
Ruabon, pressed (red)	360	5,600
Staffordshire blue, common	300	4,600
Staffordshire blue, best	450	7,000
Glazed bricks	160	2,500
Terra-cotta	160	2,500
Limestones.		
Ancaster	150	2,300
Bath	100	1,500
Bolsover	450	7,000
Chilmark	450	7,000
Ham-hill	260	4,000
Ketton	160	2,500
Portland	250	3,900
Sandstones.		
Craigleith	500	7,700
Darley-Dale	450	7,000
Mansfield	350	5,400
York	500	7,700
Granites.		
Aberdeen	650	10,000
Cornish	550	8,500
Devonshire	700	10,800
Guernsey	800	12,400
Irish	550	8,500
Concrete (after 1 month).		
Portland cement concrete (1 cement, 1 sand, and 6 parts broken brick)	23	350
Portland cement (1 cement. 1 sand, and 6 parts broken lime stone)	21	320
Concrete (after 6 months).		
Stone lime concrete (1 to 6)	9	140
Stone lime concrete (1 to 8)	6	90
Blue lias lime concrete (1 to 6)	18	280
Blue lias lime concrete (1 to 8)	12	180
Portland cement concrete (1 to 4)	75	1,100
Portland cement concrete (1 to 6)	60	930
Portland cement concrete (1 to 8)	35	540
Concrete (after 12 months).		
Stone lime concrete (1 to 6)	13	200
Stone lime concrete (1 to 8)	8	120
Blue lias lime concrete (1 to 6)	25	400
Blue lias lime concrete (1 to 8)	16	240
Portland cement concrete (1 to 4)	100	1,500
Portland cement concrete (1 to 6)	80	1,200
Portland cement concrete (1 to 8)	50	770

The following table shows the average crushing strength of brickwork, masonry, or concrete in walls, etc.

Average Crushing Strength of Masonry, etc., in Walls.

	Tons per ft. super.	Lbs. per sq. in.
Brickwork in walls, etc.		
Ordinary brickwork in lime mortar	28	430
Hard brickwork in lime mortar	40	620
Hard brickwork in cement mortar	60	930
Blue Staffordshire brickwork in lime mortar	75	1,100
Blue Staffordshire brickwork in cement mortar	100	1,500
Masonry in walls, etc.		
Rubble masonry in lime mortar	30	460
Rubble masonry in cement mortar	60	930
Ashlar masonry (limestone) in cement mortar	100	1,500
Ashlar masonry (sandstone) in cement mortar	150	2,300
Ashlar masonry (granite) in cement mortar	400	6,200
Concrete in walls, etc.		
Stone lime concrete (1 to 6)	13	200
Lias lime concrete (1 to 6)	25	400
Portland cement concrete (1 to 4)	100	1,500
Portland cement concrete (1 to 6)	80	1,200
Portland cement concrete (1 to 8)	50	770

On comparing the results given in the foregoing tables, it will be seen that the ultimate crushing strength of brickwork or masonry is considerably less than that of the bricks or building stones themselves; whilst further investigations show that the strength of the brickwork or masonry depends to a large extent on the description of mortar used, and also upon the skill employed in putting the materials together.

The average crushing strength of mortars as determined from tests made by Rondelet and Grant are here indicated:—

Average Crushing Strength of Mortars.

Lime mortar (after 18 months).

	Tons per ft. super.	Lbs. per sq. in.
Stone lime mortar	30	460
Lias lime mortar	50	770

Cement mortar (after 9 months).

Neat Portland cement	350	5,400
Portland cement mortar (1 to 2)	200	3,100
Portland cement mortar (1 to 3)	150	2,300

When determining the maximum load which may be supported by any structure, it is essential that an adequate margin of safety shall be provided, so that failure by the actual crushing of the materials themselves cannot occur under ordinary circumstances. As a general rule, it is found that materials subject to heavy pressures usually crack with a load amounting to about half their ultimate crushing strength. To ensure a proper degree of safety under ordinary conditions it is considered that all walls, etc., should be so designed that the maximum load to be supported by any portion shall not exceed from one-seventh to one-eighth the actual pressure which would be necessary to crush the materials of which the wall is built.

The average safe bearing load, or resistance to compression, which may be borne by ordinary walls of brickwork masonry, or concrete, is as follows:—

Fig 11

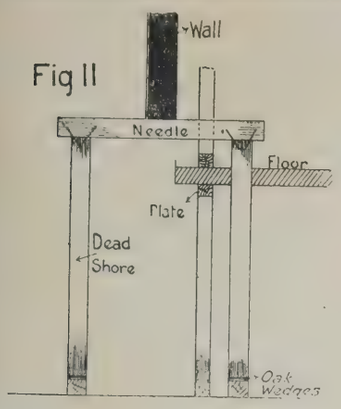
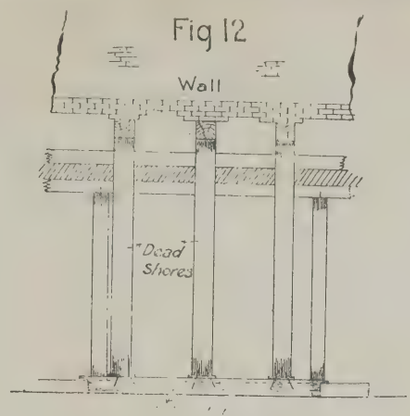


Fig 12



AVERAGE SAFE RESISTANCE TO COMPRESSION OR SAFE BEARING LOAD FOR WALLS, ETC.

	Tons per ft. super.	Lbs. per sq. in.
Brickwork in walls, etc.		
Ordinary brickwork in lime mortar	4	60
Hard brickwork in lime mortar	5	80
Hard brickwork in cement mortar	8	120
Blue Staffordshire brickwork in lime mortar	10	160
Blue Staffordshire brickwork in cement mortar	12	180
Masonry in walls, etc.		
Rubble masonry in lime mortar	4	60
Rubble masonry in cement mortar	8	120
Ashlar masonry (limestone) in cement mortar	12	180
Ashlar masonry (sandstone) in cement mortar	20	300
Ashlar masonry (granite) in cement mortar	50	770
Concrete in walls, etc.		
Stone lime concrete (1 to 6)	2	32
Lias lime concrete (1 to 6)	4	60
Portland cement concrete (1 to 4)	14	220
Portland cement concrete (1 to 6)	10	160
Portland cement concrete (1 to 8)	7	110
Mortars.		
Stone lime mortar	4	60
Lias lime mortar	6	100
Portland cement mortar (1 to 2)	25	400
Neat Portland cement (after 9 months)	45	700

The building regulations of New York require that the safe bearing load on brickwork, masonry and concrete shall not exceed the following limits:—

	Safe bearing load. Tons per ft. super.
Brickwork in lime mortar	8
Brickwork in cement mortar	15
Rubble masonry in lime mortar	5
Rubble masonry in cement mortar	10
Lime concrete	8
Portland cement concrete	15

It will be observed that the maximum safe loads allowed by American practice are slightly higher than those generally recommended in this country, owing to the adoption of a smaller value for the factor of safety than that already mentioned.

In considering the stability of retaining walls, it has already been stated that it is not usual or desirable to take into account the adhesive resistance of the mortar used in bedding and jointing the bricks or stones; yet in all soundly constructed work the cementing medium provides some slight additional margin of safety.

The average tensile strengths of lime and cement mortars are as follows:—

AVERAGE TENSILE STRENGTH OF MORTARS.
(After 12 months.)

	lbs per sq. in.
Stone lime mortar	56
Lias lime mortar	160
Cement mortar (1 to 3)	220
Cement mortar (1 to 2)	300
Neat Portland cement	450

It has been established, from numerous experiments, that the actual cohesive strength or *tensile resistance* of mortar is in itself considerably greater than the *adhesive strength* or tenacity of the same mortar as exerted in cementing the surfaces of bricks or stones to each other. The adhesive strength of mortar in brickwork or masonry varies within very wide limits, as it is largely dependent on the quality of the materials, workmanship, and the nature and condition of the surfaces to which it adheres, but for general purposes it may be taken as approximately $\frac{1}{8}$th the cohesive or tensile strength of the cementing material.

Average adhesive strength of mortar in brickwork and masonry.
(After 12 months.)

	lbs. per sq. in.
Stone lime mortar and common bricks	7
Lias lime mortar and common bricks	14
Lias lime mortar and hard stocks or ashlar masonry	24
Cement mortar (1 to 2), and hard stocks or ashlar masonry	30
Cement mortar (1 to 3), and hard stocks or ashlar masonry	40
Neat Portland cement and hard stocks or ashlar masonry	60

From the foregoing table, it will be seen that the tensile resistance of brickwork or masonry laid in ordinary mortar is comparatively small. When any structure is subject to a stress of this description, the ultimate tensile strength of the brickwork or masonry should be determined from a careful consideration of the nature of the mortar joints, as under such conditions these are the weakest part of the work.

SHORING.

By Harold Slicer.

(Concluded from p. 525, No. 698.)

The whole of the materials employed in the construction of the staging shown in Figs. 9 and 10 were old stuff, but, being still sound, they were sufficiently strong for the purpose. This is a case where the basement of a house extended to the boundary wall, and repairs were to be carried out on the first floor, new fireproof flooring and steel joists inserted, etc. The staircase being narrow, access for the materials was made by way of a first-floor window, and the staging shown was erected to extend to the roadway, so that the materials could be hoisted direct on to the platform from the cart. As no support to the stage could be obtained from the house wall, three sets of shores were used, two upright or dead shores and one set of raking shores. The lower ends of the raking shores were cut to fit on to the boundary wall and the upper ends to support a head as shown. Sole-and-head plates were secured together by dogs, and a simple floor with vertical boarded sides erected thereon. Braces were carried across about 8ft. from the ground to bind the shores together.

The case shown in Figs. 13, 14 and 15 was designed to meet the leaning of the walls of a mill where the vibration of the spinning mules had caused the upper portion of the wall to project about 2ft. 6ins. out of plumb with the base. The following particulars have been kindly supplied by Mr. H. W. Barker, A.M.I.C.E., of the firm of Messrs. Thomas Barker and Son, of Bradford, who designed the system of shores illustrated:—There are several novel features involved. The first is the large concrete bases to support each system. This was necessitated by the solid ground being at a considerable depth below the surface, and as these shores had to be for permanent use, such a base was considered most suitable. The second novel feature is the introduction of purlins running from shore to shore (purlins 11ins. by 4ins.) fixed with $\frac{3}{4}$in. by 20in. joint bolt and 4in. cast-iron washers. Thirdly, the wall-plates had to be notched, as the stone window sills formed a continuous string; so extra pieces were bolted over these weakened portions to strengthen them. The distance of the feet of shores from mill wall varies on

Fig 9

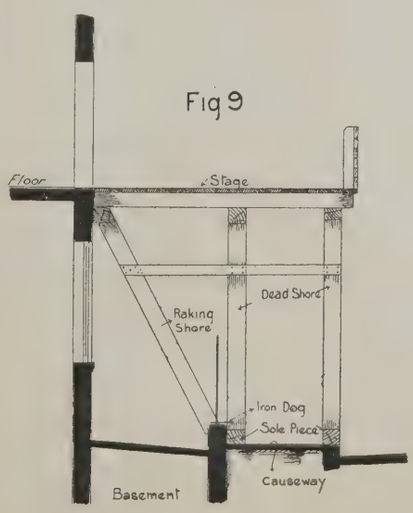
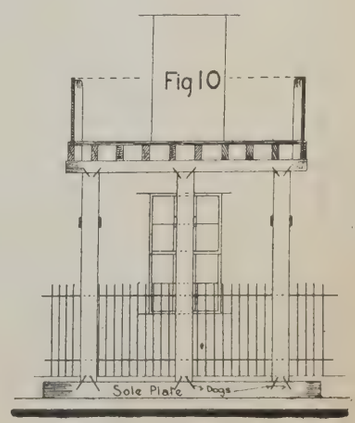


Fig 10



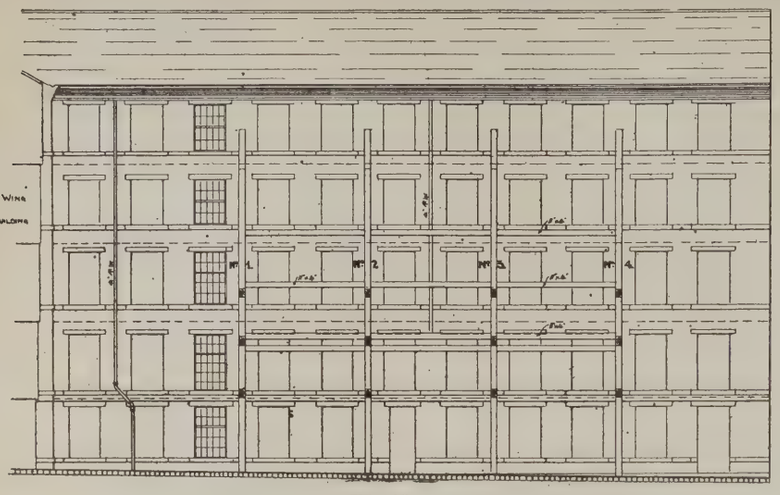


FIG. 13.

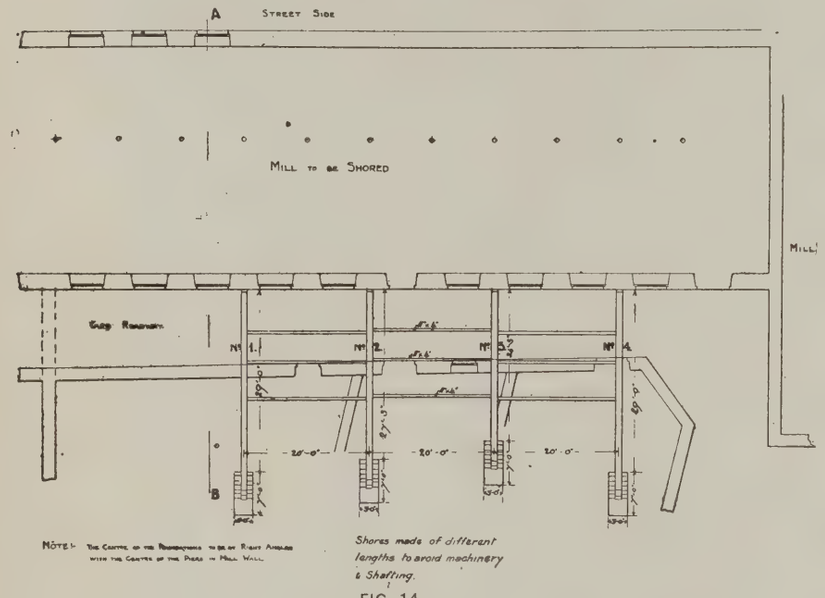


FIG. 14.

account of the machinery and shafting in the shed into which they project; this is shown on plan. The materials used were as follows:

Rakers 12in. by 12in. pitch-pine, sleepers 12in. by 4in. ditto, wall-plate 12in. by 4in. ditto, struts 9in. by 1½in. red deal well nailed to shores, purlins 11in. by 4in. red deal, oak needles 5in. by 5in., dry oak wedges for wedging up. All the woodwork below ground has two coats of boiled pitch and tar. The cost of the carpenter's work in shoring was about £170, and the concrete would be about £25. (The concrete used was 5 to 1 of Portland cement and stone, through 2in. ring gauge.)

Fig. 16 shows a case of raking shoring supported upon dead shores. This was done because the raking shores were first erected while an old building was being pulled down, and the dead shores were afterwards carefully inserted and the supporting earth removed to allow for extra depth of basement for the new building.

It is usual to incline the sole-plate slightly out of right angles with the raking shores, as shown in Fig. 17. This is done by allowing the shores to be tightended up by inserting a crowbar at their feet, and forcing them inwards towards the shored building. Now the end of the sole-plate at A is nearer to any needle compared with the end B; therefore, the nearer the shore feet approach A the

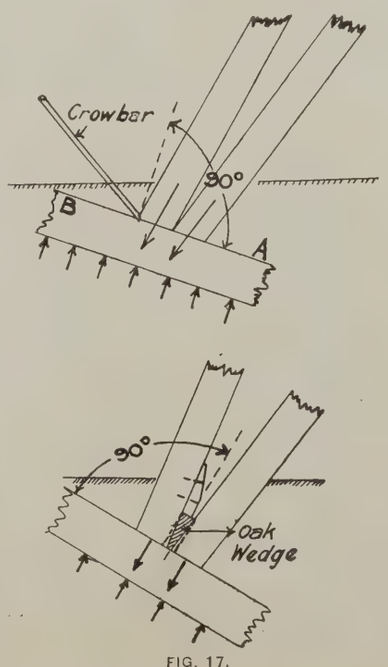


FIG. 17.

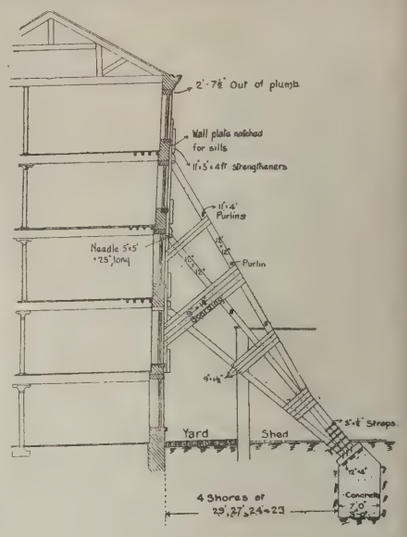


FIG. 15.

harder the upper end of the shores heads press on the needles, and consequently upon the wall supported. The earth resistance—to be on the side of safety—opposes the load from the sole-plate at right angles, as shown by arrows, but the pressure from the shores is slightly inclined to this, and provided that this angle is small (or the sole-plate embedded well into the ground) the angle of friction is not exceeded, and stability is ensured.

An alternative is to group the shores about a line at right-angles to the sole-plate, when pressure and resistance are then directly opposed. This is shown in the figure, oak wedges being inserted between the shore feet and held in position by a cleat or other mechanical means, or the ends of the shores trimmed as shown by dotted lines, whereby the shores may be tightened up as required.

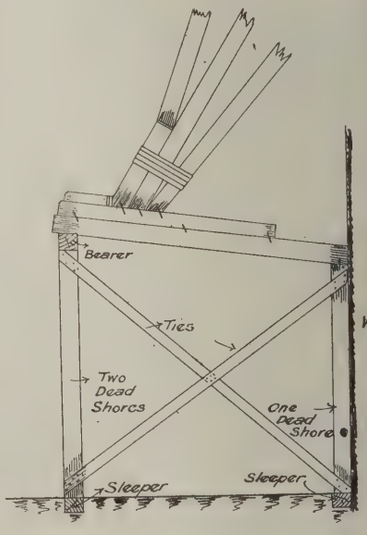


FIG. 16.

Notes and News.

A NATIONAL MEMORIAL TO THE LATE DUKE OF DEVONSHIRE is to be erected in Whitehall.

* * *

NEW BOOKS.—Messrs. Constable announce the publication of the two following new books:—"Analysis of Elastic Arches of Steel, Masonry, and Reinforced Concrete," by Joseph W. Balet, price 12s. nett; "The Design of Typical Steel Railway Bridges," by W. Chase Thomson, price 8s. nett.

* * *

CHANGE OF TITLE.—Messrs. William Cooper and Coussens, architects and surveyors, of 25, Havelock Road, Hastings, have altered the title of their firm to "Coussens and Rothwell" (Mr. Henry W. Coussens, A.R.I.B.A., and Mr. E. Rothwell).

* * *

A ROMAN CATHOLIC CHURCH at Berkhamsted, Herts, has just been commenced. The building is entirely of brick, and is being carried out by Messrs. H. and J. Matthews, of Berkhamsted, from designs by Mr. Geo. Harvey, architect, of Hemel Hempstead.

* * *

CHANGES IN BUILDING CONSTRUCTION.—At the congress of the Royal Sanitary Institute held at Cardiff last week, Sir Henry Tanner, who presided over the Engineering and Architecture section, dealt with changes that were taking place in building construction. He pointed out that wood had been largely abandoned, its place being taken by Portland cement or reinforced concrete. In buildings there was a great saving of space owing to the thinness of the external walls: carpenters, in consequence, were taking the place of bricklayers; but he did not think there need be any cause for anxiety as to the stability of this form of construction. He urged the discontinuance of the use of white lead in paint, this having a deleterious effect upon the health of the workpeople. In France zinc oxide or zinc white, which was innocuous, was substituted.

* * *

A PUBLIC OPEN-AIR BATH.—Through the enterprise of the First Garden City Co., Ltd., and the generosity of Mr. Christie Miller, a public open-air bath has been constructed at Letchworth, Herts. The site is in the Howard Park, well screened around with trees, and practically in the centre of the estate. The bath is constructed of cement concrete, rendered over with a coating of fine cement. It is 75 ft. long, 40 ft. wide, 6 ft. deep at one end, 3 ft. deep at the other, and has a capacity of nearly 80,000 gallons. Spacious wooden dressing-boxes are provided, and no expense has been spared to make the bath thoroughly up-to-date in every respect. It was designed by Mr. A. W. E. Bullmore, engineer to the First Garden City Co., and carried out by the company's own workmen under the superintendence of Mr. W. G. Satchell, works manager.

* * *

A BIG CONTRACT FOR IRON PIPING.—The municipality of Victoria, British Columbia, have placed with the Stanton Ironworks, Ltd., of Stanton, Nottinghamshire, and Southwark, the contract for the delivery of 300,000 tons of iron piping required in connection with the new water, gas, and other public improvement schemes. This contract, for which tenders were received from several leading British, Canadian, American, and Continental firms, is stated to rank as the most valuable individual order of its character ever placed by Canada.

* * *

AN INTERNATIONAL EXHIBITION OF DRAWINGS, in connection with the third International Art Congress to be held in London from August 3rd to 8th, will be opened by Princess Louise at the Imperial Institute, South Kensington, on July 27th, and will remain open for about a month. A special feature will an exhibit by the Ecole des Beaux-Arts, Paris.

* * *

A QUICK RETURN FOR BUSINESS ENTERPRISE.—As a practical instance of what enterprise in the erection of new works in a suitable place will do, the experience of Messrs. Henry Hill and Co. is interesting. Twelve months ago this firm acquired land and erected substantial new works at Derby, finding employment for between two and three hundred hands in the manufacture of incandescent gas mantles. The works were put up on the most modern lines, and great savings in the costs of manufacture resulted, insomuch that the whole of the shares of the company have been acquired by the Welsbach Incandescent Gas Light Co., Ltd., at a very substantial premium. The directors of Messrs. Henry Hill and Co. may well be pleased with such quick returns as a result of their forward policy.

* * *

RETENTION OF CONTRACT MONEY.—The Sheffield Society of Architects and Surveyors and the Sheffield Master Builders' Association have directed attention to the practice of the Corporation in retaining, in connection with building contracts, 10 per cent. of the contract prices for a period of twelve months after the completion of the work, and have urged that the keeping in hand of that amount for the period named worked a hardship on, and meant a loss to, contractors. The Finance Committee recommend that in future one half of the 10 per cent. be paid on the expiration of six months, and the other half at the end of twelve months.

* * *

THE DEPARTMENT OF ARCHITECTURE AT THE UNIVERSITY OF SHEFFIELD has been founded at the desire of the Sheffield Society of Architects and Surveyors, and the Board of Architectural Association have appointed Sir Aston Webb and Mr. Halsey Ricardo to act as visitors. The department will provide (1) a systematic course of training for students wishing to become architects (to be taken by them before entering an architect's office, though not necessarily before they are articled), and (2) an advanced and continuous course of study for students during their pupilage, and also when they become qualified assistants. Mr. W. S. Purchan is the lecturer, assisted by leading Sheffield architects. The Michaelmas term begins on October 7th.

* * *

ROYAL SANITARY INSTITUTE: NEW MEMBERS.—Following is a list of new members of the Royal Sanitary Institute elected during the present month. Those marked thus * have passed the examination in Sanitary Science as applied to Buildings and Public Works; those marked thus † the examination for Inspectors of Nuisances; those marked thus ¶ the examination qualifying for membership. E. Ault, F.S.I., London; *T. R. Bailey, Fleetwood; J. K. Colwell, F.I.C., London; J. M. Glasse, M.B., Northumberland; A. H. Hogarth, M.B., Whitechapel, E.; *H. T. Hooper, P.A.S.I., Thornton Heath; C. E. Humphreys, M.R.C.S., Montgomery; *J. G. Jones, Wandsworth, S.W.; W. M. Jones, F.C.S., Chester; ¶†W. G. Marshall, Grays, Essex; F. A. Pickles, A.M.Inst.C.E., Nottingham; †A. E. Purnell, Wandsworth Common, S.W.; T. H. Scott, Inverness; *†H. G. Sharp, Oldham.

* * *

AT THE HEALTH EXHIBITION held at Cardiff from July 13th to 22nd, in connection with the 24th Congress of the Royal Sanitary Institute, Messrs. Burn Brothers, of 3, Blackfriars Road, London, S.E., were awarded a silver medal for cast-iron drains and soil-pipe fittings, while their exhibit of sewage syphons was deferred for further consideration. Bronze medals were awarded to Messrs. Adams-Hydraulics, Ltd., of 7, Old Queen Street, Westminster, for conical cross-bar penstocks; to Messrs. W. Summerscales and Son, Ltd., of Phœnix Foundry, Keighley, for steam-jacketed cooking pan; to Messrs. The Eagle Range and Gas Stove Co., Ltd., of 127, Regent Street, W., for their "New Premier Range"; and to Messrs. T. G. Williams and Co., for "Mack" slabs. The exhibit of conical manhole and lamp-hole covers by Messrs. Adams-Hydraulics, Ltd., was deferred for further consideration. Among the exhibits shown at the exhibition was one by the Glover-Lyon Ventilation Co., of Caxton House, Westminster, comprising illustrations of buildings which have been ventilated on their system.

PORTLAND CEMENT TRADE.

With almost utter stagnation continuing in the building trade, it is not surprising that we are unable to report any improvement in the demand for Portland cement. It appears to be correct, however, that large constructional works in different parts of the country, such as docks and harbour works, are calling for increased quantities, and there certainly appear to be signs of much more activity in this direction than has been the case for a long time past. Cheap money is apparently beginning to have its effect in this department, and many of the larger corporations throughout the country are arranging to put in hand heavy work which has been hung up for some years past, mainly for financial reasons. Although so far there has been no rush for Portland cement this season, reports indicate a considerable reduction in stocks at works, and some of the more optimistic among the makers are confident of a much stronger market towards the autumn, particularly if, as seems probable, there is a revival in the export demand. The tenders which were due on June 1st for the cement required for the Panama Canal have not yet been adjudicated upon. It appears that all the bids were sent to the Chief of the Commission in Panama for the final letting.

The exports of Portland cement from this country show a very considerable falling off as compared with last year, but still some slight increase as compared with 1906; practically the whole of the falling off is due to diminished shipments to the Pacific Coast of America, both North and South. On the other hand, the imports into this country continue to show a decrease. Those for the six months to the end of June are about 10 per cent. lower than they were for the corresponding half of 1907.

Correspondence.

An Old Lancashire Church.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—May I, through the medium of your valuable paper call attention to the proposed alterations to an historical church at Sefton, Lancashire? This old relic dates back as far as the Reformation, is constructed of stone (even the seats are of stone), and the torture chambers, etc., still exist. But it is going to be altered, the drawings showing the proposed alteration being now on view in the church.

Surely this should not be allowed without an attempt to prevent it. If there is any society which looks after such matters, I hope they will do so in the present case. C.S.

[The Society for the Protection of Ancient Buildings (the secretary of which is Mr. Thackeray Turner, 20, Buckingham Street, Strand, W.C.) concerns itself with these matters.—Ed. B.J.]

Deposits for Conditions of Competitions.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—May I offer a suggestion to Mr. Travers who, in your last issue, confesses to having been victimised by the time-honoured confidence trick, practised by committees promoting architectural competitions? In his next letter asking for particulars of competition, and covering the usual deposit, let him insert some such passage as this:—"I understand that a proper assessor will be appointed to advise your committee, and that the conditions are such as are usual." If, then, when he receives his conditions, he does not like them, let him stop his cheque, and thereby throw upon the committee the onus of proving that it is entitled to the deposit.

I have formed this habit, and it is the occasion of such gratification that I am always glad when the conditions show the advertisement to have been misleading. I even look forward to being sued with greater pleasure than to winning a competition, but I have, with regret, formed the opinion that the activities necessary to goad a committee to the point of taking action are beyond my powers of achievement. F.R.I.B.A.

Shoring.

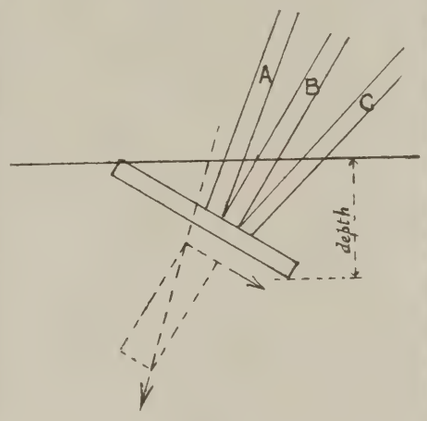
To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am obliged to your contributor for his reply to my letter in regard to the above on p. 37 of your issue for July 15th. With an experience of 35 years in shoring and similar work, I was interested to find a present-day article on the subject—such as that in your issue of June 24th—advocating a novel method of placing the sole-piece, and I naturally assumed that there must be some new and good reason for it. The explanation given, however, is disappointing.

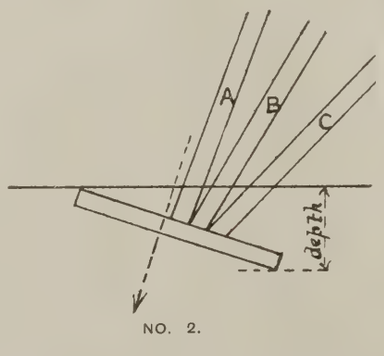
Your contributor quotes from Mr. Stock's book on shoring. If he will refer again to that book he will see that it is there clearly laid down that the sole-piece must be placed obliquely to the rakers. It is 20 years since I read the book, and I have not a copy by me to quote chapter and verse, but I well remember the great stress laid upon this feature, and the reasons given. Your readers can turn up "Specification" or any reputable text-book, and I am sure that they will find the same thing emphasized.

An average raking shore is not easily handled, and yet it is most important to go gently and carefully with structures needing to be shored up. The upper end of the shore should be notched to fit the needle, as shown in your contributor's article. The raker should then be gently lowered against the wall-plate under the needle, and carefully prised forward with a crowbar until the head of the shore slides up into its place and gets its bearing under the needle. Now this can only be done when the sole-piece is laid obliquely; and (referring to the sketches) C is fixed first, then B, and lastly, A.

Your contributor supports his principle by quoting from an actual erection in which tightening was obtained by wedging at the upper ends of the rakers, and he also suggested wedging between the feet. I must leave the merits of this practice to the judgment of your readers, but I might point out that an observant surveyor or builder will often meet with actual erections that are very bad examples.



NO. 1.



NO. 2.

If the sole-piece is placed at right angles to the shores, as shown in sketch No. 1, and as advocated by your contributor, the tendency is for the sole-piece to force its way inwards and downwards, because the resultant force is always more vertical than the usual angle of the rakers. But if the sole-piece is placed at an angle slightly less than a right angle to the top raker (as shown in sketch No. 2), it will be more nearly square with the resultant force, and, therefore, will be more stable.

Another drawback in your contributor's suggested method is the extra depth of excavation, and where a platform and concrete is necessary this is a matter for consideration.

The point is, Why should one depart from a well-established principle except by way of improvement: and, if so, what is that improvement?

BUILDING SURVEYOR.

Notes on Competitions.

Free Library and Institute, Dolgelley.

Our attention has been drawn to yet another instance of the familiar practice of obtaining designs "on the cheap." This is the case of the competition for a new free library and institute to be built at Dolgelley, at a cost of £650. The "conditions" are issued on a scrap of flimsy paper, accompanied by a feeble site plan, and the promoters offer £10 for "the best design and plans." The selection will be made by the committee in charge of the matter. This is the sort of competition which perpetuates all the bad features which architects have been trying to get rid of for so many years past. Designs have to be sent in by August 12th to the Rev. W. Titus-Jones, Brynyffynon, Dolgelley, Merioneth.

New Schools at Eccles.

The awards in this competition are as follows:—1st, Mr. Henry Lord; 2nd, Messrs. Charles Clegg and Son; 3rd, Mr. J. N. Fletcher—all of Manchester.

Secondary School for Boys, Bromley.

The following architects are to be invited to submit designs in competition for a secondary school for boys which is proposed to be erected at Bromley:—Mr. C. H. B. Quennell, Mr. Arnold Mitchell, Mr. H. P. Burke-Downing, Mr. J. Ladds, Mr. E. Hellicar, and Messrs. Russell and Cooper—all of London. Mr. John Bilson, F.R.I.B.A., of Hull, will act as assessor.

Extension of Princess Alice's Hospital, Eastbourne.

On the recommendation of the assessor (Mr. A. Hessell Tiltman, F.R.I.B.A.), the design submitted in this competition by Mr. W. Hay Murray, of Eastbourne, has been provisionally accepted.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
July 31	ELEMENTARY SCHOOL AT BANBURY.—Conditions from Oliver J. Stockton, Town Clerk, Banbury. Deposit £1
Aug. 1	COUNTRY HOSPITAL, GUERNSEY.—Conditions from Thomas Robin, President of Directors of Country Hospital, Castel, Guernsey.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. H. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SCHOOL AT DEVONPORT. Limited to architects in the Three Towns. Premiums 20 and 10 guineas.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.

Obituary.

THE LATE MR. W. R. DAVIES, builder, of Birkenhead, left estate value £34,069.

THE LATE MR. JAMES HORN, builder, of Newcastle-on-Tyne, left estate which has been proved at £28,497 gross.

THE LATE MR. R. F. VALLANCE president of the Society of Architects, left estate which has been proved at £30,158.

Current Market Rates of Materials in the Various Trades.

e quotations given in this list apply only to larger quantities purchased in London (the minimum quantity for which these prices pplicable being given where practicable). Retail purchasers must expect to pay a reasonable advance on wholesale rates, as well riage. The trade discounts for each item have not been considered, as these would be affected by the quantity of the goods ased. The endeavour is made to give fair average prices which would in many cases be affected by the quality of the materials ed.

BRICKLAYER.

current rates for stocks, s, and other common build- icks, and for local facings given, as local considera- bviously affect their prices, aders who may make use of formation given in these n can readily obtain quota- or themselves.

		Current rates.	Rates for similar materials on July 1.
lue pressed Staf- ire bricks	per 1,000	3 5 0	
inose bricks	do.	3 15 0	
ourbridge fire bricks	do.	4 15 0	
Glazed Bricks.			
ite and ivory white, l one side	per 1,000	10 7 6	
ed one end	do.	9 17 6	
ns, bullnose bricks, icks glazed on 4½in.	do.	13 17 6	
ed two sides (double ers)	do.	15 17 6	
d two ends (double s)	do.	12 17 6	
d one side and two	do.	16 17 6	
d two sides and d	do.	17 17 6	
amfers, and squints angle of 45 degs.) bullnose bricks, splays, round ends, e stops, and mitres	each	0 0 5	
ullnosed mitres ...	do.	0 0 7	
angles, 2½in. radius	do.	0 0 4	
do. 4½in. radius	do.	0 0 10	
e bricks (stretchers laders)	do.	0 0 8	
and cream	per 1,000	11 17 6	
d one end	do.	11 7 6	
lours, extra ...	do.	4 0 0	
ts, bullnoses, and glazed on 4½in.	do.	15 17 6	
l two sides (double rs)*	do.	18 17 6	
l two ends (double s)*	do.	15 17 6	
l one side and two	do.	19 17 6	
bricks in other extra	do.	3 10 0	
two sides and	do.	20 17 6	
mfers, and squints ngle of 45 degs	do.	19 17 6	
olours, extra ...	do.	3 0 0	
ngles, 2½in. radius	each	0 0 5	
4½in. radius	do.	0 0 10	
bricks (stretchers ders)	do.	0 0 8	
uality salt-glazed lazed one side ...	per 1,000	8 17 6	
one end	do.	8 7 6	
bullnoses and glazed on 4½in.	do.	12 7 6	
two sides (double s)	do.	14 7 6	
two ends (double	do.	11 7 6	
one side and	do.	15 7 6	
two sides and	do.	16 7 6	
chamfers, and r an angle of 45	do.	13 17 6	
prepared or alt-glazed with ed side or ends, ed above, same for best ivory	per 1,000		
ality salt-glazed illnoses, double und ends, bull- ps and mitres	each	0 0 4	
salt-glazed do.	do.	0 0 5	
t-glazed double mitres	do.	0 0 4	
salt-glazed do.	do.	0 0 5	
salt-glazed in gles, 2½in. radius	do.	0 0 3	
4½in. radius	do.	0 0 5	
salt-glazed in- es, 2½in. radius	do.	0 0 4	
4½in. radius	do.	0 0 8	
glazed mould- (stretchers and	do.	0 0 8	
do.	do.	0 0 8	

		Current rates.	Rates on July 1.
Second-quality glazed white and ivory white, 30s. per 1,000 less than best white			
Second-quality coloured bricks, same price as best whites of their respective descriptions			£4 per 1,000 above list.
Plain arch bricks £6 per 1,000 above list for respective kinds and colours			
Cambered arch bricks 1s. 2d. each, any kind or colour, if not exceeding 9ins. by 4½ins. by 2 ins			1s. each.
Rich majolica glazed bricks (headers and stretchers)	per 1,000	21 17 6	
do. quoins and bullnoses ...	do.	26 17 6	
Sand, Ballast, Cement, Lime, and Fireclay.			
Thames and pit sand ...	per yard	0 7 0	
Thames ballast	do.	0 5 6	
Best Portland cement ...	per cask	0 5 10	
Best ground blue lias lime	per ton	0 19 0	
(NOTE.—The charge for the sacks to be added to prices per ton.)			
Grey stone lime	per yard	0 17 6	
Stourbridge fireclay in sacks	per ton	0 27 6	upwards

MASON, SLATER AND TILER.

The average current prices for stone per foot cube are given in the following list, the railway rates being calculated on the assumption that orders will be given for full truck loads of about 4 tons upwards.

Brown Whitbed Portland stone (in blocks containing on an average 20 ft. cube)	per ft. cube	0 2 0	
White Basebed do.	do.	0 2 1½	
Bath stone	do.	0 1 6	
Beer stone	do.	0 1 6	
Ancaster stone	do.	0 1 10	
Greenshill stone	do.	0 1 10	
Chilmark stone	do.	0 1 9	
Darley Dale stone	do.	0 2 3	upwards
Red Mansfield stone	do.	0 2 4	
Closeburn red freestone ...	do.	0 2 0	
Hard York stone	do.	0 2 10	
do. 6 in. sawn both sides landings (random sizes)	per ft. super	0 2 4	
do. 6 ins. rubbed two sides do.	do.	0 2 7	
do. 3 ins. sawn two sides slabs	do.	0 1 0	
do. 2 ins. self-faced random slabs	do.	0 0 6	
Broken Granite (blue Guernsey), 1½ ins. ...	per ton.	0 9 9	c.i.f. Thames
do. do. 2 ins. ...	do.	0 9 6	do.
do. do. 2½ins ...	do.	0 9 0	do.
do. (Imperial blue Scotch), 1½ ins.	do.	0 8 9	do
do. do. 2 ins. ...	do.	0 8 6	do.
do. do. 2½ ins. ...	do.	0 8 3	do.
do. (Midland Counties), 1½ ins.	do.	0 11 0	London station
do. do. 2 ins. ...	do.	0 10 9	do.
do. do. 2½ ins. ...	do.	0 10 6	do.
Granite Kerb (Norwegian). 6 ins. by 12 ins. ...	per foot	0 1 4	c.i.f., Thames
do. do. 12 ins. by 6		0 1 4	do.
do. do. 12 ins. by 8		0 1 6	do.
do. (Imperial blue Scotch) 6 ins. by 12 ins.	do.	0 1 3	do.
do. do. 12 ins. by 6		0 1 3	do.
do. do. 12 ins. by 8		0 1 5	do.
do. (grey Jersey), 6 ins. by 12 ins.	do.	0 1 3½	do.
do. do. 12 ins. by 6		0 1 3½	do.
do. do. 12 ins. by 8		0 1 5½	do.
Circular kerb 4d. per foot extra.			
Granite Pitchings (Aberdeen), 3 ins by 5 ins ...	per ton.	1 15 0	do.
do. do. 3 ins. by 6 ins.	do.	1 14 5	do.
do. do. 4 ins. by 5 ins.	do.	1 14 0	do.
do. do. 4 ins. by 6 ins.	do.	1 13 0	do.
do. (Imperial grey Scotch) 3 ins. by 5 ins.	do.	1 10 0	do.
do. do. 3 ins. by 6 ins.	do.	1 9 0	do.
do. do. 4 ins. by 5 ins.	do.	1 9 0	do.
do. do. 4 ins. by 6 ins.	do.	1 7 6	do.
do. (grey Jersey), 3 ins. by 5 ins.	do.	1 7 6	do.
do. do. 3 ins. by 6 ins.	do.	1 6 6	do.
do. do. 4 ins. by 5 ins.	do.	1 6 6	do.
do. do. 4 ins. by 6 ins	do.	1 5 0	do.
do. (blue Guernsey), 3 ins. by 5 ins	do	1 14 0	do.
do. do. 3 ins. by 6 ins.	do.	1 13 0	do.
do. do. 4 ins. by 5 ins.	do.	1 13 0	do.
do. do. 4 ins. by 6 ins.	do.	1 12 0	do.

		Current rates.	Rates on July 1.
Slates.			
*Best blue Bangor Countess slates	per 1,000 of 1,200	13 0 0	
do. 20 ins. by 12 ins.	do.	13 15 0	upwards
First-quality Bangor Countess slates	do.	12 17 6	
do. 20 ins. by 12 ins.	do.	13 10 0	
do. Ladies	do.	7 5 0	
Permanent green Countess slates	do.	11 10 0	upwards
do. 18 ins. by 10 ins. ...	do.	9 10 0	
do. Ladies	do.	6 10 0	
Best "Eureka" unfading green Countess slates ...	do.	15 15 0	
do. 20 ins. by 12 ins. ...	do.	18 7 6	
do. 18 ins. by 10 ins. ...	do.	13 5 0	
do. Ladies	do.	10 5 0	
Best blue Portmadoc Countess slates	do.	13 10 0	
do. Ladies	do.	6 10 0	
These prices are for lots not less than 4 tons.			
Tiles.			
Plain red roofing tiles ...	per 1,000	2 2 0	
do. hip and valley tiles ...	per doz.	0 3 6	
Best Broseley tiles	per 1,000	2 10 0	
do. ornamental tiles	do.	2 15 0	
do. hips and valley tiles ...	per doz.	0 3 10	
Edwards's (Ruabon) brindled red or brown tiles ...	per 1,000	2 17 6	
do. ornamental do.	do.	3 0 0	
Valley tiles	per doz.	0 3 9	
Hip tiles	per doz	0 4 0	
Peake's mottled or red Staffordshire tiles	per 1,000	2 12 0	
do. ornamental do.	do.	2 15 0	
Valley tiles	per doz.	0 3 6	
Hip tiles	do.	0 4 0	
Best "Rosemary" plain tiles	per 1,000	2 8 0	
do. ornamental do.	do.	2 10 0	
Valley tiles	per doz	0 3 8	
Hip tiles	do.	0 4 0	
"Hartshill" sand-faced tiles	per 1,000	2 10 0	
do. pressed do.	do.	2 7 6	
do. ornamental	do.	2 10 0	
Valley tiles	per doz	0 3 5	
Hip tiles	do.	0 4 0	

CARPENTER AND JOINER.

Fir timber best middling Danzig	per load	4 15 0	
Seconds	do.	4 10 0	
Riga and Libau, full size	do.	3 5 0	
Swedish Balks	do.	3 0 0	
Pitch-pine (average 30 ft.)	do.	4 5 0	
Swedish Deals, 3 ins. by 11 ins., and 4 ins. by 11 ins. 1st quality	per standard	22 10 0	
do. 2nd do.	do.	20 0 0	
do. 3rd do.	do.	13 10 0	
do. 4th do.	do.	11 5 0	
do. 1st quality 3 ins. by 9 ins	per standard	19 10 0	
do. 2nd do.	do.	16 0 0	
do. 3rd do.	do.	12 10 0	
do. 4th do.	do.	11 10 0	
Swedish Battens, 2½ ins. by 7 ins. 1st quality	per standard	14 10 0	
do. 2nd do.	do.	13 0 0	
do. 3rd do.	do.	11 10 0	
do. 4th do.	do.	10 10 0	
Battens, 2½ ins. by 6 ins., 2 ins. by 6 ins., and 2 ins. by 4 ins. do.	do.	9 10 0	
do. 2 ins. by 4½ ins. and 2 ins. by 5 ins.	do.	9 0 0	
For foreign sawn boards 1 in. by 7 ins. and 1¼ ins. by 7 ins. add to price of battens	do.	0 10 0	
For ¾ in. do. add	do.	1 0 0	
White Sea first yellow deals 3 ins. by 11 ins. (average price)	do.	24 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Second yellow deals 3 ins. by 11 ins.	do.	19 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	12 0 0	
White Sea first yellow battens 2½ ins. by 7 ins. and 3 ins. by 7 ins.	do.	17 0 0	
Second do.	do.	13 10 0	
Third do.	do.	11 10 0	
Petersburg first yellow deals 3 ins. by 11 ins.	do.	21 10 0	
For 3 ins. by 9 in. deduct from above	do.	4 0 0	
do. second yellow deals 3 ins. by 11 ins.	do.	14 0 0	
For 3 ins. by 9 ins. deduct	do.	1 10 0	
do. third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	11	

		Current Rates.	Rates on July 1.
Petersburg battens, 1st	per standard	£4 0 0	
do., second	do.	11 10 0	
do. third	do.	10 10 0	
White Sea, first white deals, 3 ins. by 11 ins.	do.	15 10 0	
For 3 ins. by 9ins. deduct from above	do.	1 0 0	
do., second white deals 3 ins. by 11 ins.	do.	13 10 0	
For 3 ins. by 9 ins., deduct from above	do.	1 0 0	
do., first white battens ...	do.	11 0 0	
do., second do.	do.	10 0 0	
Pitch-pine deals	do.	19 0 0	
Add for less than 2 ins. thick	do.	0 10 0	
First yellow pine regular sizes	do.	40 0 0	
do., oddments	do.	32 0 0	
Second yellow pine regular sizes	do.	33 0 0	
do., oddments	do.	28 0 0	
American whitewood planks	per ft. cube.	0 4 6	
Kauri pine planks	do.	0 4 0	
1 in. by. 7 ins. yellow flooring, planed and shot ...	per square	0 14 0	
Add, if matched	do.	0 0 6	
1¼ in. by 7 ins. yellow, planed and matched ...	do.	0 16 6	
1 in. by 7 ins., white planed and shot	do.	0 12 6	
1 in. by 7 ins., white, planed and matched ...	per square	0 13 0	
1¼ in. by 7 ins., do.	do.	0 15 6	
⅝ in. by 7 ins., yellow matched boarding, beaded or V-jointed	do.	0 11 6	
1 in. by 7 in., do.	do.	0 15 0	
⅝ in. by 7 ins., white do. ...	do.	0 10 0	
1 in. by 7 ins. do.	do.	0 13 0	
For 6 ins. boards deduct from the above prices ...	do.	0 6 9	

Hardwoods.

Teak	per load	18 0 0	
Danzig and Stettin oak logs (large)	per ft. cube	0 3 0	
do., small	do.	0 2 6	
Wainscot oak logs	do.	0 5 9	
Dry wainscot oak (in the 1 in.)	per ft. superi	0 0 9	
⅝ in. do., do.	do.	0 0 7	
Dry Honduras mahogany (Tabasco), in the 1 in. ...	do.	0 0 10	
do., selected Figury do. ...	do.	0 1 8	upwards
do., American walnut do....	do.	0 0 10	

FOUNDER AND SMITH.

Cast-iron columns and stanchions, including patterns	per ton	7 10 0	
do., drain pipes, 3 ins. diameter, L.C.C. weights, in 9 ft. lengths, coated with solution	per yard	0 2 4	
do., do., 4 ins. diameter ...	do.	0 3 0	
do., do., 5 ins., do.	do	0 3 10	
do, do., 6 ins., do.	do.	0 4 6	
do., do., 9 ins., do.	do.	0 6 3	
Rolled steel joists, Belgian (ordinary section)	per ton	5 10 0	
do., English	do.	7 0 0	
Rolled steel fencing wire...	do.	7 0 0	
do., galvanised	do.	9 0 0	
Steel compound girders (ordinary section)	do.	9 5 0	
Angles, channels, etc., do.	do.	9 5 0	
Galvanised sheets, common brands	do.	13 10 0	
Wrought-iron gas tubes (current discount off standard lists)	p.c.	70 p.c.	
do., water tubes	do.	67½ p.c.	
do., steam tubes	do.	62½ p.c	
do., galvanised gas tubes...	do.	57½ p.c.	
do., do., water tubes ...	do.	55 p.c.	
do., do., steam tubes ...	do.	50 p.c.	

		Current Rates.	Rates on July 1.
Expanded metal lathing, ⅜ in. mesh (short way) 24 gauge, in quantities of not less than 300 yds. ...	per yard	0 0 10	
do., 22 gauge	do.	0 1 3½	
do., 20 gauge	do.	0 1 5½	
do., ½ in. mesh, 24 gauge...	do.	0 0 10½	
do., 22 gauge	do.	0 1 4½	
do., 20 gauge	do.	0 1 6½	

(For quantities of between 300 and 700 yds. deduct approximately 10 per cent. from above; for quantities of between 700 to 1,400 yds., deduct approximately 15 per cent.)

PLUMBER, COPPERSMITH, AND GLAZIER.

Sheet lead, 3 lbs.	per ton	£17 2 6	£16 15 0
do., above 3 lbs.	do.	16 12 6	16 5 0
Lead water pipe up to 2 in.	do.	17 2 6	16 15 0
Lead barrel pipe	do.	18 2 0	17 15 0
Lead pipe, tinned inside ...	do.	44 0 0	43 12 6
do., and washed outside ...	do.	46 10 0	46 2 6
do., soil pipe, up to 4½ ins.	do.	20 2 6	19 15 0
do., do., to 6 ins.	do.	21 2 6	20 15 0
do., do., above	do.	21 17 6	21 10 0
Lead sash weights	do.	19 12 6	19 5 0
Sheet zinc	do.	28 0 0	upwards
Copper sheets	do.	71 0 0	
do., nails	per lb.	0 0 11	
., wire	do.	0 0 10	
Plumber's solder	per ton	65 0 0	
Tinman's solder	do.	80 0 0	
Old lead (against account, etc.)	do.	11 15 0	
Clean scrap copper, do ...	per cwt.	2 10 0	2 12 0
Clean scrap brass do. ...	do.	1 18 0	2 0 0
Old zinc, do.	do.	0 13 0	0 14 6
15 oz. English sheet glass, thirds (in crates)	per foot	0 0 2¼	
do., do., fourths	do.	0 0 1¾	
21 oz. do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 2	
26 oz., do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 3½	
32 oz., do., do., thirds ...	do.	0 0 4	
do., do., fourths	do.	0 0 3½	
For obscured sheet glass add to fourths	do.	0 0 1	
15 oz. fluted sheet	do.	0 0 2¼	
21 oz., do., do.	do.	0 0 4	
For obscured fluted sheet, add to above	do.	0 0 1	
⅛ in. plain rolled plate ...	do.	0 0 2¼	
3-16 in., do., do.	do.	0 0 2½	
¼ in. do., do.	do.	0 0 3	
For rolled fluted plate add to the above prices ...	do.	0 0 7	

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Accident Insurance Coupons have been sent to the following:—

A. B. (Blackheath), T. W. F. (Wolverhampton), W. B. G. (Pembridge Square), F. C. (York), A. S. (Keighley), J. B. (Shrewsbury), W. J. D. (Plymouth), A. D. (Westgate), A. G. L. (Bristol), E. F. A. S. (London, E.C.), W. H. G. (Dover), W. I. S. (Woodbridge), W. M. H. (Sheffield), T. W. (West Bridport), T. F. (Mansfield), E. B. G. (Handsworth), F. S. (Long Eaton), H. K. (Huddersfield), G. H. (Hemel Hempstead).

Bankruptcies.

During the week ended July 10th, fourt failures in the building and timber trades of E land and Wales were gazetted, as against sev teen for the corresponding week in 1907, and ni teen in 1906.

A. Dunn, builder, Gloucester. Adj., July 7.

F. R. Buckingham, builder, Southall. A July 4.

B. W. Dowell, contractor, Hammersmith. A July 7.

G. B. Andrews, builder, Ivybridge. R.O. Adj., July 10.

H. J. Harding, builder, Belvoir, Bideford. R and Adj., July 7.

H. C. Foulkes, builder, Finsbury Pavem House, E.C. R.O., June 3.

J. E. A. Burrows, builder and contractor, V ton, Droitwich. Gross liabilities, £2,142; e mated deficiency, £596.

T. H. Thomes, painter and decorator, Cha Ash, Wolverhampton. Adjourned examinat C.C., Wolverhampton, July 22, at 11.

G. H. Knights, builder, Hanwell. First meeti 14, Bedford Row, W.C., July 22 at 3. P.E., C Brentford, August 5, at 11. Adj., July 10.

T. W. Cletheroe, journeyman carpenter, builder, Sheringham, late Weybourne. First m ing, O.R.'s, Norwich, July 18, at 12. P.E., S Hall, Norwich, July 22, at 11.

T. Tancock, timber dealer, Honeywell, K steignton. R.O., July 9. First meeting, O.R Exeter, July 30, at 10.30 P.E., The Cas Exeter, July 30, at 11.30. Adj., July 9.

N. Marshall, builder, Thundersley, R.O., Jul First meeting, The Institute, Clarence R Southend-on-Sea, July 22 at 12. P.E., Shire H Chelmsford, August 5, at 10. Adj., July 4.

E. P. Milne, heating and hot water engin Charing Cross and Wandsworth. R.O., July First meeting, Bankruptcy Court, July 21, at P.E., Bankruptcy Court, August 25, at 11. A July 7.

New Companies.

Worthing West End Brick Company, Ltd., acquire the business of a brickmaker carried by C. C. Cook at Goring, Sussex. Capital, £3 Registered office, Brickfield, Goring-by-Sea, Sus

Midland Land and Property Development Ltd. Capital, £2,000. To carry on the busi of builders, contractors, brick, tile, pot and makers, stone and mineral merchants, founders, etc. Registered office, Albert Buildi 151-7, Fitzwilliam Street, Sheffield.

Cocking and Sons, Ltd. Capital, £25,000. take over the business of manufacturers of br tiles, pipes, pottery, earthenware, china, t cotta, stoneware, plastic materials or prod etc., carried on by G. E. Cocking and F. Cocking at Walkeringham, Notts, and at B near Doncaster, Yorks.

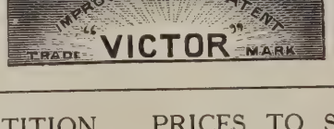
Canadian Improved Construction Company Stephen's Chambers, Telegraph Street, E.C. tal, £50,000. To acquire and take over an vention and patents, licenses, concessions, and like, for the manufacture of cement, conc lime, building or constructional and other r rials, and to carry on in Canada and elsewher business of constructors, manufacturers of dealers in cement, concrete, etc.

Yockney and Hartham Park Stone Co., Capital, £60,000. To take over the business quarry owners and stone merchants (1) carrie by H. C. H. Yockney and W. A. Yockney, as ney and Co., at Corsham, Wilts; and at the London Stone Depot, Warwick Road, Kensin W.; (2) by T. H. Kingerlee and H. J. Luca the Corsham Quarrying Company, at Cor aforesaid, and (3) by A. C. Kinnier, T. H. gerlee, W. A. Yockney, and H. J. Lucas at neir and Lucas, at Corsham. Registered Greengate House, Corsham.

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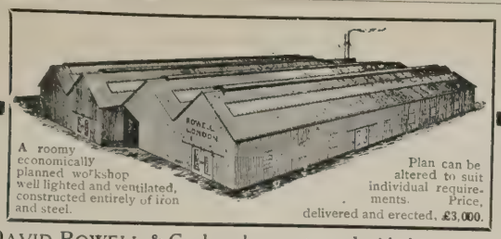


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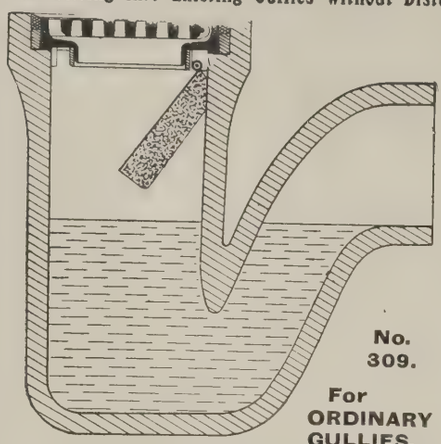
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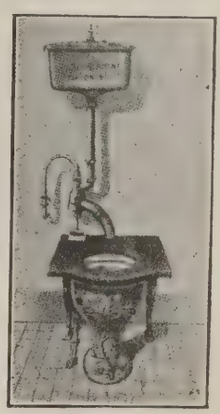
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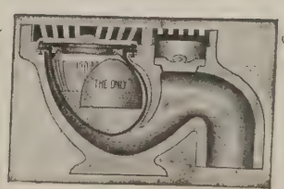
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Telegraphic Address : "Buildable, London."

Telephones : ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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At all newsagents and bookstalls	8	8
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aberdeen.—For alterations and additions at the south-west portion of the main buildings of the Aberdeen Royal Asylum. Messrs. Kelly and Nicol, architects, 367, Union Street, Aberdeen:—

Accepted tenders.

Gall and Walker, builders	£1,583 0 0
Leslie and Hay, carpenters	1,236 9 0
A. B. Robertson and Son, plumbers	1,234 8 0
J. Scott and Son, plasterers	439 4 6
J. Mason and Son, glaziers	58 13 6
J. Abernethy and Co., iron-workers	220 11 0
F. Morrison, junr., slater	23 10 0
Aberdeen Electrical Engineering Co., electric lighting	350 10 0
J. Abernethy and Co., heating engineers	699 17 4

Beeston (Notts.).—For constructing new roads and sewers, for owners of the Lenton Abbey Estate. Mr. Charles Carter, M.S.A., architect and surveyor, Parliament Buildings, Parliament Street, Nottingham. Quantities by the surveyor:—

J. Coupe	£3,791 18 1
E. Cope	3,401 0 0
J. C. Trueman, Ltd.	3,356 0 0
C. Cannam	3,232 13 6
A. Palmer	3,102 0 0
S. Thumbs	2,954 0 0
T. Smart	2,939 17 10
E. Somerfield	2,865 0 0
J. Thraves	2,700 0 0
C. E. Cox and Co.	2,682 17 4
A. and C. Raynor	2,617 18 3
J. Hawley and Son,* Ilkeston	2,615 0 0

*Provisionally accepted.

Chichester.—For the erection of a secondary school for girls in Stockbridge Road, Chichester, for the West Sussex and Chichester Joint Education Authority. Mr. Haydn P. Roberts, A.R.I.B.A., architect, Horsham. Quantities by Mr. H. A. Grover, 32, New Bridge Street, Ludgate Circus:—

F. W. Potter, Selsey	£10,850
Peckett and Co., Crawley	10,767
Burrell and Standen, Arundel	10,582
Brown and Sons, Brighton	10,488
Newell and Sons, Bognor	10,381
Connar Bros., Crowborough	10,377
G. Potter, Horsham	10,350
E. and A. Springings, Portsmouth	10,200
G. Lynn and Sons, Brighton	10,173
Willcock and Co., Wolverhampton	9,975
Peerless, Dennis and Co., Eastbourne	9,940
J. Lindfield and Sons, Littlehampton	9,925
Hillman and Murrell, Horsham	9,747
J. Longley and Co., Crawley	9,669
H. Lindfield and Sons, Horsham	9,650
Rowland Bros., Horsham	9,575
E. Wilcox, Fareham	9,750
F. Sandall and Sons, Worthing	9,566
W. Potter, Horsham	9,490
Norman and Burt, Burgess Hill	9,429
S. Salter, Southsea	9,320
R. Cook and Sons, Crawley	9,253
F. Privet,* Southsea	8,888

Architect's estimate, £9,428.
*Accepted.

Enfield.—For the erection of a pair of cottages, stables, and cartsheds, in Lincoln Road, Enfield, for the Urban District Council. Mr. Richard Collins, surveyor:—

W. H. Onyett, Wood Green	£1,950
Saunders and Co., Herne Bay	1,560
Wilkinson and Co., Finsbury Park	1,510
A. Fairhead and Sons	1,446
Fitch and Cox	1,419
Lane and Harvey, Enfield Wash	1,295
A. F. Almond, Enfield Highway	1,276
Jennings and Grenfell, Waltham Cross	1,265
J. Thomas	1,250
A. Monk, Edmonton	1,250
L. and W. Patman	1,229
B. E. Nightingale, London	1,200
Pavey and Son,* Winchmore Hill	1,173

*Accepted.

Histon.—For the south side extension of Histon Baptist Church. Messrs. George Baines and Son, architects, 5, Clement's Inn, Strand, W.C.:—

Coulson and Lofts	£847 6 6
William Saint	845 7 4
Negus and Sons	774 12 0
W. Bell and Sons	835 19 0
Battley Sons and Holmes*	757 15 0

*Accepted, less estimate D (£10).

(*Tenders continued on page viii.*)

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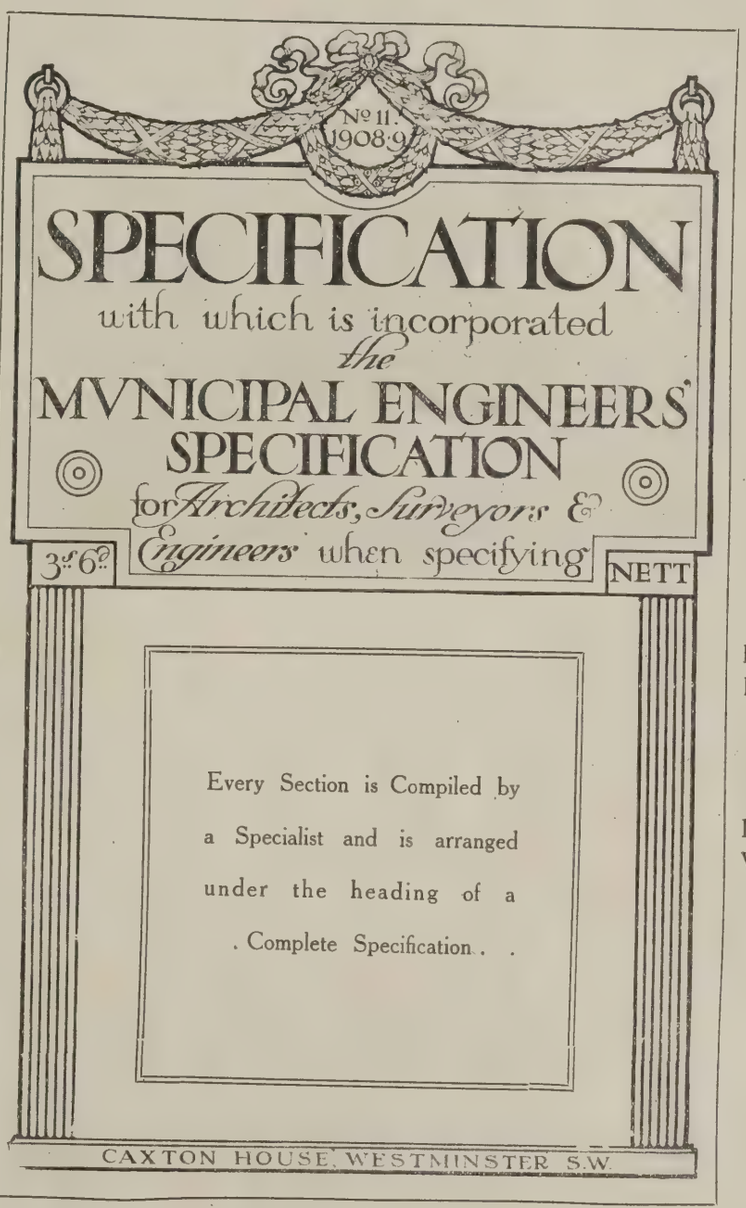
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(Tenders continued from page vi.)

Ferndale (Wales).—For pulling down five cottages in Maxwell Street, Ferndale, and for the erection of a new bakery and stores, with engine-rooms for suction gas and electric producing plant and foundations for same, for the Ferndale Industrial Co-operative Society. Messrs. W. M. Lewis and Morgan, architects, Pontypridd and Tonypandy:—

J. E. Evans, Cardiff	£3,911 0 0
Evans Bros., Cardiff	3,413 9 8
W. Morris, Ferndale	3,012 11 2
W. Williams, Cardiff	2,890 0 0
Jones Bros., Treharris	2,794 0 0
D. Davies and Sons, Cardiff	2,770 0 0
J. B. Mundy, Taff's Well	2,513 8 1
Doddington and Son, Pontypridd	2,455 0 0
J. Dawson, Ferndale	2,448 1 3
E. R. Evans and Bro.,* Gwynneth Street, Cardiff	2,349 0 0

*Accepted.

Greenwich.—For forming and paving roads as new streets, for Greenwich Borough Council. Mr. E. J. Heward, borough engineer and surveyor:—

Eastcombe Avenue.

G. J. Anderson	£2,150
J. Etheridge	1,967
Fry Bros.	1,923
H. Woodham and Sons	1,900
J. Mowlem and Co., Grosvenor Wharf, Westminster	1,795

Part of Shooter's Hill.

G. J. Anderson	1,196
J. E. Etheridge	1,035
Fry Bros.	1,019
H. Woodham and Sons	990
J. Mowlem and Co.	815

High Beckington (Devon).—For alterations and additions to "The Stores," High Beckington, Devon. Mr. Spencer Edwards, P.A.S.I., architect and quantity surveyor, Barnstaple. Quantities by same.

Woolaway and Sons, Barnstaple	£907 0 0
E. Karslake, Barnstaple	667 0 0
Harris and Pedler, High Beckington	633 0 0
A. Darch,* Tarnscombe	620 0 0
H. Squire and Son, Beaford	619 19 7

*Accepted, subject to slight amendment.

London, S.W.—For the erection of new divisional offices on the St. John's Hill site, Wandsworth, for the London County Council. Mr. T. J. Bailey, architect (Education):—

Leslie and Co., Ltd., S. Kensington	£4,961 0 0
C. Wall, Ltd., Lloyd's Avenue	4,873 16 0
Holloway Bros. (London), Ltd., Belvedere Road	£4,819 0 0
F. and H. F. Higgs, Herne Hill	4,733 0 0
Higgs and Hill, Ltd., South Lambeth Road	4,769 16 0
Works Committee estimate	4,715 0 0
F. G. Minter, Putney	4,713 0 3
E. Lawrance and Sons, City Road	4,700 0 0
Spencer, Santo and Co., Ltd., Westminster	4,629 9 4
H. L. Holloway,* Church Street, Deptford	4,340 0 0

*Recommended for acceptance.

(Erection of building £4,198; fittings, £87; wall tiling, £55; total, £4,340.)
Architect's estimate, £4,685.

Norbury.—For the erection of seven blocks comprising 63 cottages, on the Norbury estate, for the London County Council:—

Kirk and Randall, Woolwich	£14,820 0 0
James Parsons, Waterloo Road, S.E.	14,131 0 0
James Smith and Sons, Ltd., South Norwood	14,096 0 0
Chas. Wall, Ltd., Lloyd's Avenue	13,695 0 0
Rowley Bros., Tottenham	13,633 0 0
Leslie and Co., Ltd., Kensington	13,558 0 0
E. J. Saunders, Croydon	13,321 0 0
H. L. Holloway, Deptford	13,163 0 0
F. and H. F. Higgs, Herne Hill	13,100 0 0
G. H. Carter, Tottenham	12,933 0 0
W. Akers and Co., Ltd., South Norwood	12,852 0 0
F. and T. Thorne, Isle of Dogs	12,726 0 0
Gathercole Bros., Norbury	12,224 0 0
W. Smith and Sons,* Croydon	8,960 0 0
W. Potter, Croydon†	8,927 10 0
G. E. Everitt, Croydon†	8,749 0 0

*Recommended for acceptance. †Withdrawn.

Ramsgate.—For new elementary schools, for the Corporation. Mr. T. G. Taylor, borough engineer:—

Anderson Bros., Margate	£11,950 0 0
F. G. Minter, Putney	11,577 0 0
Adcock and Son, Canterbury	11,527 0 0
A. E. Goodbourn, Ramsgate	11,507 0 0
L. Seager, Sittingbourne	11,497 0 0
J. White, Ramsgate	11,285 0 0
G. Browning, Canterbury	11,254 0 0
Sturry Building Co., Sturry	11,250 0 0
Denne and Son, Deal	11,077 0 0
Castle and Co., Folkestone	10,999 0 0
Hayward and Paramor, Folkestone	£10,974 0 0
Archer and Son, Gravesend	10,947 0 0
A. S. Ingleton, Herne Bay	10,783 0 0
C. E. Skinner, Chatham	10,770 0 0
Gates and Son, Rochester	10,750 0 0
Amos and Foad, Whitstable	10,715 0 0
Ballard and Co.,* Ramsgate	10,590 10 0

Borough engineer's estimate, £11,271.

*Accepted.

Stratford-on-Avon.—For alterations and additions to wardsman's apartments at the Union Workhouse. Mr. J. Greenway, architect:—

E. J. Callaway	£98 0 0
J. G. Fincher and Co.	78 0 0
J. Cox	73 16 6
E. T. Kennard	65 0 0
J. Roberts	40 0 0

All of Stratford-on-Avon.

Thurstonland (Yorks.).—For alterations to disposal works, and construction of new septic tanks and filter-beds and other appurtenant works for the purification of the sewage from the Storthes Hall Asylum, near Thurstonland, Yorkshire, for the Thurstonland Urban District Council. Mr. W. H. Radford, C.E., engineer, Albion Chambers, King Street, Nottingham:—

R. C. Brebner and Co., Edinburgh	£3,860 0 0
H. Smith, Kirkburton	3,703 7 0
T. W. Boothroyd, Almondbury	3,307 1 0
T. Bentley and Co., Bradford	3,117 17 0
Bentley and Swift, Kirkburton	3,110 0 0
Bower Bros., West Bridgford	2,699 0 0
H. H. Barry, Radcliffe-on-Trent	2,641 0 0
R. Turner, Holmfirth	2,612 0 0
A. Graham and Sons, Huddersfield	2,580 0 0
H. E. Buckley, Bradford	2,566 10 0
A. Sykes, Bradford	2,546 15 0
W. Waring and Sons,* Huddersfield	2,600 0 0

Wakefield.—For the erection and completion of new Wesleyan Sunday school and church premises at Westgate End, Wakefield. Messrs. Garside and Pennington, architects and surveyors, Pontefract and Castleford:—

Higgins and Pashley, bricklayers and masons	£1,084 0 0
J. H. Wood, Leeds, joiner	666 0 0
T. Brear and Son, Dewsbury, slaters	95 0 0
H. Gillott, plumber	135 19 0
S. Shaw, plasterer	94 6 0
Baines and Taylor, painters	40 8 0
J. Woodhead, heating	116 0 0

Rest of Wakefield.

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Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 22-August 5. LONDON, S.W.—Erection of Quartermaster's Quarters, etc., and **Mortuary and Disinfecting Establishment** at the Alexandra Hospital, Cosham, Hampshire, in the Southern Command. Plans and specifications may be inspected at the Office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., and the Barrack Construction Office, Alexandra Hospital, Cosham, not later than July 22. Applications for bills of quantities and form of tender must be received not later than July 24, and on payment of the sum of ten shillings (not returnable) they will be forwarded by the Director of Barrack Construction. Tenders, marked "Tenders," are to be delivered not later than noon on August 5, to the Director of Army Contracts, War Office, London, S.W. The bills of quantities are to accompany the tender in separate sealed envelope similarly addressed, and marked "Bills of Quantities for Work at the Alexandra Hospital, Cosham," and also with contractor's name and address.

July 23. READING.—Construction of public convenience for men and women at junction of Southampton Street and Mount Pleasant, Reading. Particulars at the Borough Engineer's Office, Town Hall, Reading. Tenders, in the printed addressed envelope provided for the purpose, to be delivered not later than noon on July 23 to John Bowen, Assoc.Mem.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Reading. Fair wages clause.

July 24. SOLOHEAD (Co. Tipperary).—Repairs and improvements to Catholic Church at Solohead, Co. Tipperary, for the Parish Committee. Drawings and specifications on application to the treasurer, Patrick Ryan, Esq., Hotel, Limerick Junction, to the priests of the parish, or at the office of the architects, O'Malley and O'Rourke, 10 Glenthworth Street, Limerick. Tenders, endorsed "Tender for Solohead Church," will be received by the secretary, Mr. P. Doherty, Barnaleen, Tonard, Tipperary, up to 1 p.m. on July 24.

July 24-August 26. STOCKTON HEATH.—Erection of a school at Stockton Heath, for Runcorn Education Committee. Particulars with the architect, Joseph Holt, A.R.I.B.A., 9, Albert Square, Manchester, not later than July 24. Applications must be accompanied by a deposit of £2. Tenders, marked "Stockton Heath New School," to Geo. F. Ashton, clerk to the sub-committee, 71, High Street, Runcorn.

July 24. ABERDARE. — Additions and alterations at Tir-Rhos Farm, Llwydcoed, Aberdare, for the trustees of the Hamlen-Williams Estate. Particulars with J. Llewellyn Smith, M.S.A., architect, Aberdare, to whom tenders, endorsed "Tender for Tir-Rhos Farm," are to be sent not later than July 24.

July 25. BRIDLINGTON.—Erection of house and stable, Belgrave Road, Bridlington, for J. Hartley, Esq. Particulars with Maurice B. Parkin, Architect, Midway Avenue, Bridlington, to whom tenders are to be delivered not later than noon, July 25.

July 25. MIDDLETON.—Excavations required in connection with a proposed new elementary school in Durnford Street, Middleton. Persons desirous of tendering are requested to send in their names to Frederick Entwistle, Town Clerk, Town Hall, Middleton, on or before July 25, and they will afterwards receive bills of quantities from the architect, Mr. Edgar Wood, Middleton, and 78, Moss Street, Manchester.

July 25. STOURBRIDGE.—Extensions to the Secondary Schools at the corner of Hagley Road and Church Street, for the U.D.C. Plans, specifications, and conditions may be seen and copies of quantities and any further information can be obtained from Mr. F. Woodward, architect, Town Hall, Stourbridge, upon a deposit of £1, which will be returned upon the receipt of a bona fide tender. Tenders, endorsed "Tender for Extensions. Secondary Schools," to be sent to the above-mentioned not later than 12 o'clock noon on Saturday, July 25.

July 25. SOUTHMOLTON.—Erection of Classrooms at the United Schools, Southmolton. Plans and specifications at the school, on application to the Master. Tenders to be sent to Mr. J. Kingdon, East Street, Southmolton, on or before Saturday, July 25.

July 25. SHEFFIELD.—Construction of underground lavatories and an underground tramway office, and the formation of a balustraded terrace in Fitzalan Square. Particulars at the office of the City Engineer, Town Hall, Sheffield, on deposit of one guinea (£1 1s.). Applications to be endorsed "Fitzalan Square Lavatories." Tenders, addressed to the Improvement Committee, to be delivered at the City Engineer's Office not later than 9 a.m. on July 5. Fair wages clause.

July 25. EDINBURGH.—Alterations at Craiglockhart Poorhouse, Morningside, Edinburgh (mason, joiner, plumber, plaster, and slater work, etc). Schedules and specifications of work from Mr. R. M. Cameron, architect to the Council, 53, Great King Street, Edinburgh. Tenders to be lodged not later than July 25 at 10 o'clock a.m., with James Kyd, clerk, Parish Council Chambers, Castle Chambers, Castle Terrace, Edinburgh.

July 27. WHITTINGTON.—Widening of the bridge over the River Whitting and cutting a new river course. Plans and specifications can be seen at the office of Mr. S. J. Laver, "Fernleigh," Old Whittington, between the hours of 4 and 6.30 p.m., and the bill of quantities may be obtained on payment of one guinea, which will be returned on receipt of a bona fide tender and all documents. Sealed tenders to be sent to Henry T. Twelves, clerk, Whittington Moor, on or before July 27.

July 27. MORPETH.—Alterations and additions to farm buildings at the County Lunatic Asylum, including new house for bailiff. Persons desirous of tendering for the above are requested to forward their names to J. A. Bean, county surveyor, The Moothall, Newcastle-on-Tyne, together with a cheque for £1 1s. Drawings can be seen at the office of the county surveyor, where tenders are to be delivered not later than 10 a.m. on July 27.

July 28. GREAT HORTON.—Erection of a Detached House, etc., Great Horton. Particulars up to July 28, with Sam Spencer, Architect, etc., Old Bank Chambers, Great Horton, Bradford.

July 28. LEYTON.—Erection of a Corrugated Iron Building (about 112 ft. long, 20 ft. wide, and 10 ft. high to eaves) at the Isolation Hospital, for the Leyton U.D.C. Brick foundations will be provided by the Council. Particulars with Mr. William Dawson, M.Inst.C.E., the Council's Surveyor, Town Hall, Leyton. Tenders to be delivered at the Town Hall, Leyton, on July 28, before 7.

July 29. RHYMNEY (Mon.).—Additions to the Rhymney Brewery, Rhymney, Mon., for Messrs. A. Buchan and Co. Particulars with T. Roderick, architect, Clifton Street, Aberdare. Tenders to be sent in to T. Edwards, Esq., Rhymney Brewery, Rhymney, Mon., not later than July 29.

July 29. DURHAM.—Erection of a new church at Woodlands Colliery, near Doncaster. Plans and specifications can be inspected on application to Mr. Lord, at the Estate Office, Brodsworth, Doncaster. Quantities can be obtained on application to Mr. Wm. Morton, Quantity Surveyor, 45, John Street, Sunderland. Tenders to be delivered to C. Hodgson Fowler, F.S.A., Architect, The College, Durham, by July 29.

July 30. TYNEMOUTH.—Erection of a new chimney and economiser house, at the Workhouse. Applications, together with a deposit of £1 1s. (which will be returned on receipt of a bona fide tender), on or before Tuesday, July 21, to Mr. J. P. Spencer, architect, 30, Howard Street, North Shields. Sealed and endorsed tenders to be delivered to Septimus Scott, Union Clerk, Guardians' Hall, North Shields, by noon on Thursday, July 30.

July 30. HULL.—Completing the Public Hall, Hull, for the Corporation. Particulars at the address below upon a deposit of two guineas. Tenders, endorsed "Tender for Completing Public Hall," to be addressed to the Chairman of the Property Committee, and delivered at the Town Clerk's Office, Hull, before 10 a.m. on July 30.

July 30. MOTHERWELL. — Extension of Motherwell Hospital from Plans prepared by Mr. Cullen, architect, Motherwell. Tenders are required for the following works:—(1) Brickwork and Foundations; (2) Joiner, Wood, and Ironworks; (3) Plumber Work and Drains; (4) Plaster, Concrete and Slab Partitions; (5) Iron Railings. Particulars on deposit of £1 1s. with James Burns, Town Clerk's office, 18, Clyde Street, Motherwell, to whom tenders marked "Tender for Hospital —— Work" are to be lodged not later than 10 a.m. on July 30.

July 31. DUBLIN.—Erection of a Recreation Hall and Library at the Royal Hibernian Military School, Phœnix Park. Particulars from the address below, on deposit of £1. Tenders to be sent not later than July 31 to H. Williams, secretary, Office of Public Works, Dublin.

July 31. BRITON FERRY.—Re-building of the Puddler's Arms, Briton Ferry, for E. Evans Bevan, Esq., Neath. Particulars at the offices of the architect, J. Cook Rees, Parade Chambers, Neath. Tenders not later than July 31.

August 1. PENZANCE.—Erection of a County School for Boys at Treneere, Penzance, according to plans and specifications which may be seen by appointment at the District Education Office, Penzance; or at the office of Mr. Sampson Hill, architect to the Committee, Green Lane, Redruth, from whom all particulars may be obtained. Forms upon which tenders are to be made may be had at the District Education Office, or from the architect. Tenders are to be sent not later than August 1, to F. R. Pascoe, secretary, Education Office, Truro.

August 1. MERTHYR TYDFIL.—Erection of 38 houses at Danyderi, Merthyr Vale, and construction of the necessary streets in connection therewith, including drainage works. Particulars with the Borough Surveyor, Town Hall, Merthyr Tydfil, upon deposit of one guinea. Tenders, endorsed "Danyderi Houses," to be sent not later than August 1 to T. Aneuryn Rees, town clerk, Town Hall, Merthyr Tydfil.

August 2. NORTH OWERSBY.—Erection of new Wesleyan Chapel and Sunday School. Plans and specifications can be seen at Mr. J. G. Glew's Office, Market Rasen. Tenders to be sent to the Secretary, L. S. Riggall, Gulham, Lincoln, not later than August 2.

August 4. CHAPEL-EN-LE-FRITH.—Renewals and repairs of the following bridges and culverts, viz:—School Bridge, Grainfoot Culvert, and Grindlebarn Culvert, Derwent, Hardenclough Bridge, Edale; Burghwash Bridge, Brough; Tricket Bridge, Castleton; and Half of Dale End Mill Bridge, Ashwood Dale, Buxton. Drawings may be seen and lithographed specification, bills of quantities, and form of tender obtained on payment of a deposit of £1, on application to the engineer, Mr. Thomas Partington, A.M.I.C.E., Bank Chambers, Market Place, Chapel-en-le-Frith, from whom also a limited number of sets of the drawings may be had on payment of 10s. 6d. per set, which sum will not be returned. Sealed tenders, endorsed "Highway Bridges," to be delivered to J. Burton Boycott, Clerk to the Council, Council Offices, Chapel-en-le-Frith, not later than 10 a.m. on August 4.

August 4. DOWLAIS.—Erecting new infants' school to accommodate 500 children, with covered playgrounds, latrines, boundary walls, ballasting and asphalting playgrounds, etc., and for carrying out alterations to present Dowlais Schools, forming Central Hall, cookery, and manual instruction rooms, etc., for Merthyr Tydfil Borough Education Committee. Particulars with E. Stephens, clerk, Town Hall, Merthyr Tydfil, or on application to the Committee's architect, J. Llewellin Smith, M.S.A., from whom copies of the specification and bills of quantities may be obtained on deposit of cheque for £2 2s. The architect will attend at the office on Thursdays and Saturdays from 9.30 to 11.30 a.m. Tenders, endorsed "Tender—Dowlais Council Schools," to be sent to the clerk before noon on August 4.

August 6. SWANSEA.—Erection of New Offices on the eastern side of the Prince of Wales Dock Lock, for Swansea Harbour Trust. Particulars at the office of the Trustees' Engineer, Mr. A. O. Schenk, M.Inst.C.E., Harbour Offices, Swansea. Tenders, marked "Tender for New Offices," to be delivered before 10 a.m. on August 6 to Talfourd Strick, clerk, Harbour Offices, Swansea.

August 6. RAWTENSTALL.—Alterations to Waterfoot Market Buildings. Plans may be seen and form of tender, general conditions, specifications and quantities obtained on application to Mr. J. Johnson, Borough Surveyor, Municipal Offices, Rawtenstall, on payment of the sum of £1 1s., which will be returned on the receipt of a bona fide tender. Tenders, enclosed in envelope pro-

vided, to be delivered to James Whalley, Town Clerk, Municipal Offices, Rawtenstall, not later than 10 a.m. on August 6.

August 7. RHONDDA.—Provision and erection of temporary iron school buildings at Cymmer and Tylorstown, for Rhondda U.D.C. Particulars with Mr. Jacob Rees, architect, Hillside Cottage, Pentre, Rhondda. Tenders to be sent to the Chairman of the Building Committee, at the Council Offices, Pentre, Rhondda, not later than August 7.

August 8. GOOLE.—Erection of an Infectious Diseases Hospital for 25 beds, with administrative and laundry blocks. Plans and specifications may be seen, and schedules of quantities and forms of tender obtained at the offices of the architect, Mr. H. B. Thorp, Goole, on and after Saturday, July 25. Sealed endorsed tenders for the whole or for separate trades to be delivered to Geo. England, Clerk to the Goole Joint Hospital Board, Goole, by August 8.

August 11. DURRINGTON, near Worthing. — Erection of a new elementary school at Durrington, near Worthing. Plans, specifications, and conditions of contract may be seen, and bills of quantities obtained after July 29, provided the builder applies previous to that date, on application to Mr. Haydn P. Roberts, A.R.I.B.A., County Education Architect, Education Offices, Horsham, on deposit of two guineas. Tenders, endorsed "Tender for New Elementary School at Durrington," to be sent not later than 10 a.m. on August 11 to Lionel Thompson, secretary to the West Sussex and Chichester Joint Education Committee, Education Offices, Horsham.

No date. RUGBY.—Repairs to Crick Church. Contractors desiring to tender may obtain particulars from Mr. Hoper, Albert Street, Rugby.

No date. CREWE. — Erection of a Sunday-school on a site adjoining the Wesleyan Church, Mill Street, Crewe. Particulars with Mr. W. G. Timperley, 243, Walthall Street, Crewe.

No date. BRISTOL. — Extensions to Nos. 53 and 55, Castle Street, Bristol, for Messrs. Reynolds and Adams. For particulars apply to La Trobe and Weston, F.R.I.B.A., architects, 44, Corn Street, Bristol.

ENGINEERING.

July 24. BATLEY.—Heating of the Healey Council School with radiators on the low-pressure system. Particulars to be obtained of Mr. Oscar J. Kirkby, A.M.I.C.E., Borough Engineer, Town Hall, Batley. Tenders, to be endorsed "Tender for Heating Schools," to be delivered to G. R. H. Danby, M.A., Secretary and Director, Education Offices, Batley, on or before July 24.

July 24. PETERHEAD.—Construction of cement concrete filter beds, clear water tank, and other supplementary works. Particulars at the office of the engineers, Walker and Duncan, 3, Golden Square, Aberdeen, on deposit of one guinea. Tenders, endorsed "Tender for Peterhead Water Works—Contract D," to be lodged with David Martin, Esq., Town Clerk, Peterhead, not later than July 24.

July 27. OAKENSHAW.—Heating Oakenshaw Church (hot water). Tenders to be sent not later than July 27 to the Rev. W. Priestley, Oakenshaw Vicarage, Bradford.

July 27. BRYNMAWR. — Excavating at the Council's reservoir, for the Brynmawr U.D.C. Plans, specifications, etc., at the surveyor's office, Market Chambers, Brynmawr. Tenders received up to 4 p.m. July 27, by John Thomas, clerk, Council Offices, Brynmawr.

July 27. WATFORD.—Sinking and lining a 30in. borehole, and the execution of other work in connection therewith. Particulars with the Engineer, Mr. D. Waterhouse, Council Offices, High Street, Watford. Schedule of quantities and form of tender from the Engineer upon deposit of £2. Tenders, endorsed "Tender for Borehole, Contract No. 1," must be delivered not later than noon on July 27, to H. Morten Turner, Clerk to the Council, Council Offices, High Street, Watford.

July 27. ENFIELD.—Manufacture and erection of a triple-expansion pumping engine, two Lancashire steam boilers, fitted with induced draught hot air economisers, superheaters, steam pipes, connections, and all appurtenant works. Also 15-ton traveller, iron flooring, etc., at Hadley Road, Well, Enfield, Middlesex. Particulars at the New River District Engineer's Offices of the Metropolitan Water Board, 173, Rosebery Avenue, Clerkenwell, E.C. Particulars from the engineer upon the production of an official receipt for the sum of £10, which must be deposited with the accountant at Savoy Court, Strand, W.C. Tenders, addressed to the Clerk, Metropolitan Water Board, Savoy Court, Strand, London, W.C., and endorsed "Tender for Engines, Hadley Road," to be delivered at the offices of the Board not later than 10 a.m. on July 27.

July 28. GUILDFORD.—Construction of cast-iron pumping main, about 339 yds. of 14-in. and 1,515 yds. of 15-in. cast-iron syphon, and one screening chamber. Particulars with Mr. C. G. Mason, Assoc.M.Inst.C.E., the Borough Engineer and Surveyor, at his office in Tuns Gate. Contractors are to take out their own quantities. Tenders, endorsed "Tender for Syphon," to be sent not later than noon on July 28 to F. S. Miller, Town Clerk, Bridge Street, Guildford.

July 28. STEPNEY.—Erection of an iron and steel high-tension electricity generating station on Blyth's Wharf, at Narrow Street, Limehouse, Stepney, E. Particulars with the borough engineer (Mr. M. W. Jameson, A.M.Inst.C.E.), at the Municipal Offices, 15, Great Alie Street, Whitechapel, E., upon depositing a £5 Bank of England note. Tenders, endorsed "Tender for Blyth's Wharf Station," to be sent not later than 5 p.m. on July 28 to Geo. W. Clarke, town clerk, 15, Great Alie Street, Whitechapel, E. Fair wages clause.

July 29. DORCHESTER.—Supply and erection of a turbine pumping installation in connection with the sewage works. Particulars with Percival T. Harrison, Assoc.M.Inst.C.E., borough engineer, Guildhall Chambers, Dorchester, to whom tenders should be sent not later than July 29.

July 29. HAMILTON, N.B.—Providing and erecting steel girder bridge (Warren Type), for carrying 9-in. steel water main across river Clyde, near Hamilton. Total weight of girders about 10 tons. Particulars at the office of the Water Superintendent, Mr. W. L. Balmer, District Offices, Hamilton, on deposit of £1. Tenders, endorsed "Tender for Bridge," to be lodged not later than July 29 with W. E. Whyte, District Clerk, Hamilton.

July 30. GLASGOW. — Supplying and erecting steel binding rings and other work in connection with the strengthening of a 250ft. chimney stalk at the Refuse Despatch Works, Crawford Street, Glasgow. Particulars with Mr. D. McColl, Superintendent of Cleansing, 38, Cochrane Street, Glasgow. Tenders marked "Tender for Binding and Repairing Chimney Stalk, Crawford Street," to be lodged not later than 10 a.m. on July 30 to A. W. Myles, Town Clerk, City Chambers, Glasgow.

August 1. BATH.—Construction of a Concrete Apron about 150 ft. in length at the east end of the existing wall of the Sea Defences at Blue Anchor, in the county of Somerset, and other works to be executed at once. Particulars on remitting half a guinea to the Clerk of the County Council, 1, Chapel Row, Queen Square, Bath. Tenders, marked "Tender" on the outside, to be sent not later than August 1 to G. I. Simey, Clerk of the County Council, Bath.

August 3. EVESHAM.—Erection of a new pier to the bridge carrying the railway over the River Avon near Evesham, for the Great Western Railway. Particulars at the office of the engineer at Paddington Station, between 10 a.m. and 4 p.m. Tenders, marked "Tender for Pier to Bridge at Evesham," will be received not later than August 3 by G. K. Mills, secretary, Paddington Station, London.

August 3. LONDON.—Reconstruction of bridge carrying Westbourne Terrace over the Great Western Railway, near Paddington Station. Particulars at the office of the engineer at Paddington Station, between 10 a.m. and 4 p.m. Tenders, marked "Tender for Westbourne Terrace Bridge, Paddington," will be received not later than August 3 by G. K. Mills, secretary, Paddington Station, London.

August 5. LIVERPOOL.—Excavating and filling-in the trenches for gas mains, at Fazakerley Gasworks, for Liverpool Corporation. Particulars with Mr. A. G. Smith, Corporation Gas-testing Department, Hood Street, Liverpool. Tenders, endorsed "Gas Main Trenches," to be delivered not later than August 5, to Edward R. Pickmere, Town Clerk's Office, Liverpool.

August 5. TUTBURY, BURTON-ON-TRENT. Provision, laying, and jointing of about 1,450 yds. of 5in., 2,396 yds. of 4in., and 2,101 yds. of 3in. cast-iron pipes, together with all special castings, valves, and hydrants required; also for the construction of engine-house, service reservoir, and other works, for Tutbury R.D.C. Drawing and specification may be seen, and bills of quantities and form of tender obtained at the offices of the Engineers, Messrs. Willcox and Raikes, 63, Temple Row, Birmingham, on payment of a deposit of three guineas. Tenders, in envelopes, supplied, endorsed "Tutbury Water Supply—Contract No. 1," to be delivered not later than noon on August 5 to C. F. Chamberlin, Clerk to the Council, Union Offices, Burton-on-Trent.

No date. GLASGOW.—Erecting steel chimney 160 ft. high in vicinity of Glasgow. Apply 3375, "Glasgow Herald" Office, Glasgow.

IRON AND STEEL.

July 23. LONDON, E.C.—Supply of rolled steel beams for bridges for the Great Indian Peninsular Railway. Particulars at the address below. Tenders marked "Tender for Rolled Steel Beams for Bridges, etc.," to be sent not later than 11 a.m. on July 23 to J. I. Berdy, secretary, Company's Offices, 48, Copthall Avenue, London, E.C.

July 23. THORNTON.—Supply of wrought-iron and steel unclimable fence, about 310 yards. Copies of specification and plan may be had on application to Mr. H. Fenton, Gas Manager. Tenders, endorsed "Iron Fence," to be sent in not later than noon on July 23, to Richard Bowman, Clerk, Thornton Urban District Council, Council Offices, Thornton, via Preston.

July 27. KINTYRE.—Supplying and erecting about two miles of iron and wire fencing between the lands of Glenreasdell and Kilchamaig, near Whitehouse, Kintyre. Offers to be lodged with James Edgar, Factor, Poltalloch Estate Office, Lochgilphead, not later than July 27.

July 27. BRIDGWATER.—Supply of cast-iron pipes (about 175 tons of 2-in. and 3in.) and other castings to be made in accordance with the specifications of their Engineer, Mr. W. Alexr. Collins, Binford Place, Bridgwater. Particulars with T. M. Reed, Solicitor and Clerk to the Council, Bridgwater, on deposit of two guineas. Tenders, endorsed "Tender for Cast-iron Pipes," to be delivered at the Rural District Council Offices, Bridgwater, not later than noon, July 27.

July 28. SOUTHALL-NORWOOD.—Supplying and fixing wrought-iron ornamental entrance gates, 1,200 lineal yds., or thereabouts, of wrought-iron unclimbable fencing, entrance gates, and other appurtenant works, at "Southall Park." Particulars from Reginald Brown, A.M.I.C.E., F.S.I., engineer and surveyor to the Council, Public Offices, Southall, Middlesex. Tenders, endorsed "Tender for Wrought-iron Fencing and Gates," to be delivered to the clerk to the Council not later than 4 p.m. on July 28.

August 6. TIDWELL (Devon).—Supply and erection of 280 ft. of fencing at Tidwell, Staverton, to consist of oak posts and tubular galvanised iron rail. Particulars with Mr. S. S. Rendle, Highway Surveyor, Hillside, Paignton. Tenders to be sent not later than August 6 to F. K. Windeat, clerk, Totnes.

August 7. MERE (Wilts).—Supply of cast-iron pipes and specials from 6in. to 2in. in diameter, about 450 tons. Particulars from Mr. William Phelps, C.E., the Council's Engineer, at Charlton Road, Shepton Mallet, Somerset, in return for a cheque for £2 2s. Tenders to be delivered not later than August 7, endorsed "Tender for Pipes—Contract No. 3," to J. T. Humby, Clerk to the Council, Church Street, Mere, Wilts.

August 15. ECCLES.—Supply of steel steam and cast-iron circulating water pipes, etc., at the Electricity Works. Specification and drawings may be obtained from the Borough Electrical Engineer, Cawdor Street, Patricroft, on receipt of a deposit of £1 1s., which will be returned on receipt of a bona fide tender. Tenders, marked "Tender for Section C," to be delivered to Edwin Parkes, Town Clerk, Town Hall, Eccles, not later than 9 a.m. on August 15.

PAINTING AND PLUMBING.

July 24. BARNSTAPLE.—Painting, etc., for the Barnstaple Education Committee. Ashleigh Road Council School: Colouring all the internal walls. Pilton Mixed and Infants: Re-colouring the walls and varnishing the woodwork. Specifications of the works required can be seen at the Borough Surveyor's Office. Tenders to be sent on or before Friday, July 24 next, to G. W. F. Brown, Secretary, The Square, Barnstaple.

July 25. BANDON. — Painting, etc., of the Workhouse Infirmary Hospital, Bandon. Tenders to be lodged with A. H. Haynes, clerk to the Union, Clerk's Office, Workhouse, Bandon, before noon on July 25.

July 27. HALIFAX.—Painting the exterior of the fire brigade station, Gibbet Street, and the Sovereign Works, Stead Street. Particulars with Mr. James Lord, M.I.C.E., borough engineer, Town Hall, Halifax, upon deposit of £1. Tenders, endorsed "Fire Brigade Station," and "Sovereign Works," to be sent not later than noon on July 27, to Keighley Walton, town clerk, Halifax. Fair wages clause.

July 27. YORK.—Painting, etc., of the properties belonging to the various Committees of the Corporation. Specification and particulars may be obtained from F. W. Spurr, City Engineer, Guildhall, York, to whom tenders, sealed and endorsed "Painting," are to be delivered not later than noon on July 27. The work may be divided into two or more contracts.

July 28. MANCHESTER. — Painting exterior of car shed, car works, permanent way depot, etc., Hyde Road, Manchester. Particulars with Mr J. M. McElroy, General Manager, Tramways Department, 55, Piccadilly, Manchester, on deposit of £1 1s. Tenders to the chairman of the Tramways Committee, 55, Piccadilly, Manchester, endorsed "Tender for Painting," to be sent not later than 10 a.m. on July 28.

y 29. WINSFORD.—Painting and decorating interior and exterior of Verdin Technical ol, Winsford, as per specification prepared by County Architect (Mr. H. Beswick), Chester. ers, marked "Painting Verdin Technical ols, Winsford," to be delivered not later than 29, at 10 a.m., to Jno. H. Cooke, clerk to Committee, Council Offices, Russell Street, ord.

ust 3. SWANSEA.—Painting, distempering, washing, etc., the workhouse buildings at aen, for Gower Union. Tenders, endorsed der for Painting," to be sent not later than st 3, to H. J. Ind, clerk to the Guardians, h Street, Swansea.

ust 3. BELFAST.—Painting at Belfast goods and passenger station. Specification at the of Mr. W. H. Mills, Engineer-in-Chief, Amiens Terminus, Dublin; copy of it at the office e District Engineer, Belfast. Forms of ten- n payment of 1s. each (not returnable). Ten- to be delivered, under sealed cover, en- d "Tender for Painting," not later than 10 on August 3, to T. Morrison, Secretary, tary's Office, Amiens Street Terminus, Dublin.

ust 3. DROGHEDA.—Painting bridge over River Boyne, near Drogheda Station, for Northern Railway Co. (Ireland). Specifica- at the office of Mr. W. H. Mills, Engineer-in- Amiens Street Terminus, Dublin; copy of it e office of the District Engineer, Belfast. s of tender on payment of 1s. each (not re- ble). Tenders to be delivered, endorsed der for Painting," not later than 10 a.m. on st 3, to T. Morrison, secretary, Amiens Street nus, Dublin.

date. SALFORD.—Painting the outside of hton Baths, and the outside of Regent Road Specification and form of contract from . J. Ellis, superintendent, Blackfriars Road . Salford.

ROADS AND CARTAGE.

23. READING.—Making up the following s:—James Street (having a length of 163ft), of Brook Street West (having a length of Particulars at the Borough Engineer's s, Town Hall, Reading. Tenders, endorsed ate Street Improvement Works," to be de- d not later than noon on July 23, to John n, Assoc.Mem.Inst.C.E., Borough Engineer Surveyor, Town Hall, Reading.

25. PENARTH.—Private improvement t) works in Victoria Road. Particulars at urveyor's office, to whom tenders, endorsed der for Street Works," must be delivered ter than noon on July 25.

27. MIDDLETON.—Supply of 260 tons of e setts. The setts must be three-inch cubes delivered at the Railway Station, Middleton. er particulars and form of tender, which will e a fair-wage clause, may be obtained from W. Welburn, borough surveyor, Town Hall, leton. Tenders, endorsed "Setts," and ad- ed to the Chairman of the Surveyor's Com- , must be delivered to Frederick Entwistle, Clerk, Town Clerk's Office, Middleton, by 7.

27. WHITEFIELD.—Forming, levelling, g, flagging, channelling, paving, and com- g Stanley Street and South Avenue. Plans e seen and specifications, bills of quantities, orms of tender obtained from Mr. C. H. t, Surveyor to the Council, upon payment of osit of one guinea. Sealed tenders, endorsed der for Private Street Works," to be de- to P. Darbyshire, Clerk to the Council, t Council Offices, Elms Street, Whitefield, ter than noon on July 27.

28. BARKING. — Private street works oward, Shaftesbury, and Clarkson Roads, ig Town, for the U.D.C. Particulars with harles Ford Dawson, Surveyor to the Coun- ublic Offices, Barking. Tenders, endorsed ate Street Works," addressed to the Chair- f the Highways and Buildings Committee, Offices, Barking, are to be delivered not than noon on July 28, to H. Hargreaves, to the Council, Public Offices, Barking. labour. Fair wages clause.

28. HOLBORN.—Supply of granite spalls. olborn Guardians invite tenders for the sup- 800 tons of hard blue Guernsey granite to be delivered as required, to their work- Western Road, Mitcham, Surrey, free of ivery charges and cartage. Form of tender e obtained by forwarding stamped directed pe as under, and must be returned not han noon on Tuesday, July 28, to J. Allan sby, clerk to the Guardians, 53, Clerkenwell E.C.

29. RUNCORN.—Supply of broken stone, 200 tons of 1½in. and about 300 tons of 2in. nd metal, to be delivered in such quantities be required; to be Penmaenmawr stone, or similar in nature and equal in quality, and broken into cubes of the above-named sizes. rs to state the prices delivered at the fol- places in Runcorn—namely:—Stone Croft, Top Locks, and Crane Wharf, Halton Road; and to be accompanied with samples of the metal to be supplied. Tenders to be sent, not later than July 29, endorsed "Tender for Road Metal," to the Chairman of the Highways Committee.

July 29. RUNCORN.—Making of three passages, for Runcorn U.D.C. Particulars at the surveyor's office. Tenders, endorsed "Street Making," and addressed to the Chairman of the Highways and Buildings Committee, to be delivered not later than July 29 to E. Marshall, secretary, Town Hall, Runcorn.

July 29. BARNET.—Supply of broken granite of approved quality (the description and certified crushing strain to be stated in the tender), delivered, carriage paid, in trucks at High Barnet Station (G.N.R.) at the rate of 200 tons per week, commencing delivery about August 17. Any quantity up to 850 tons, 2-in. Also any quantity up to 420 tons of clean coarse gravel, and any quantity up to 300 tons of hoggin, delivered in trucks at High Barnet Station, carriage paid, in such consignments as may be ordered. Tenders, endorsed "Granite," "Gravel," or "Hoggin," to be delivered at the Council's Offices, 40, High Street, Barnet, not later than July 29, to H. W. Poole, Clerk of the Council, Barnet. No tender unaccompanied by samples of granite, gravel, or hoggin will be considered.

July 29. ROCHESTER.—Supply of the undermentioned materials for the period ending June 24, 1909:—1, 2,000 tons of 2 in. broken Quenast, Guernsey, or Aberdeen granite; 2, 250 tons of 1¼ in. broken Cherbourg quartzite; 3, 300 tons of ¾ in. granite chippings; 4, 300 tons of ½ in. granite chippings; 5, 1,250 tons of 2½ in. broken Kentish ragstone; 6, 200 cub. yds. Aylesford sand; 7, 200 cub. yds. Aylesford gravel; 8, 500 cub. yds. Thames ballast. Particulars with Mr. William Banks, A.M.I.C.E., city surveyor, Guildhall, Rochester. Tenders, endorsed "Tender for Road Metal," are to be delivered before 4 o'clock on July 29 to Apsley Kennette, town clerk, Guildhall, Rochester.

July 29. SANDGATE.—Supply of the following highway materials, to be delivered at Folkestone Harbour, or at Sandgate Station, on or before September 30 next; 150 tons of Guernsey Granite, broken to pass a 1¼in. gauge; 40 tons of Guernsey granite siftings, broken to pass a ⅜in. gauge; 100 tons of Cherbourg quartzite, broken to pass a 1¼in. gauge; 20 tons of Cherbourg quartzite siftings, broken to pass a ⅜in. gauge; 130 cub. yds. (more or less) of dug flints, broken to pass a 2½in. gauge, and delivered upon roads or into depots as described; 80 cub. yds. (more or less) of Kentish ragstone, broken to pass a 2½in. gauge. Tenders may be sent in for all or either of the above items and samples of each of the items included in any tender must be sent to the surveyor's office at Sandgate before the date of delivery of the tender. Forms of tender may be obtained on application at the Council Offices, Sandgate. Tenders must be on the forms supplied, and under cover, marked "Tender for Highway Material," and must reach J. Shera Atkinson, Clerk to the Council, Council Offices, Sandgate, Kent, not later than July 29.

August 4. FEATHERSTONE.—Private street works in Crossley Street, George Street, Fearnley Street, and Phipps Street, including kerbing, flagging, channelling, macadamising, etc. Plans and specifications may be seen, and copies of the bill of quantities, with form of tender, obtained on application to Mr. Fredk. B. Rothera, C.S.I., Engineer and Surveyor, District Council Offices, Featherstone, on payment of £1. Sealed tenders accompanied by the priced quantities, endorsed "Tender for Private Street Works," must be delivered to Charles Lowden, Clerk to the Council, Council Offices, Featherstone, by 5 p.m. on Aug. 4.

No date. YORK.—Estimates wanted for tarpaving. For particulars apply F 352, "Herald" Office, York.

No date. GREENFORD.—Supply of about 500 to 1,000 tons of road gravel, picked chalk flints, and granite, to be delivered in or between the months of September, 1908, and January, 1909, for Greenford U.D.C. Tenders must be on the forms to be obtained from W. H. Read, F.S.I., surveyor, The Avenue, West Ealing.

SANITARY.

July 22-August 5. LONDON, S.W.—Re-drainage of Cambridge Barracks, Woolwich, for the War Department. Particulars at the Office of the Director of Barrack Construction, 80, Pall Mall, London, not later than July 22. Applications for bills of quantities and form of tender not later than July 24 and on payment of the sum of ten shillings (not returnable) they will be forwarded by the Director of Barrack Construction. Tenders, marked "Tenders," are to be delivered not later than noon on August 5, to the Director of Army Contracts, War Office, London, S.W. The bills of quantities are to accompany the tender in separate sealed envelopes similarly addressed, and marked "Bills of Quantities for Work at Cambridge Barracks, Woolwich," and also with contractor's name and address.

July 23. EDINBURGH. — Construction of a brick and concrete sewer (7ft. diameter), for the Lochend Meadows District, 272 yds. or thereabouts in length, in Lochend Meadows. Particulars with the Burgh Engineer. Offers endorsed "Tender for Lochend Meadows Outlet Sewer," to be lodged with Thomas Hunter, W.S., Town Clerk, City Chambers, Edinburgh, not later than July 23.

July 24. EXETER.—Execution of the following works at Council schools, for Devon County Education Committee:—Axminster.—New drainage to teachers' houses. Bishopsnympton, Newtown. Water supply, general repairs, drainage, etc. Braunton.—Ventilation, new w.c., etc. Coleridge. —Alterations to offices, drainage, water supply, etc. Great Torrington.—New offices, etc. Horwood and Newton Tracey.—Alterations, additions, new offices, drainage and water supply, etc. Willand.—Alterations to offices and new drainage. Drawings, specifications, and conditions of contract at the respective schools. Tenders to be delivered at the architect's office, 1, Richmond Road, Exeter, not later than Friday, July 24.

July 27. STOCKTON-ON-TEES.—Construction of 258 lineal yards of Brick Sewer, 2 ft. diameter, and other works in connection therewith. Particulars with Mr. M. H. Sykes, Borough Engineer, Town Hall. Tenders, endorsed "Sewerage Works," to be sent before 10 a.m., on Monday, July 27, to Arthur B. Crossby, Town Clerk, Borough Hall, Stockton-on-Tees.

July 29. WOKINGHAM.—Construction of about 350 yds. of surface water sewers, together with the necessary manholes, etc., in the borough of Wokingham. Also improvement of the access to Bucks Copse Sewage Farm, and for the painting of the sewer ventilating shafts in connection with the existing sewers. Particulars with C. W. Marks, borough engineer and surveyor, Town Hall, Workington, upon payment of £1, to whom tenders, with priced quantities, and endorsed "Tender for Sewers," or "Bucks Copse Farm," or "Painting," are to be delivered not later than July 29.

August 10. WAINGROVES.—Construction of sewage disposal works at Waingroves, for Ripley Urban District Council, comprising subsidence tanks, percolating filters, and other appurtenant works. Particulars on application to the consulting engineers, Messrs. Herbert Walker and Son, King Street, Nottingham, or to Mr. George W. Bird, surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. required. Tenders to be delivered not later than noon on August 10, endorsed "Tender for Waingroves Sewage Disposal Works," to Geo. M. Capon, clerk, Town Hall, Ripley, Derby.

August 11. WOKING.—Construction of about eight miles of stoneware and cast-iron pipe sewers, manholes, and pumping station. Drawings, conditions of contract, specification, and bills of quantities at the offices of Mr. G. J. Wooldridge, the Engineer to the Council, Council Offices Woking. Copy of the specification, bills of quantities, and form of tender may be obtained from the engineer on payment of five pounds. Tenders, enclosed in sealed envelopes, addressed to the Clerk of the Urban District Council of Woking, and endorsed "Tender for Horsell Drainage," to be delivered at the Offices of the Council not later than noon on August 11.

No date. DUNFERMLINE.—Excavation, tunnelling, etc., in the construction of a new outfall sewer between the Burgh of Dunfermline and Ironmill Bay, Charlestown. (Contract No. 1). Particulars from the Burgh Engineer on deposit of £3 3s.—Providing, laying, and jointing of reinforced concrete sewer tubes between the Burgh and Ironmill Bay, Charlestown. (Contract No. 2). Particulars on deposit of £3 3s. with Andrew W. Bell, Burgh Engineer, Burgh Chambers, Dunfermline.

MISCELLANEOUS.

July 28. PLYMOUTH.—Painter's, carpenter's, and mason's work required to be done at certain of the Scattered Homes of Plymouth Guardians. Tenders, setting out separately the cost of the work to be done at each of the Homes mentioned in the specifications, to be sent not later than noon on July 28, endorsed "Tender for Painting, etc.," to W. Adams, Clerk to the Guardians, 13, Princess Square, Plymouth.

July 29. STAMFORD.—Excavating, Drains, Floors, Wharf, etc., for extension of the workshops, Ryhall Road, Stamford, for the Martin Cultivator Co., Ltd. Particulars can be obtained from T. J. Ward, architect, Stamford. Tenders to be delivered by July 29.

No date. MANCHESTER.—Supply and delivery of 65 porcelain wash baths for Bradford Baths, for the Baths Committee of Manchester Corporation. Forms of tender and full particulars may be obtained upon application at the City Architect's Office, Town Hall.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

ACCURATE quantities prepared by London Surveyor of experience in shortest possible time. Reasonable terms. Provincial work undertaken. Jobs measured up and settled in town or country.—Surveyor, 441, Birkbeck Bank Chambers, Holborn, W.C. 3031

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECTS' Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4456

ARCHITECT'S Assistant (24), desires engagement —seven years' varied experience; neat, expeditious draughtsman; honours construction and architectural certificates; excellent references; moderate salary.—Address, W. E. K., 34, Wingate Road, Hammersmith, W. 4375

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Fred Griffiths, 6, Bath Terrace, Hanwell, London, W. 4421

ARCHITECT'S Assistant, 9 years' experience; hon. mention, R.I.B.A., for design; working drawings, details, and competition drawings; London preferred.—Box 4434, Builders' Journal Office.

ARCHITECT'S Junior Assistant (21½) desires engagement; 5½ years' experience; working drawings, details, measuring up; levelling, surveying, etc.; assist with quantities; Inter. R.I.B.A.; moderate salary.—Box 4435, Builders' Journal Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, Builders' Journal Office.

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities. R.A. Exhibitor; expert perspectives.—Box 4409, Builders' Journal Office.

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Assistant (21), disengaged; five years' London and Provincial experience; working drawings, specifications, details, levelling, assist with quantities; five first classes in construction; highest references, 25s. — C. D. H., 7, King's Parade, Finchley, N. 4412

ARCHITECTURAL Assistant (34), sixteen years' splendid experience, first class designer and colourist, practical, and artistic, working drawings, perspectives, details, excellent references; salary to be arranged. — Box 4430, Builders' Journal Office.

ARCHITECT'S or Surveyor's Assistant, 14 years' experience in details, perspectives, quantities, surveying and levelling; good draughtsman; excellent testimonials; total abstainer; salary 45s.—Box No. 4438, Builders' Journal Office.

ARCHITECT'S Assistant, twelve years' experience, desires engagement; good draughtsman, designs, working and detail drawings, etc.; excellent references.—W. A. N., 17, Hugo Road, Tufnell Park, N. 4326

ARCHITECT'S Assistant (25), 6 years' experience, medallist and prize-winner; knowledge of quantities; good references; town or country.—Apply Box 4439, Builders' Journal Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, Builders' Journal Office.

ADVERTISER desires engagement in or near London; expert surveyor and leveller; just completed important survey in the North; plans, specifications, superintendence. — Box 4391, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (24), passed P.A.S.I. exam.; six years' varied London experience —working drawings, dilapidations, surveying, levelling, measuring and usual office routine; good ref.; salary 30s.—Box 4387, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (21), 4½ years' London and Provincial experience; Student R.I.B.A.; excellent refs.; experience more an object than salary; country preferred.—E. H. H., 08, Newbridge Hill, Bath. 4386

ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, Builders' Journal Office.

BUILDER'S Clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4373

BUILDER'S Clerk (21), good draughtsman, thorough practical knowledge of construction and details, certificates for geometry, building and carpentry, and joinery. Capable of assisting with estimates, and picking up decorative work.—Box 4,400 Builders' Journal Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, Builders' Journal Office.

CARPENTER-JOINER (31), seeks situation; good all-round man, good draughtsman, etc. Three years present job, now finishing. Town, country, and teaching experience. Excellent references.—G. K., 8, Tudor Road, Upton Park. 4313

CLERK of Works, contractors' manager, or general foreman disengaged, carpenter and joiner, practical in all details; smart, energetic, trustworthy, recently concluded large industrial undertakings; accustomed to large jobs. — Box 4341, Builders' Journal Office

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, Builders' Journal Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GENERAL Assistant (30), fourteen years' excellent all round experience, good knowledge of construction, sanitary science, and everything in building estate development; Surveyors' Institution and Municipal and County exams. £4 4s. and prospects of betterment.—Apply Box 4318, Builders' Journal Office.

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, Builders' Journal Office.

GENERAL Foreman wants job; town or country carpenter; age 44; experienced new or alteration good timekeeper and manager of men; high references; moderate terms. — King, 4, Burg Grove, Greenwich. 42

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 44

IMPROVER or junior assistant (22), stud R.I.B.A., excellent knowledge, practical build construction experience, supervising, neat draugh man, surveying; assist quantities; small sala specimens; good references.—Box 4090, Builde Journal Office.

IMPROVER or junior assistant (21) desires p tion with architect or surveyor; working drawin quantities, surveys, qualified P.A.S.I.; nomi salary.—R. R. F., 25, Queen Street, Hemel Hem stead. 4

JUNIOR Draughtsman (19), desires re-enga ment; assist generally; good refs.; town country; shorthand; probationer; R.I.B.A. — Weston, The Laurels, Rotherfield, Tunbridge We 4

JUNIOR Assistant (20) requires situation in veyor's or builder's office, 3 years' experience London surveyor; can assist in abstracting, wo ing up, variations, etc.; willing worker.—W. Coo 102, Faraday Road, Wimbledon, S.W. 4

JOINER-MACHINIST, or general assistant; to office, bench, or building work, planer, spindle, mortise, or entirely bench; construct certificates; good draughtsman; abstainer; re ences.—Box 4419, Builders' Journal Office.

MANAGER to New York architect last se years, 16 years' experience; expert in Ameri fireproof construction, design, specifications supervision, desires re-engagement. — Turl Goosey, 20, Primrose Hill, Northampton. 4

MACHINIST, good all-round. wants job, t or country; take charge or otherwise, thoro knowledge of gas-engine; good refs.—T. S., 4, Terrace, King's Road, Herne Bay. 4

PRACTICAL machinist (joiner), used to elepha spindle, and first-class work; 10 years last pla —Cruse, Boxford, Newbury. 4

QUANTITY Surveyor's assistant, just comple three years' articles, passed Intermediate of veyors' Institution; first class references, se billet in busy office; salary £7 per mensem.— 4346, Builders' Journal Office.

SURVEYOR'S Junior Assistant (19), Student served articles; good leveller, draughtsman tracer; experienced in private street works, b ing, sewerage, water supply, etc.; excellent t monials; small salary. — Box, 4284, Build Journal Office.

THOROUGHLY competent builder's book-ke and general assistant requires engagement, years' experience in London with builders shopfitters; good reasons for leaving present be excellent references. Age 32.—Apply Box 4 Builders' Journal Office.

TEMPORARY assistance on working drawi quantities, measuring up, surveys, levels, set out and steelwork generally rendered at ow outside offices—F. B., 51, Hillfield Park, Mus Hill.

THE ESTATES MANAGER AND AGENT to known public institutions. London estates (prising over 1,000 properties), holding app ment, over 11 years, desires similar appointt in town or provinces, with view to improving position; exclusive knowledge and experienc management of leasehold and troublesome we properties; thoroughly qualified architect and veyor; administrative ability and experience in collecting; highest references. — Apply Box Builders' Journal Office.

TO ARCHITECTS.—An experienced Civil Engi will advise upon and assist on drainage disp water supply and estate development; roads, veys, levels, etc.—Apply Box 4121, Builders' J NAL Office.

WANTED, architect and surveyor's assis shortly disengaged; thorough general perience; quick and accurate draughtsr supervising; entire charge.—Box 4447, Build Journal Office.

WANTED at once, position as builder's man assistant, or general foreman; disengaged; st energetic; abstainer; references. — Box 452, Broadway, Wimbledon.

YOUTH (age 18) requires situation in buil or surveyor's office. Desirous of learning mating. Three years' previous experience.— W. B., 8, Medley Road, West Hampstead,

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THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

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An Important Announcement.

In the report of the Building Act Committee presented to yesterday's meeting of the London County Council an important announcement is made in regard to the much-needed amendment and consolidation of the London Building Acts. With the Housing and Town Planning Bill now before Parliament, unsettled, the Committee consider that it would be useless to attempt to promote legislation in the next session for the general amendment of the Building Acts, but they think there is one important matter which should be dealt with then, namely, the use of steel construction and reinforced concrete in buildings. The Committee point out that this method of construction was not contemplated in the Act of 1894, "and there is no doubt that a change of the law in this direction is necessary in order to meet modern building requirements, and we have been strongly urged by the Royal Institute of British Architects, the Institution of Civil Engineers and the Surveyors' Institution to promote legislation with that object. Under the London Building Act, 1894, the walls of all buildings must be of the thickness prescribed by the first schedule of the Act, with the effect that the walls of buildings mainly constructed of steel or reinforced concrete have to be of a greater thickness than is necessary for stability, thus unnecessarily diminishing floor space of the buildings. We are advised by the solicitor, under Standing Order No. B163, that the Council has power to promote legislation on the subject, and we have informed the Parliamentary Committee in accordance with standing order No. B 161 (2) of our intention. We are of opinion that the suggested amendment should be secured as quickly as possible, and we therefore recommend—(*a*) That the operation of Standing Order No. B. 161 be suspended in order that the following recommendation may be dealt with; (*b*) That application be made to Parliament in the session of 1909 with a view to the amendment of the London Building Act, 1894, so as to facilitate the use of steel or reinforced concrete in the construction of buildings and to make any necessary provision with regard thereto." Obviously, this is a more important recommendation. It marks the beginning of a new era of construction in the metropolis, and we may expect that, with the existing unfair and illogical requirements removed, concrete and steel construction may go forward with leaps and bounds.

The Hampstead Garden Suburb.

A most hopeful report was presented at last week's annual meeting of the Hampstead Garden Suburb Trust, Ltd. In moving the adoption of the report, Mr. Alfred Lyttleton, K.C., M.P., said the Hampstead Tenants, Ltd., which was a co-partnership society, had already 63 houses occupied on the land, 110 in course of erection, and 154 more arranged for, for which 300 shareholders were waiting. Large areas had also been taken for the erection of workmen's cottages and residential flats for working ladies. Without being unduly sanguine or optimistic, one might say that the development of the estate had exceeded almost all their hopes. The part of it which was most advanced at present was that devoted to the tenant co-operators, and the designs for the cottages and the gardens with which they were surrounded would satisfy the most exacting critics. The estate was not bought in the first instance for nothing, nor was it developed for nothing. He was glad to be able to tell them that the work of development was proceeding so rapidly that they had thought it desirable to place in hand the designs of the central square, in relation to which the whole scheme was grouped. Mr. Lutyens had in hand the designs for the central church and the Free Church which were to be erected there, and there was every reason to anticipate that they would be beautiful buildings. The roads had already been laid out to the extent of 1½ miles, and, to meet the demands for land, the directors were arranging for extensions which would bring the total up to over 3½ miles.

Excavations in the Roman Forum.

During the past year the excavations carried out in the Forum at Rome, under the direction of Commendatore Boni, have been just beyond the Arch of Titus, with the object of tracing the original temple of Jupiter Stator. These excavations, however, do not appear to have been very remunerative, as nothing of importance has been discovered. More interesting have been the excavations at the eastern entrance to the Basilica Maxentius, where a floor of a room has been laid bare which must have belonged to the Golden House of Nero—a floor paved with polygonal fragments of glass, pale green and dark blue in colour, arranged in a geometrical pattern. The excavation of the Basilica Æmilia has made some progress, more than half of the embankment being already carted away, but here again the mass of earth and rubbish contained nothing of any value, except a few fragments of African marble and portions of old columns. Before the end of this year it is hoped that the pavement of the Basilica may be reached, and some light may perhaps be thrown on the causes of its destruction. Commendatore Boni hopes to be able to carry out a plan for joining the Forum and Palatine, in which event he would open passages from one to the other in the ancient Porta Mugonia, the old gate of the Palatium, and through the staircases, now blocked, which descend from the Imperial palaces to the Via Nuova.

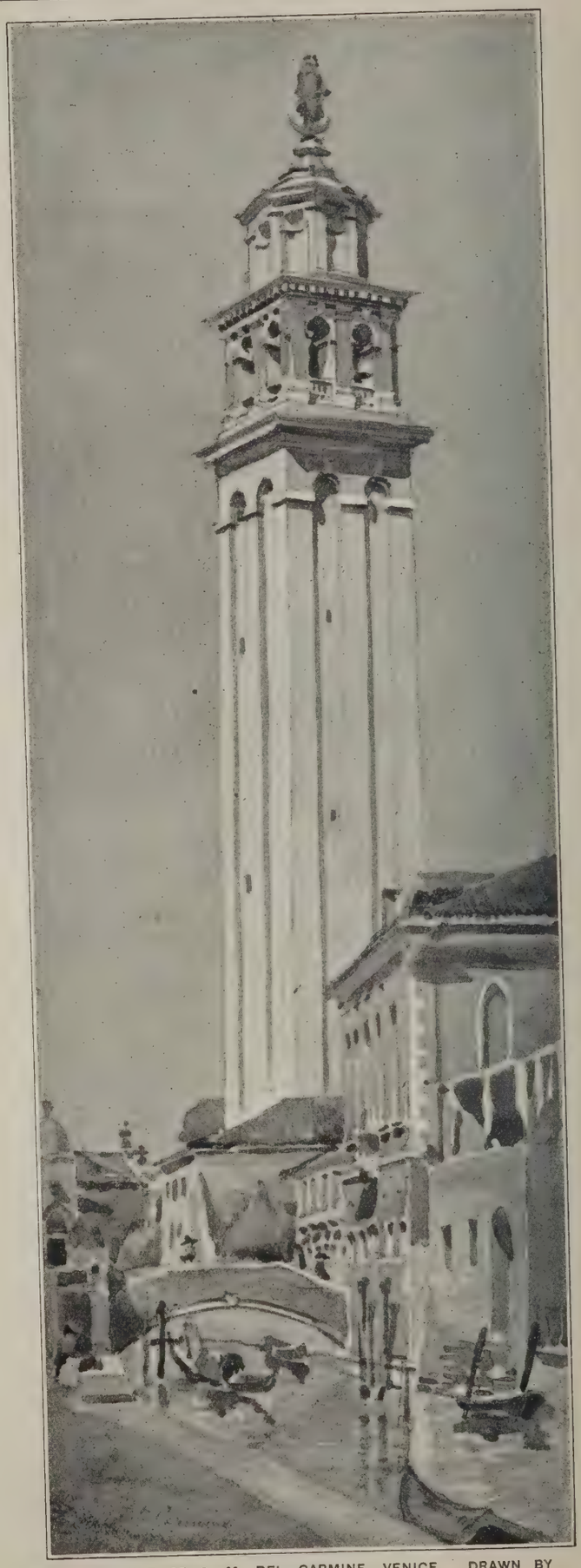
The "Stud" Tramway System.

After a lengthy and heated discussion at last week's meeting, the London County Council decided to cease the use of the "G.-B." (Griffiths-Bedell) system of electric tramways laid down from Aldgate to Bow, on the ground that accidents had occurred, and the public safety was endangered. The Stepney Borough Council would not permit the overhead system, and the conduit system would have been very costly to lay down because of the Whitechapel and Bow Railway, which comes near the surface. It was decided, therefore, to try the "stud," or surface-contact, system, more or less as an experiment. A system of this nature—the Lorain—was installed at Wolverhampton six years ago, where it is understood to have given satisfactory results, and another surface-contact system—the Dolter—has been installed at Hastings, at Torquay, and at Mexborough: while the "G.-B." system has been used at Lincoln for some time past over about 3½ miles of route. The working of the "G.-B." system is as follows:—On the car is a steel cable, or "collector," about ¾in. in diameter, carried by insulators. Along the road, at intervals of about 6ft., the "studs" are fixed, level with the street paving. Each stud has a plunger, which normally is held up, but becomes magnetic and makes contact with the cable when the car passes over it; and as the cable is so arranged that it does not break contact with one stud before it makes contact with the next, a continuous supply of current is fed to the car motors. As regards cost of working, this is said to be about the same as for the overhead system; so that the "stud" system combines the merits of the overhead and the

conduit systems, without the disadvantages of either—that is to say, it is not unsightly like the overhead system, and is not so costly as the conduit system. As to its safety, the Bow experiment would appear to indicate that the system is deficient in this respect, though we have not heard that this is the case in the towns named above, where it has been in use for some years.

The Architectural Courts at the Crystal Palace. In view of the attention which is now being directed to the future of the Crystal Palace, it is opportune to point out how very much the facilities for art and architectural education there provided are neglected. The existence, within Paxton's glass structure, of a Pompeian House and the Egyptian, Greek, Roman, Alhambra, Byzantine, Romanesque, Renaissance and Mediæval Courts is well known, but very few people take the trouble to see these most interesting representations. Architectural students, especially, should make a point of doing so, because the Courts have been prepared with great care and skill, and are excellent examples of their kind. While referring to them, we cannot help remembering Ruskin's poignant reference to the lack of a representation of Gothic art in London: for which, he says, such as it is, we have either to go to the South Kensington Museum, where it is mixed up with steam threshing machines and dynamite-proof ships of war, or to the Crystal Palace, where it is mixed up with Rimmel's perfumery! That, of course, was before the founding of the Architectural Museum in Tufton Street, now the home of the Architectural Association.

Photography as an Aid to Measuring Buildings. We take the following from the "British Journal of Photography," dated July 17th:—"Architectural students frequently require measurements of buildings, and in the case of the larger structures these are often by no means easy to obtain. By selecting a time when the front of one of the cathedrals is covered with scaffolding this measuring does not present insuperable difficulties, though assistance with the measuring tape is usually necessary. If no such scaffolding is available the work must be done by means of ladders, and often at considerable bodily risk, though the method of lowering a rope marked distinctly in 3ft. lengths may sometimes be useful, distances being set off on a rough sketch elevation by a colleague situated on the ground and at some little distance. Some recent experiments have shown us that considerable use may be made of photography in this direction, provided a few special points are attended to. First, a view-point should be chosen as nearly as possible opposite the centre of the frontage, and in every case the axis of the lens must be absolutely at right angles to the frontage. On some part of the building a scale must be made by marking chalk lines at a distance of, say, 3ft. apart. If it is undesirable to mark the building in this way four or five white rods or laths may be set on the pavement in a vertical position and placed a yard apart. Measurements on the one plane only can be made, though if there are two parallel planes the one photograph may be utilised for measurements on both planes, provided a scale is attached to each plane. The depth of a recess or the extent of a projection cannot be measured from the photograph."



CAMPANILE OF S. M. DEL CARMINE, VENICE, DRAWN BY LESLIE WILKINSON, A.R.I.B.A.

An Irish Society and the R.I.B.A.

A curious state of affairs has been caused by the action of the Ulster Society of Architects in its relation to the Irish Institute and the R.I.B.A., as the outcome of which the Ulster Society has seen fit to lodge a protest against the petition of the R.I.B.A. for a new charter. The case is well put in the current issue of "The Irish Builder," and we cannot do better than reproduce our contemporary's remarks, with which we are entirely in accord:—

"The Royal Institute of the Architects of Ireland is an old-established body, dating back so far as 1837, and has ever since been regarded as the representative body of the profession in Ireland. About the year 1889 the Irish Institute became allied to the Royal Institute of British Architects: allied, be it marked, *not* affiliated. The Irish Institute preserved its own constitution, by-laws, governing council, and the right to manage and regulate all its affairs, and its relation to individual members, absolutely free and unfettered. Up to a few years ago the Council of the Irish Institute had the right of nominating to fellowships of the British Institute such Irish architects as they unanimously considered worthy of that distinction, and such persons were almost invariably elected as a matter of course; but even this slight link or privilege has for several years past ceased, and Irish aspirants to fellowships of the British Institute are required to be nominated and elected in the ordinary way after furnishing testimonies of their professional works. With the cessation of this practice ended the smallest interference of the one Institute with the affairs of the other. The sole indication of the connection between the two bodies that now remains is that a representative of Ireland is entitled to sit upon the Council of the British Institute in London, the object not being to enable Irish architects to meddle in purely English affairs, but that the representative of the Irish Institute may be enabled to act in concert with the English in important matters affecting the profession as a whole, and also to ensure, as far as practicable, uniformity of practice in relation to the public. Further than this there has been no intermeddling by the one Institute in the affairs of the other, and the British Institute has always recognised the status of the Irish Institute as representative of the profession in all Ireland, and the entire country as its sphere of influence. Now, quite recently—only a few years ago—the Ulster Society of Architects was founded under the auspices of the Irish Institute, and Sir Thomas Drew, out-going president of the Institute, became the first president of the new society. Following the precedent of the British Institute, the Ulster Society was accorded the privilege of sending a representative to sit as a member of the Council of the Royal Institute of the Architects of Ireland. This arrangement continued amicably until the Ulster Society suddenly proposed to lower the scale of fees which had so long prevailed, and which were all but universal throughout the country, save in Belfast. It is unnecessary to here debate this point. The folly of lowering a scale of fees which had received all but universal acceptance is too obvious to need demonstration. The Institute, of course, could take no other course than to firmly object to any such change, whereupon the Ulster Society severed its official connection with the Irish Institute, though its individual members, who were also members of the Institute, still continued their membership. The next step of the Ulster Institute was to approach the English Institute and ask to be allied with that body, and as such recognised as a representative professional body in Ireland, the exclusive right to which status was always claimed and held by the Institute. The British Institute referred the matter to the Irish Institute, which pointed out that the recognition of any other and independent Irish society would be a breach of both the letter and spirit of the alliance. The British Institute loyally adopted this view, and has ever since adhered thereto. The Ulster Society, receiving no encouragement in London, issued a threat to the Irish Institute that unless the Irish Institute withdrew its opposition to the British Institute giving the Belfast Society recognition and entering into an alliance with them, all the Belfast members of the Institute would resign. The Irish Institute, of course, received this threat uninspired by the terror that the Belfastmen evidently expected, and, strange to say, only two or three of the ringleaders carried out the threat. This threat failing to achieve its object, the Belfast Society next threatened the English Institute, first that those of their members who happened to be also members of the English Institute would compel a ballot to be taken in the case of every Fellow or Associate proposed for election, and finally by lodging with the English Privy Council a petition against the granting of the charter sought by the English Institute. It is hardly necessary to point out that it is not possible for the British Institute to recognise a second or rival society within the sphere of influence of the Irish Institute, or to ally itself with a body which has officially lowered the standard of prevailing fees. Nor need it be indicated that if the British Institute were to act in bad faith and recognise the Belfast Society, it would be quite as open to the Irish Institute (as to any other body) to lodge a petition against the granting of the charter—though we feel certain such a 'dog-in-the-manger' policy is about the last means of furthering their desires or venting their displeasure that they would contemplate. The whole matter is one of very trivial importance indeed, so far as the general public is concerned, and the efforts of the Ulster Society to thwart and hinder the schemes of the British Institute, for having acted fairly by the Irish Institute, would hardly be worthy of comment were it not for the unpleasant spectacle of disunion it displays before the Privy Council and others outside the profession, which is most lamentable, and conveys an impression of want of dignity and restraint that is singularly unfortunate for the reputation of the architectural profession."

Campanile of S.M. del Carmine, Venice.

This good example consists of a shaft of red brick, relieved with pilaster strips, carrying a rich belfry stage with 2-arched openings with stone dressings in each face, and crowned with a bold block cornice; above this is an octagonal stage with niches and a pyramidal roof, all in stone, and surmounted by a large bronze statue. The church to which it is attached was consecrated in 1348. The tower probably dates from the 17th century.

THE RENAISSANCE IN FRANCE.

The immigration of Italian artists into France which commenced under the auspices of Charless VIII., and culminated in the reign of Francis I., did not succeed in overthrowing native art. Indeed, it was not until many years later that the full significance of the classic revival was realised in France, for native art was sufficiently strong to prevent the movement, in its earlier stages, from resulting in anything more than the formation of the distinctive style we are accustomed to associate with the architectural products of the reigns of Francis I. and Henry II. The buildings of these periods are, architecturally, neither wholly French nor wholly Italian. The influence of Gothic art still appeared in the constant use (in conjunction with the classic "orders") of lofty and highly decorated chimneys, turrets, pavilions, and elliptical arches, with which fenestration of a more or less mediæval character was usually combined, and it was not until many years later that the geometrical formality of the *real* classic style altogether took the place of free artistic phantasy.

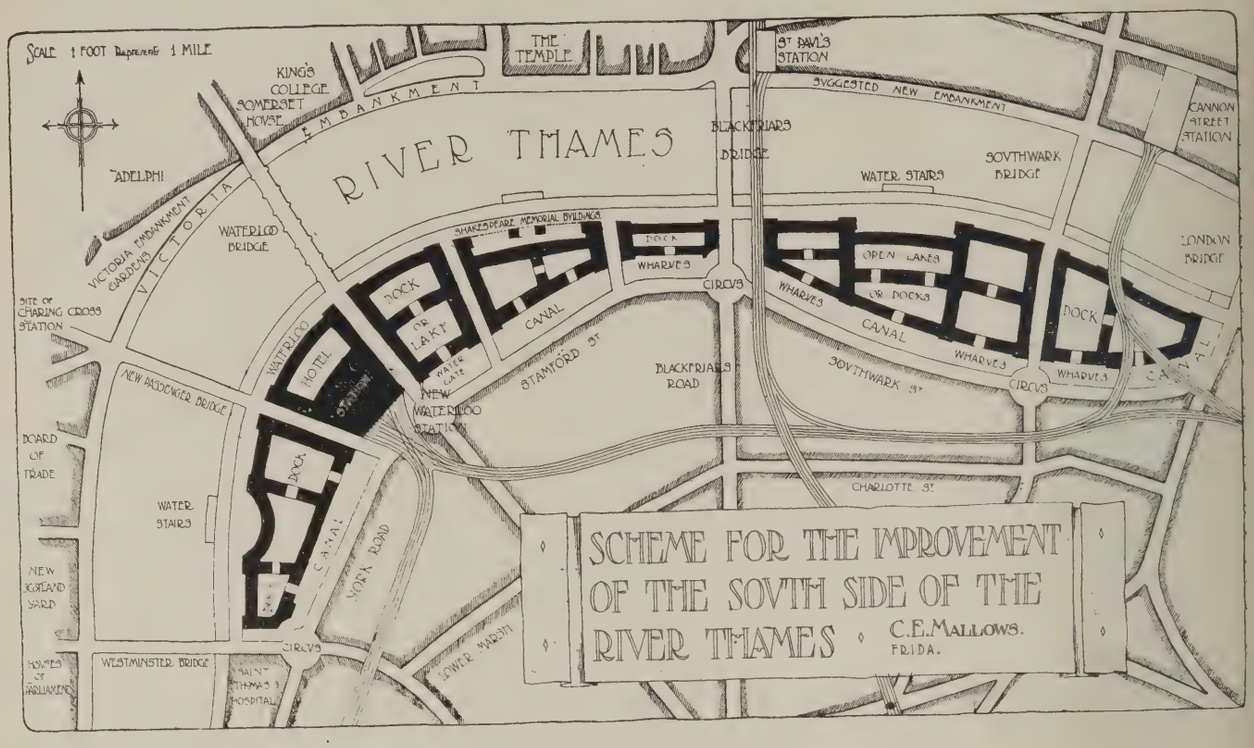
Nowhere can the very gradual development of the architecture of the Renaissance in France be studied with greater advantage to the student than in the series of buildings erected in Paris during the two hundred years which elapsed between the accession of Francis I. and the death of Louis XIV. Among the most illustrious names of the French architects of the early French Renaissance are those of Pierre Lescot, Philibert de l'Orme, Pierre Chambiges, and Jean Bullant; among those of the middle period, Salamon de Bresse, Jacques Lemercier, and Francois Mansart hold the pride of place; whilst the later period of Louis XIV. will be for ever associated with the more matured Renaissance work of Claude Perrault, Levau, and J. H. Mansart.

Under Francis I. the city of Paris commenced to throw off its mediæval aspect and to assume a new form. The old Gothic chateau of the Louvre was demolished, and the erection of a new palace was commenced, a royal College for instruction in the sciences was founded, and improved means of communication were opened between various parts of the city. The construction of the Hotel de Ville was taken in hand, and the Faubourg St. Germain laid out anew.

The construction of the Arsenal, Quai de la Tournelle, and the Place Maubert is associated with the reign of Henry II., and during this period the work on the Louvre was continued, and the whole of its western front (the Vieux Louvre) and the wing containing the Gallerie d'Apollon were completed.

During the reign of Charles IX. and Henry III. the wars of religion and (more particularly) the massacre of St. Bartholomew had a disastrous effect upon the progress of art, but among other buildings the Tuileries, the Hotel de Scissons, the Hotel de Burgoyne, and the Théâtre Italien date from those troublous times.

When peace was restored to the kingdom by Henry IV., the further embellishment of the capital was continued on a grand scale, and during the reign of this king the Pont Neuf was completed, the neighbourhood the Arsenal improved, the Hospital of St. Louis founded, the Place



Royale, the Rue Dauphine and the neighbouring quays laid out, and great additions made to the Tuileries and the Louvre.

During the reign of Louis XIII. the Palais Cardinal (afterwards known as the Palais Royal) was commenced by Richelieu, the Luxembourg by Marie de Medicis, and the Cours de la Reine was planted. The quays and bridges of the Ile St. Louis were constructed, the Faubourg St. Honoré was united with the villages of Roule and Ville l'Evêque, and the Faubourg Saint Antoine with Popincourt and Neuilly.

At the time of Louis XIV. the population of the capital had overthrown the ancient walls of Philip Augustus (which had been already extended by Francis I.), and the king, believing that a strong community needed no such protection, proceeded to demolish the old towers and ramparts of the fortifications, to fill up their fosses, and to form new boulevards in their place. More than eighty new streets were opened, the old city gates were swept away and superseded by triumphal arches, and the Place de Vendome and the Place des Victoires were constructed. In addition, thirty-three new churches were erected, the Hotel des Invalides, the Colonnade of the Louvre, and the Pont Royal were completed, the Champs Elysées planted, and the Tuileries enlarged.

However much we may feel inclined to cavil at the perhaps far too laudatory references made by Voltaire in his work (*Le Siecle de Louis XIV*) to the artistic aims and aspirations of this monarch, it must not be forgotten that it was entirely owing to the encouragement given by Louis XIV. to native and foreign artists that Renaissance architecture in France was at length able to altogether free itself from the fetters of mediævalism, and to assume its proper aspect of stately formality and geometrical symmetry.

A SCHEME FOR THE IMPROVEMENT OF THE SOUTH SIDE OF THE THAMES.

The various proposals and suggestions brought forward for dealing with the problem of the improvement of the south bank of the Thames seem to have been finally set aside in favour of one emanating from the London County Council, under which a low-level embankment, some thirty to forty feet wide and suitable only for pedestrians, is provided. Yet, even at this, the eleventh hour, it is still in the power of the citizens of London to prevent the realisation of what we venture to predict will be regarded by posterity as a most egregious blunder.

Surely it is obvious that any *real* extension of the city proper can now only take place on the south side of the river, and if the sapient advisers of an equally sapient public authority admit this premise, we may well ask why the immediate future requirements of the largest and wealthiest city in the world are absolutely ignored in the so-called "improvement" scheme which has been matured by officials of the London County Council. For various reasons, based on practical requirements and on æsthetic considerations, the new embankment thoroughfare should at least correspond in width with the present Victoria Embankment, and behind it there should be ultimately raised a terrace of public and other stately buildings to balance in architectural effect those on the opposite side of the river.

This, the proper treatment for the south side of the river, was developed by Mr. C. E. Mallows as long ago as June, 1903, when he prepared the accompanying scheme for a new embankment to commence at Westminster Bridge, and extending the whole length of the river to London Bridge, thus doing justice to what he regards as the finest river in the world. Mr. Mallows' proposals may be briefly outlined as follows:—

(1) A new wide embankment, built o two levels, corresponding to the terrac and embankment in front of Somerse House, of which the higher level would b utilised for general traffic so that shippin could pass without hindrance into (2) series of basins or canals, arranged at th back of the terrace buildings, extendin the depth of the site and approache from the river by locks and waterway around which could be built the variou wharves, warehouses, offices, and othe business places displaced by the scheme (3) groups or terraces of public and othe buildings.

We think the suggestion made by M. Mallows deserves the serious consider tion of all who are interested in wel thought-out proposals prepared with th view to the permanent improvement of ou vast metropolis. Hence, although th scheme which we illustrate has bee already brought under the notice of th London County Council, and has also, some extent, since become public propert we feel we need offer no apology to ou readers in affording them a furth opportunity of studying and criticisin what appears to us to be an extreme able solution of a very difficult proble

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The Establishment Committee of t London County Council recommend th tenders be now invited from selected fir for the construction of an embankment the site of the new County Hall; while t Local Government, Records, and Museu Committee recommend that a water-colo drawing (5ft. by 3ft.) be made by M Wyllie of the site as it exists at prese for inclusion in the Council's records.

The International Drawing Exhi tion at South Kensington, which i cludes an exhibition by the *Ecole d Beaux-Arts*, Paris, was opened by H.R. Princess Louise on Monday, and will r main open until Saturday, August 15th

Correspondence.

An Old Lancashire Church.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The attention of the Committee of the Society for the Protection of Ancient Buildings has been called to the letter signed "C.S." which appeared in your issue of July 22nd, on the subject of Sefton Church, Lancashire.

It may interest your readers to know that as far back as the year 1890 the building was receiving the attention of this Society, and that in the year 1892 a destructive scheme of "restoration" and enlargement was abandoned, largely owing to its opposition.

With regard to the proposed alterations referred to by "C.S.," the Society is making inquiries, and it is to be hoped that nothing is in contemplation which would, if carried into effect, detract from the beauty and interest of this valuable ancient building.

THACKERAY TURNER,
Secretary.

20, Buckingham Street,
Adelphi, W.C.

Deposits for Competitions.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Surely architects have a very simple remedy in their hands regarding this question. I make a practice of sending my cheque for a deposit dated four days ahead. If the promoters refuse to forward conditions, you know there is a desire to rob you, and your cheque is stopped, and so the matter ends. If conditions are sent and you judge them to be unfair, return them (without a stamp, if you are of a vindictive nature), stopping cheque as before. If this were made a general custom, we should not hear so often of this very dishonourable trick being practised on members of our own profession.

E. P.

London, E.C.

PORTSMOUTH SPECULATIVE BUILDERS & THE LOCAL BY-LAWS

A Meeting of Protest.

A meeting of the speculative builders of Portsmouth was held last week to protest against the local building by-laws.

Mr. W. Brittan said the by-laws in their present form were such that they must either be ended or mended. He particularly drew attention to the demand for 9-in. walls for small greenhouses and sheds, which he declared was absurd and ridiculous. He further asserted that the Committee were inconsistent, inasmuch as where plans had been passed providing for 4½-in. walls, the Building Surveyor insisted on 9-in. He suggested that a deputation should wait upon the Committee with a view to getting a compromise and a definite interpretation put upon the regulations. Speculative building in the town was the backbone of the building trade in Portsmouth, and provided work for hundreds; and it was only fair that they should at least have some consideration in the matter.

Mr. Arthur Chase thought that by the friendly action they proposed a more serious crisis might be averted. He was sorry that the Master Builders' Association had not seen their way to take the initiative, but he pointed out that many of the big contractors were not affected like the speculative builders. Two interpretations could be put upon the by-laws as at present worded, and it was hard to know whose interpretation was to be accepted. Until they had some intelligent interpretation they did not know where they stood.

Mr. Griffiths also expressed his regret that the Master Builders' Association had not come to their aid just as the speculative builders had acted with them in other contingencies. He suggested that they should formulate a report pointing out the anomalies of the by-laws. He also moved that the Master Builders' Association be asked to join with the speculative builders in a conference on the matter. This resolution was carried unanimously.

Notes and News.

CHANGES OF TITLE.—The firm of "Umlandt and Nicoll," builders and contractors, of 98, Cherry Orchard Road, East Croydon, has changed its title to "Umlandt and Gibson."—The title of Messrs. W. Griffiths and Sons, of Great George Street, Liverpool, is now changed to "Wm. Griffiths and Sons (Liverpool), Ltd." They have purchased the high-class plumbing and decorating firm of Messrs. B. Kay and Sons, of Alderley Edge, Cheshire, and have also opened London offices at 74, Victoria Street, S.W.

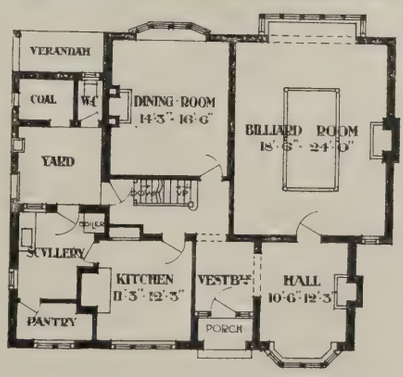
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SURREY COUNTY SURVEYORSHIP.—Ninety-four applications have been received for the appointment of county surveyor under the Surrey County Council, rendered vacant by the resignation of Mr. F. G. Howell after fifteen years' service. The final selection was made yesterday.

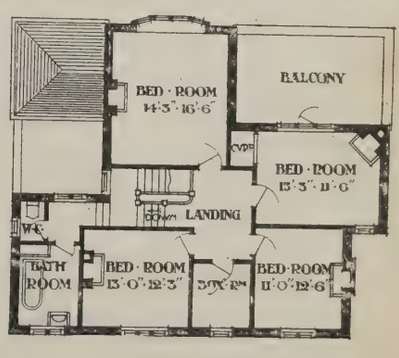
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THE WHITEFRIARS GLASS WORKS.—By permission of Messrs. James Powell and Co., the Society of Engineers recently paid a visit to the Whitefriars Glass Works, Tudor Street, E.C. In the mixing room the raw materials of glass were found, showing among other things the formation of lead-glass and soda-lime glass. The pot room was inspected, and in it was seen a stock of finished crucibles, as well as some in course of being built up rod by rod. The goods, when finished by the workman, are slowly cooled or "annealed," either by being





Ground-Floor Plan.



First-Floor Plan.

HOUSE AT SALE, CHESHIRE. T. W. HUDSON, ARCHITECT.

This house has been built for Mr. F. Mitchell (of the "Clipper" Belt Hook Co., 251, Deansgate, Manchester) to suit the owner's requirements, facing Broad Road and overlooking Sale Park at the rear. Common bricks have been used, specially burnt with grey sides for the exterior and worked in stretcher-bond, using 2 in. "Anchor" Wall Ties for all walls. The chimneys are of Ruabon red bricks, and the roofs of Broseley tiles. The interior walls are finished in Brother's cement on the ground floor. The whole of the woodwork and walls are finished with "Ripolin" paint (gloss and flat), being thus rendered perfectly sanitary, and all washable. Strip panelling has been used for the vestibule, hall and billiard-room, the ceiling of the last-named being finished with beams and rafters. Mr. T. W. Hudson, of 2, Exchange Street, Manchester, was the architect, and Mr. William Thorpe, of Old Trafford, the contractor.

gradually moved away in iron pans from a fixed source of heat in the "bars," or by being placed in a chamber or "kiln," in which the source of heat is allowed gradually to die out. In the cutting shop particular interest was taken in the process of decorative cutting by means of iron or stone wheels, fed respectively with sand mixed with water, and with water alone. The sheet-glass cutting shop was also visited, where the glass is cut either with a diamond or a small steel wheel.

* * *

A CHEAP HOUSES EXHIBITION IN PARIS.—An exhibition of cheap dwelling-houses is now being held in Paris, on the quays of Cours de la Reine, whose conservatories have been sold to a contractor to be pulled down, for £1,000. This exhibition is practically confined to three or four large societies, whose object is to enable the working classes to provide homes for themselves.

* * *

DISCOVERIES AT GLASTONBURY ABBEY.—While pursuing his excavations in the nave at Glastonbury Abbey on Thursday last Mr. Bligh Bond uncovered near the base of the western chancel arch the foundations of what is supposed to be a much older building than the present ruin. Some magnificent specimens of complete coloured mosaic tiles were turned up, but the chief feature was a medallion dated 1105. It is conjectured that this was struck to commemorate the work of Abbot Herlewin, who ruled Glastonbury Abbey from 1101 to 1120, and who was the first to begin buildings on an imposing scale. Much of his work was destroyed in the great fire which nearly swept away the Abbey in 1184.

* * *

THE ANCIENT CHURCH OF ST. NICHOLAS, PLUMSTEAD, the transept and the south and west walls of the nave of which date from the thirteenth century, was severely damaged by the disastrous explosion which took place in the Chemical Research Department—a sort of off-shoot of the Royal Arsenal—on Plumstead Marshes, on February 11th, 1907. The fabric has now been restored, and additions have been made on the east and north sides, under the direction of Messrs. Greenaway and Newberry.

* * *

THE NORTHERN ARCHITECTURAL ASSOCIATION, on Wednesday last, visited Northallerton County Hall (Mr. Walter H. Brierley, architect), and afterwards motored to Mount Grace—an old Carthusian house, now the residence of Sir Cecil Spring-Rice. They subsequently visited Rounton Grange and Arncliff Hall, concluding the day with a dinner at Northallerton, when Mr. Arthur B. Plummer was presented with a silver salver and a hall clock as a mark of the members' appreciation of his services as hon. secretary of th Association—a position from which Mr. Plummer has recently retired.

* * *

MESSRS. ROBERT MCALPINE AND SONS, of Glasgow and London, have secured the contract for the construction of a new power station at Dunston, near Newcastle, required by the Newcastle Electric Supply Co. The work is to cost about £60,000, and its special feature is that, as the ground has a poor bearing capacity, the whole site is to be covered with a heavy concrete floor resting on piles. This floor is to carry a great weight of machinery and the concrete is reinforced. For the same company Messrs. McAlpine are also boring tunnels under the Tyne and Wear.

* * *

THE LATE SIR RANDAL CREMER, M.P., who died on Wednesday last, was trained as a carpenter. In 1859 he assisted in the Unionist agitation which resulted in the celebrated lock-out in the building trade. His first notable achievement was to unite several small and weak unions into a strong and compact body, the Amalgamated Society of Carpenters and Joiners. He was the first general secretary of the International Working Men's Association, and throughout his life worked towards the ideal of making international arbitration a substitute for the brutality of war.

* * *

NEW MUNICIPAL WORKS.—The Local Government Board has decided to hold inquiries into proposed expenditure by public bodies as follows:—*Water supply works and plants.*—Wellington Rural District Council, £1,700 (July 20). *Sewerage, drainage, and sewage disposal works.*—Colchester Borough Council, £4,700 (July 31); Ripley Urban District Council, £4,077 (Aug. 5); Cuckfield Rural District Council, £10,000, for Balcomb (Aug. 5); Hailsham Rural District Council, £5,050, for Polegate (Aug. 6). *Street improvements, roads, pleasure grounds, and public walks.*—Wembley Urban District Council, £1,370 (July 27); Colne Borough Council, £17,925 (July 29); Portsmouth Borough Council, £15,093 (July 31). *Various.*—Coventry City Council, £25,956, for refuse destructor (July 29); Colne Borough Council, £1,500, for public library (July 29); Altringham Urban District Council, £4,500, for public baths (July 30); Portsmouth Borough Council, £5,000, for public lighting (July 31); Salford Borough Council, £22,711, for public baths (Aug. 6).

SHEFFIELD CITY ARCHITECT APPOINTED.—Mr. F. E. P. Edwards, F.R.I.B.A., City Architect of Bradford, has been appointed City Architect of Sheffield, at a commencing salary of £650 per annum. From 147 applications the selection was reduced to six candidates. In giving the names of these in our issue for July 15th, Mr. Reginald G. Kirkby, A.R.I.B.A., was styled "architect to the Glamorgan County Council": this, however, is incorrect, Mr. Kirkby being associated with Mr. D. Pugh-Jones, F.S.I., of Cardiff, who is the County Architect (Eastern Division). Mr. Edwards, the successful candidate, was appointed City Architect of Bradford in December, 1900, when this department was formed. He is a native of Cheltenham, and was for a time an assistant with the late Professor Middleton. From 1886 to 1889 he was an assistant in the Architect's Department of His Majesty's Prisons Commission for Scotland in Edinburgh, and afterwards until his appointment in Bradford he was



FRANCO-BRITISH EXHIBITION: DETAIL OF BAY WINDOW, ROYAL PAVILION.



FRANCO-BRITISH EXHIBITION: DETAIL OF SIDE ENTRANCE, FRENCH APPLIED ARTS PALACE.

assistant in the Liverpool Corporation Architect's and Surveyor's Department. In Bradford Mr. Edwards has designed and superintended the carrying out of a very large amount of work for the Corporation. The most important undertaking is, of course, the extension of the Town Hall, in respect to which he has Mr. Norman Shaw, R.A., associated with him as consultant.

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PROPOSED MEMORIAL TO GAINSBOROUGH.—A movement is on foot to erect a memorial to Gainsborough at his birthplace, Sudbury, in Suffolk, and a committee has been formed in furtherance of this object.

* * *

A NEW LIQUID ENAMEL.—Messrs. John Mathews and Co., of Hatton Garden, Liverpool, have put on the market a new liquid enamel, to which they have given the name "Apex." It is claimed for this enamel that it will not blister nor crack, and that it possesses an exceptionally hard surface. It has been applied at the Liverpool Dispensary, where it is fully realising the claims made on its behalf. "Apex" is not only prepared in white, but is also supplied in various colours. We understand that Messrs. Mathews are finding an excellent market for this new material—which, in the present state of business in all departments associated with building, is no slight testimony to its excellence.

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ENGINEERING STANDARDS COMMITTEE.—The Royal Institute of British Architects has nominated Mr. Edwin T. Hall, senior vice-president, to represent that Institute on the sectional committee on bridges and general building construction, of which the chairman is Sir John Wolfe Barry.

* * *

SANITATION 3,500 YEARS AGO.—On Friday last, at the Summer Meeting of Extension Students at Cambridge, Dr. A. J. Evans delivered a most interesting lecture on "The Recent Excavations in Crete." The excavations, he said, conclusively showed that Crete was the true cradle of European civilisation. At Minos they found strata to the depth of about 25ft., carrying them through relics of forms of civilisation which took them back in successive stages to an antiquity of at least 12,000 years. Dr. Evans showed by slides the results of his excavations in the Minonian palaces of a period about 1,600 years before the Christian era. A great feature was the perfection of the domestic architecture. A knowledge of sanitation was shown equal to the best of modern ideas. It included such things as inspection chambers and vent shafts, while the terra-cotta water-pipes displayed an ingenuity and effectiveness in design which modern hydraulic science could not excel.

* * *

THE BELL TOWER OF CHICHESTER CATHEDRAL.—The reparation of the Bell Tower of Chichester Cathedral is now complete. This work has cost about £2,000, which has to be added to the total of £130,000 spent on the Cathedral fabric since the central spire fell in 1861. The tower dates from about A.D. 1420-40, and is to-day the only detached campanile connected with any cathedral in England or Wales. The work now completed was required not because the structure itself was unsafe, but because the surface-stone was badly decayed. Professor Church, who has given similar advice at Westminster Abbey, the Houses of Parliament, and Canterbury Cathedral, urged that the stone should be soaked in a preservative solution of baryta. This has been done, and no stones have been removed which it was in the least degree possible to preserve. The work has been carried out by Messrs. Vick, of Chichester, under the direction of the Cathedral architect, Mr. Somers Clarke, Prebendary Bennett acting as honorary clerk of the works.





LYONS' GRAND RESTAURANT AT THE FRANCO-BRITISH EXHIBITION.
Plasterwork by the Bromsgrove Guild.

THE FRANCO-BRITISH EXHIBITION.

We give in this issue some views of work at the Franco-British Exhibition at Shepherd's Bush which were crowded out of our issue for last week, when we dealt with the Exhibition at length. The accompanying illustrations are all examples of plasterwork, and do not call for extended notice, though we would draw special attention to the excellent work which has been done by the Bromsgrove Guild in Lyons' Grand Restaurant.

Notes on Competitions.

Secondary School, Market Drayton.

The design by Mr. Joseph Holt, A.R.I.B.A., of Manchester, has been placed first in this competition, and has been adopted by the Committee; 98 sets were submitted, these being assessed by Mr. H. Beswick, F.R.I.B.A., County Architect for Cheshire.

New Schools, Tebay.

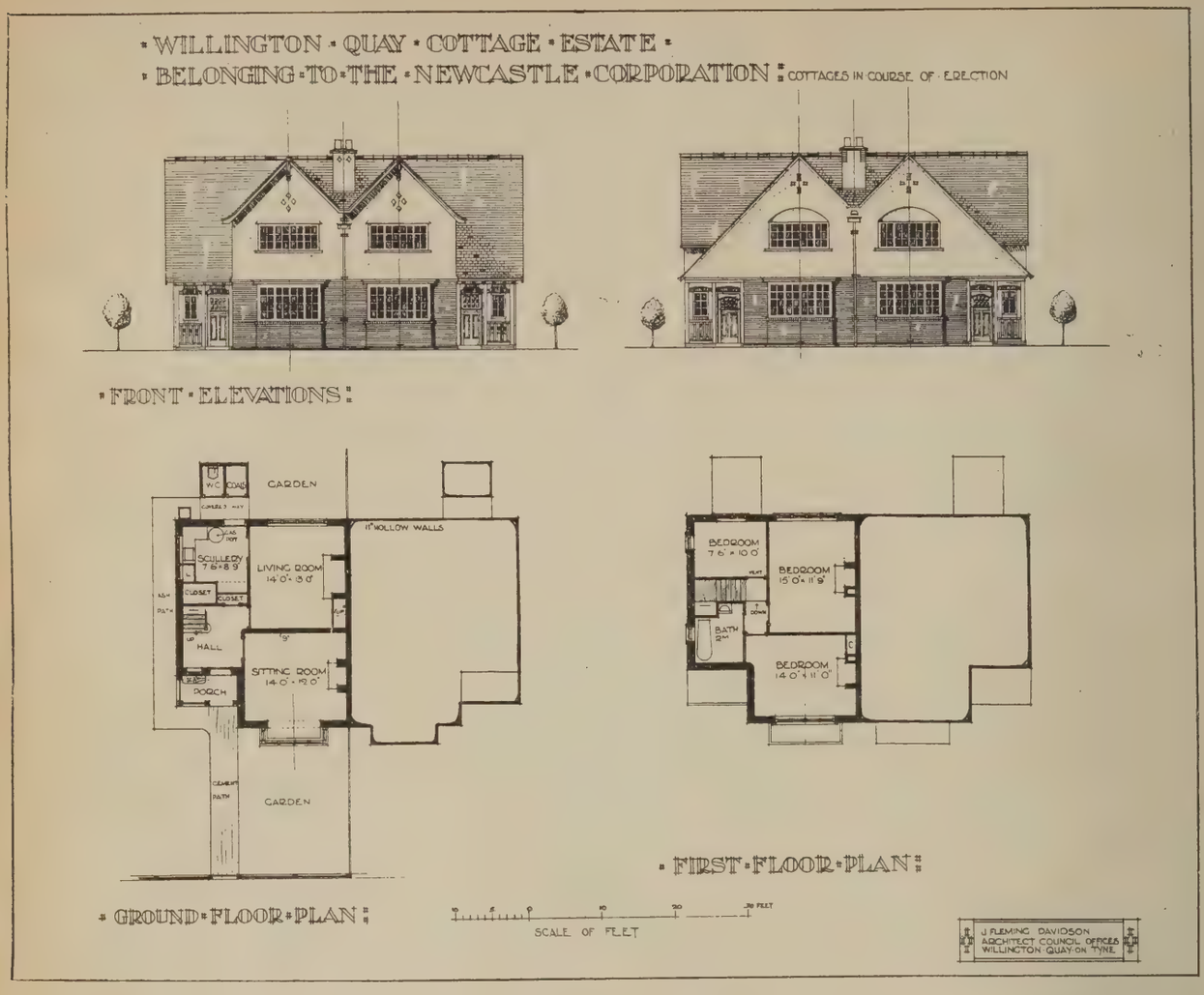
The design by Messrs. Sproat, Farmer, and Warwick, of 18, Cook Street, Liverpool, has been placed first by the assessor, and adopted by the Education Committee. About fifty designs were submitted.

Extension to Royal Infirmary, Bristol.

The following architects have been selected to compete for this work:—

H. Percy Adams
T. W. Aldwinckle
W. A. Pite
J. W. Simpson
A. Saxon Snell
A. Hessell Tiltman
Young and Hall
} London.

Arthur Marshall, Nottingham.
Everard, Son and Pick, Leicester.
Henman and Cooper, Birmingham.
T. Worthington and Son, Manchester.
E. Kirby and Sons, Liverpool.



LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
July 31	ELEMENTARY SCHOOL AT BANBURY.—Conditions from Oliver J. Stockton, Town Clerk, Banbury. Deposit £1.
Aug. 1	INTERMEDIATE SCHOOL AT YSTRADGYNLAIS (BRECONSHIRE), for 120 children. 10 guineas offered. Designs to be sent in to L. J. Kempthorne, clerk to Governors, Duffryn Chambers, Neath.
Aug. 1	COUNTRY HOSPITAL, GUERNSEY.—Conditions from Thomas Robin, President of Directors of Country Hospital, Castel, Guernsey.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. H. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.

COTTAGES AT WILLINGTON-ON-TYNE

These cottages are in course of erection at Willington-on-Tyne on the estate of the Newcastle Corporation, which has recently been laid out by them on Garden City lines.

Twenty cottages are to be now built, each pair different in design. Every cottage will have about 400 yds. of garden ground, and the 20 are arranged in a square, so that all the gardens are in the centre. The builder is Mr. T. R. Bell, of North Shields, and the architect W. J. Fleming Davidson, of Willington Quay and Newcastle.

Our Plate.

Old Portes-Cocheres in Paris.

Of the same First Empire character as the example given in our issue for July 15th, we publish as a centre plate this week two more portes-cochere in Paris—in the Rue de Grenelle and the Rue de l'Université, respectively. They are both good examples of design, well proportioned, and delicate in the scheme of their ornament. The illustrations are themselves fully detailed, and consequently do not call for extended description here.

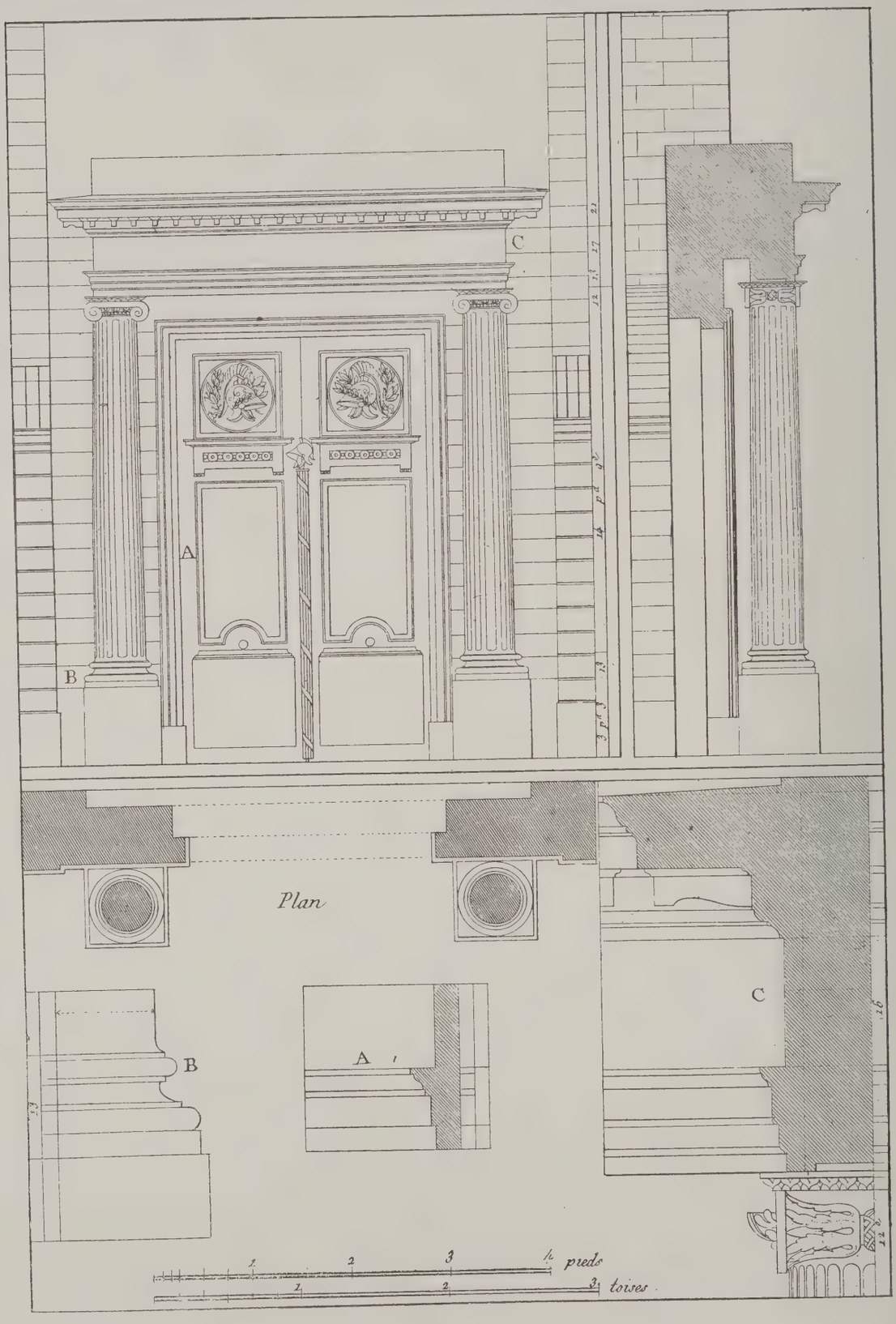
Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

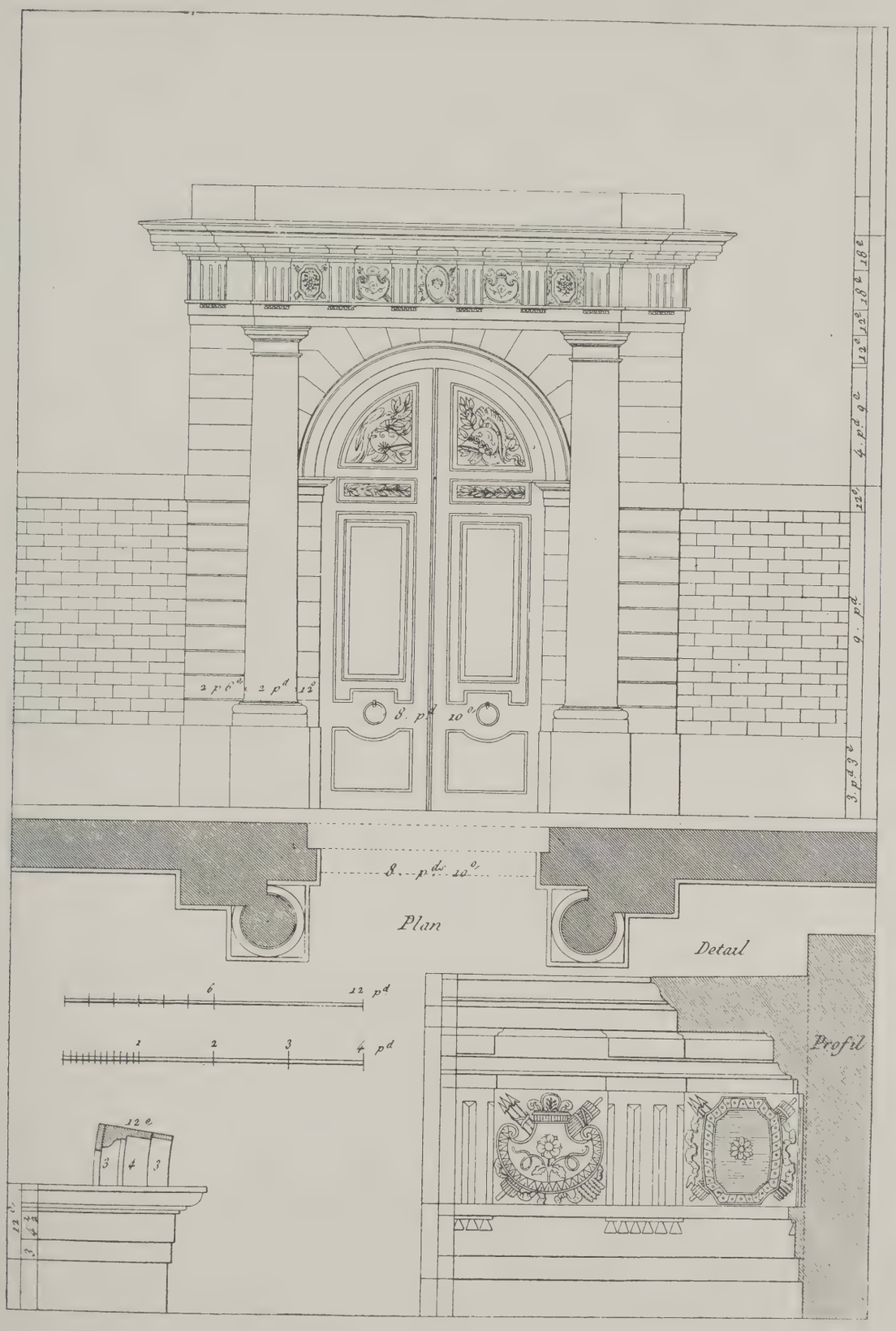
Free £500 Accident Insurance Coupons have been sent to the following:—

A. H. (London, E.C.), G. A. B. (Barry), L. C. (Halifax), E. A. S. (Oxted), A. M. (Hanwell), G. A. S. A. (Blackburn), E. M. L. (Devonport), W. S. J. (Streatham), J. D. (Wakefield), A. J. (East Croydon), T. J. G. (Norwich), G. F. K. (Chesterfield), T. C. S. (Dundee), E. J. B. (Shaftesbury), R. A. H. P. (Devizes), J. G. H. (Ilkeston), W. J. (Newport, Mon.), W. B. (Kirkby Lonsdale), J. E. (Dublin), J. R. (Pyle), P. L. (Gloucester), J. B. H. (Kilburn).

BISHOPSGATE STREET TO BE WIDENED.—At last week's meeting of the Court of Common Council, on the recommendation of the Improvements and Finance Committee, it was decided to widen Bishopsgate Street to 70ft. between Angel Alley and the City boundary, at a cost of £313,900. The London County Council had agreed to contribute one-half the expense in consideration of the Corporation not offering any opposition to the construction of a tramway from the City boundary to Middlesex Street.



PORTE COCHÈRE, RUE DE GRENELLE F. ST. GERMAIN, PARIS.



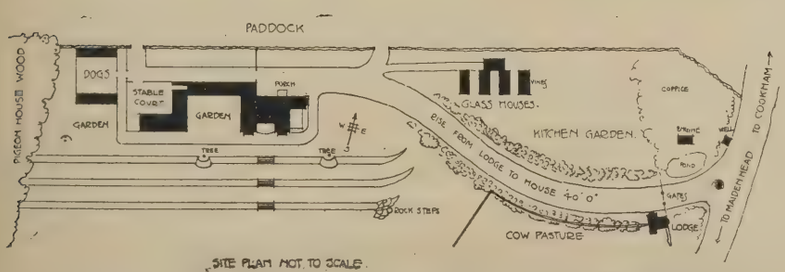
PORTE COCHÈRE, RUE DE L'UNIVERSITÉ, PARIS.



Entrance Front.



Garden Front.



SITE PLAN NOT TO SCALE.

"HARWOOD," COOKHAM DEAN. SULLIVAN AND SULLIVAN, ARCHITECTS.

This house has been built in the centre of about 56 acres of ground, and occupies a commanding position on Mount Hill, one of the highest points in Berkshire. It faces south, overlooking the surrounding country to the Surrey hills, with Windsor Castle and Clieveden Woods in the middle distance. The approach is by means of a winding drive from the Maidenhead road. On the left of the entrance gates is the gardener's lodge from where there is a rise of about 40 ft. up to the house. The hall, staircase, and corridor of the house are all panelled and floored in oak, while the dining-room and drawing-room are panelled in deal, with oak floors. The kitchen, offices and dairy are to the north, forming, with the stables to the west, an enclosed garden. The stabling is arranged to accommodate five horses. The coachman's quarters are placed over the coach-house and harness room. To the west of the stables there are kennels for about forty dogs. The general contractors for the work were Messrs. Patman and Fotheringham, Ltd. The stable fittings are by Messrs. Musgrave & Co.; sanitary fittings, plumbing and pumping by Messrs. Dent & Hellyer; Broseley roof tiling by Messrs. E. & C. Braby; wrought-iron gates and glazing by Messrs. Wainwright & Waring; wrought-iron work, locks and weathercock by Messrs. Hart, Son, Peard & Co.; ranges by the Eagle Range Co.; fireplaces by the Teale Fireplace Co.; and the wood carving by Mr. J. Seglie—all of London. The glass-houses are by Messrs. Crompton & Fawkes, of Chelmsford. The bricks from Messrs. Thomas Lawrence & Son, of Bracknell.

Views and Reviews.

Weighty Affairs of Estate.

The portly and prosperous-looking volume which has for its short title "The Estate Book" contains much that is interesting and valuable to those who are concerned in estate management. There are, for example, articles on the construction and maintenance of roads, on the rights of property in land, on forestry and the cost of tree-planting, on estate engineering, and on week-end cottages. In the article last-mentioned (which is illustrated with several folding plates) the author commits himself to the recklessly speculative statement that "when (a week-end cottage is) provided with a fireplace, and fires are lighted in it during the winter months, it will tend to keep the house warm, and will certainly add to its cheerfulness." Well, we live and learn; and it is not always possible to avoid these highly technical details; but has the author duly considered their possibly paralysing effect on the bucolic mind?

The Country Gentlemen's Estate Book, 1908 (The Year Book of the Country Gentlemen's Association), edited and compiled by William Broomhall. London: The Country Gentlemen's Association, Ltd.

Yorkshire Vales and Wolds and Buildings.

Mr. Gordon Home, whose excellent sketches of Yorkshire vales and wolds have been worthily reproduced in the best style of the three-colour process of printing, is by no means a blind worshipper of the scenes and buildings he depicts and describes. His natural tendency to praise the objects he has selected for attention is often tempered with criticism that is always discriminating and sometimes caustic. Hence, with respect to Beverley Minster, while confessing that, in his opinion, no towers that he has seen in this country compare with Beverley for the masterly way in which they "combine continuous lines and rectangular ornaments with the most exquisite grace and dignity," he does not hesitate to express his disapproval of the Early English chancel and transepts, which, he considers, suffer loss of dignity by lack of proportion. The book is for the general reader, but, as was inevitable in a book dealing with a district (including York, Sheffield, Hull, and Leeds) that is prolific in minsters and abbeys and castles and halls, contains many pictures and much comment that are of architectural interest. Mr. Gordon Home is certainly a past-master in the gentle art of producing books in which the pictures are beautiful and the gossip is agreeable.

"Yorkshire Vales and Wolds." Painted and described by Gordon Home. London: A. and C. Black. Price 7s. 6d. net.

Electrical Measuring Instruments.

That there should be any subject under the sun about which no book has been written would be rather surprising. Yet the author of "Industrial Electrical Measuring Instruments" seems to have had the good fortune to hit upon such a subject, and he may be congratulated not only on his enjoyment of a rare monopoly, but on the excellent use he has made of it in producing what seems to us to be a good practical treatise by a competent writer. It explains to the non-mathematician the construction and working of the various types of electrical measuring instruments, and gives hints as to their selection and maintenance; and, since "science is measurement," the author, in dealing with the various instruments for indicating, recording, and integrating, naturally introduces a great

deal of information which, while subsidiary to the main purpose of the book, is nevertheless valuable. The volume is abundantly illustrated.

"Industrial Electrical Measuring Instruments." By Kenelm Edgcumbe, A.M.Inst.C.E., M.I.E.E. London: Archibald Constable and Co., 10, Orange Street Leicester Square, W.C. Price 8s. net.

Bankruptcies.

During the week ended July 17th, twenty failures in the building and timber trades of England and Wales were gazetted.

C. Haynes, builder, Clacton. Adj., July 17.

Ridal and Wincott, builders, Ashby. R.O., July 15.

F. Taylor, joiner and builder, Manchester. R.O. July 17.

W. Stubbs, builder, London and Southend-on-Sea. Adj., July 16.

E. B. Hayward, builder, Worthing. Liabilities, £1,435; assets, £28.

J. E. B. James, builder and plumber, Bristol. Liabilities £1,450; assets, £542.

S. Warburton, builder and contractor, Miles Platting, Manchester. R.O., July 10.

H. J. Harding, builder, Bideford. P.E., Guildhall, Barnstaple, July 28, at 3.30.

G. B. Andrews, builder, Ivybridge. P.E., Town Hall, East Stonehouse, August 6, at 12.

H. C. Foulkes, builder, London, E.C. P.E., Bankruptcy Court, September 8, at 11.30.

T. W. Cletheroe, carpenter, formerly builder, Weybourne. Liabilities, £172; assets, nil.

H. Bray, surveyor, Putney. R.O., July 14. P.E., Bankruptcy Court, London, September 8, at 11.

E. Tabor, contractor, Cambridge. Gross liabilities, £4,947; £3,747 expected to rank; assets, nil.

C. Duckhouse, heating engineer, Smethwick. P.E., Law Courts, West Bromwich, August 14, at 10.30.

A. Northcott, plumber and gasfitter, Penygraig. R.O., July 13. P.E., C.C., Pontypridd, July 28, at 10.15.

E. Bowdler, builder, Shrewsbury. Liabilities, £201; expected to rank, £199; assets, £42; deficiency, £157.

C. Wilcox, galvanised iron merchant, Smethwick. P.E., Law Courts, West Bromwich, August 14, at 10.30.

T. H. Tucker, painter and paperhanger, Luddenden Foot. R.O., July 14. P.E., C.C., Halifax, July 31, at 2.

F. Britton, builder and contractor, London, W.C. R.O., June 16. P.E., Bankruptcy Court, September 8, at 11.

J. Thompson, architect and surveyor, Kendal. Gross liabilities, £5,838; £271 expected to rank for dividend; assets £35; deficiency, £240.

H. Watson, builder and contractor, Peterborough. Liabilities expected to rank for dividend, £3,023; assets, £3,516; estimated surplus £493.

T. Waite, plumber and painter, Kidsgrove. R.O., July 14. First meeting, O.R.'s, Newcastle, July 30, at 12. P.E., Town Hall, Hanley, August 26, at 11.

M. Lewis, builder and contractor, Ystabyfera. R.O., July 13. First meeting, O.R.'s, Swansea, August 1, at 11. P.E., Town Hall, Neath, August 11, at 11.30.

A. T. Huss, timber merchant, North Shields, R.O., July 13. First meeting, O.R.'s, Newcastle-on-Tyne, July 31, at 11. P.E., C.C., Newcastle, August 20, at 11.

Nicholls and James, builders, Upper Caterham. R.O., July 15. First meeting, 132, York Road, London, S.E., July 31, at 11.30. P.E., C.C., Croydon, August 13, at 11.

W. Bettridge and Son, smiths and engineers, Chelsea and Parson's Green. R.O., July 14. First meeting, Bankruptcy Court, July 30, at 12. P.E., same, September 8, at 11.30.

G. Race (trading as Geo. Race and Sons), builder, Stockton-on-Tees. First meeting, O.R.'s, Middlesbrough, July 22, at 11.30. P.E., C.C., Stockton-on-Tees, July 29, at 10.30. Adj., July 8.

New Companies.

Essex Builders' Supply Association, Ltd., to take over the business of a builders' merchant carried on by W. J. Hart, of 174, Midland Arches, Leyton. Registered office, 48, Leadenhall Street, E.C.

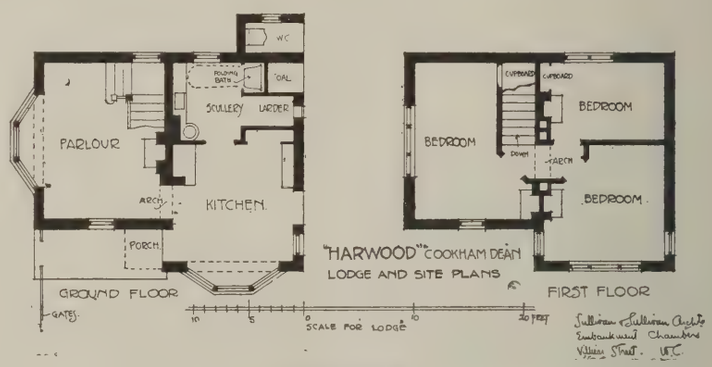
Natal Premier Portland Cement Co., Ltd., to adopt an agreement with the Brakfontein Concessions Syndicate, Ltd., for the acquisition of the property, rights, benefits, and privileges referred to therein, and to carry on the business of manufacturers of and dealers in cement, lime, plaster of Paris, and whiting, etc. Capital: £130,000. Registered office: 8, Duke Street, Adelphi, W.C.

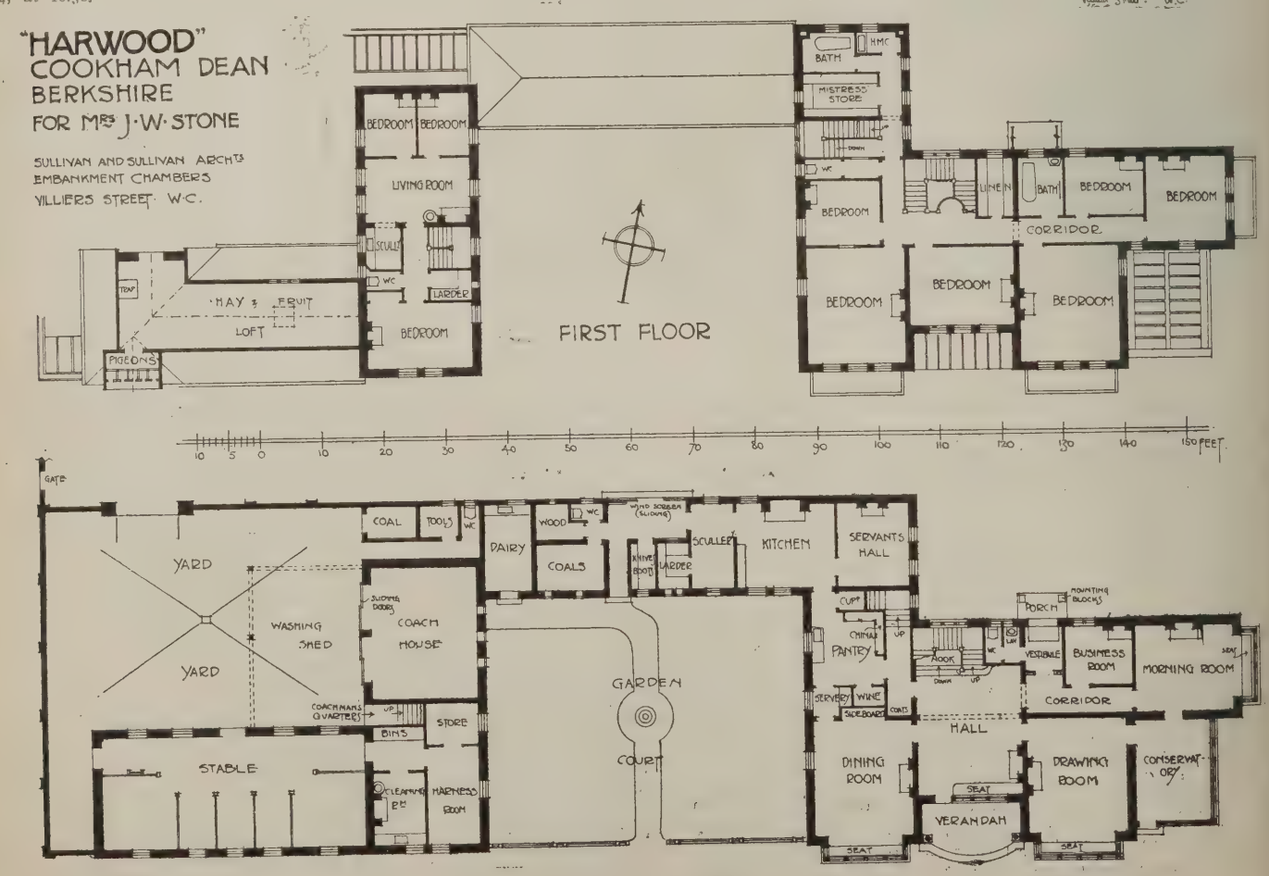
Courtney, Pope and Co., Ltd., to acquire the business of a builder, decorator and shopfitter carried on by W. J. Sumner as Sumner and Co. at 6-9, Alpha Place, London, N. Capital £5,000. Registered office, 5, Alpha Place, Caledonian Road, N.

St. Helens Manufacturing Co., Ltd., to manufacture and deal in oxides of iron and other pigments, paints, oils, etc. The first directors are: W. J. Wigg, T. Hall Sissons, F. J. Norman, and A. T. Hall. Capital: £10,000.

PARTNERSHIP DISSOLVED.

Hovenden and Barber, architects and surveyors, 30, Bishopsgate Street Without. Dissolved as and from June 20, by mutual consent. Debts due to and owing by the firm will be received and paid by Henry Edward Hovenden.





FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY.)

Concrete and Fire-Resistance. On another page we record the first meeting of the Council of the Concrete Institute. It may be expected that this Institute will have considerable influence on fire prevention, for there is no material which has made greater headway in the direction of true fire prevention than concrete, both plain and reinforced. Some doubts have, of course, been raised of late as to the value of certain of the concrete aggregates, so far as the lasting power of reinforced concrete is concerned, and, notably, the use of coke-breeze has been discussed. There can be no doubt, however, that coke-breeze concrete provides an excellent fire-resistant, and that where the coke-breeze has been carefully selected, *i.e.*, not having too much sulphur in it, nothing of a detrimental character has resulted, so far as metalwork is concerned. What architects should be careful about is not to use coke-breeze that is sulphurous. The presence of sulphur up to 1 to 1½ per cent. will probably do no harm, but when there is from 3 to 4 per cent. of sulphur present, it may have a serious effect on the metalwork. Architects should also be particularly careful not to use pan-breeze. It is pan-breeze which has been the cause of complaint in Germany, not the coke-breeze as generally understood in this country. It is time that a little more care should be taken by the producers of coke-breeze to discriminate between pan-breeze and coke-breeze, and it would also be as well if they took a little more care as to the cleanliness of their coke-breeze heaps.

The Tube Fire. In view of the popular use to which the various underground tube railways are being put, the fire which occurred recently near Moorgate Street station has certainly been disturbing, for it has brought vividly before us once again the risks of fire on some of the older tube lines. The line on which this fire occurred is one of the pioneer "tubes," and thus cannot be expected to possess as perfect an equipment as could be desired; nevertheless, considerable improvements have been made on the older lines, and it is to be hoped that this recent warning will lead to yet further improvements. Among the alterations we would most strongly advocate is the gradual but complete removal of all inflammable material on the tube lines and at their stations, and included in such material is the timber used for the railway sleepers. There is not the least reason, either, why such structures as signal-boxes should not also be of non-combustible material, i.e., of metal or of a combination of metal and concrete. There is, also, not the least reason why the present wooden railway sleepers should not be gradually replaced by concrete or reinforced concrete sleepers: such sleepers are being used both on the Continent and in the United States. We think it would be unreasonable to compel the company to make its changes forthwith, but changes as indicated should certainly be undertaken within a limited period, say, three or, at the most, five years.

Fire Losses in Cotton Mills. Most cotton mills are now protected with automatic sprinklers, and, as a writer points out in the "Journal of the Royal Society of Arts," the damage caused by fire is often small as compared with that occasioned by water. The majority of fires originate in the spinning frames in the upper storeys of the mills, the carding machines being placed on the ground floor, so that the cards are often deluged with water distributed by the automatic sprinklers or other fire appliances. Even where the mills are supposed to be fireproof, much water has been known to find its way through the concrete floorings into the lower rooms. The card clothing is very susceptible to injury by water owing to the difficulty of removing the effects of damp from the wire teeth. Considerable salvage can be effected from prompt attention to most of the machinery, but the cards are usually abandoned as a total loss, there being no method of removing the effects of damp from the wire teeth. If only some inventor could devise such a method, the fire loss in cotton and woollen spinning mills would be considerably minimised.

Causes of Electrical Fires. Many electrical fires are caused from employing non-trained labour to install temporary work, and by the carelessness of plumbers, carpenters, and other mechanics, who in this way often undo the work that has been well and safely done by those who installed the system. The following is an instance of the mischief resulting from such bad work on the part of a gas-fitter: In a large warehouse the electric wires had been well installed, and shortly afterwards the gas-fitter came in and fixed a gas-pipe that touched the insulation of one of the wires. During a severe thunderstorm, following a very vivid flash of lightning, a flame was seen at the point where the gas pipe crossed the electric-lighting wire. When the fire inspector arrived, it was learned that the lightning had melted a hole in the gas-pipe, setting fire to the escaping gas. Fortunately, the outbreak occurred in the daytime, when it was at once discovered; but had it not been determined who was to blame, the fire would have been credited to defective wiring. To show what mischief may be wrought by the work of the amateur or the handy-man around the premises, the following instances may be quoted: A window-dresser had been decorating a show-window, and, having no light, had installed a temporary cord, tapping it to some wires nailed down with double-pointed tacks to the floor of the window, and used to supply current to twenty-four (8 c.p.) lights. This one light was of 32 c.p. capacity, and was being used as a portable light. The window-dresser left the window for a few minutes, carelessly leaving the lamp on a wax figure, which was covered with drapery. When he returned he found the figure in flames. The damage done was about £200. Another window-dresser attempted to utilise a star, the outline of which was made with incandescent lights, by connecting it to a socket in the window-fixture, using for conductors between the plug and star ordinary cotton-covered magnet-wire. He also attempted to install a few extra lamps, the lamps to be fastened to and partially enclosed by paper flowers. Having no extra sockets, he soldered his wires directly to contact-pieces on the butt of the lamps. A short circuit resulted; the goods in the window were ignited; and before the window-dresser (who was in the window at the time) could get out, he was so badly burned as to necessitate his removal to the hospital. Statistics show that only a very small percentage of fires are caused by electricity, and that most of these are due to defective work or fittings.

The Berlin Opera House Fire. Extended reference has recently been made in the daily press to a fire which occurred at the Royal Opera House, Berlin. As a matter of fact, however, the fire was only a comparatively small one, although here again evidence was afforded of how modern precautions result in the limitation of a fire. In this particular instance the fire occurred in a very old building, which has seen many alterations and changes; but during the last few years these alterations have been, to a great extent, improvements from the fire point of view. The cause of the fire, as is only too customary, was that of negligence, and what is more the negligence of a builder's workman who was apparently doing a plumber's job.

Fire Tests. We deal elsewhere with a report by the British Fire Prevention Committee on one of the dry-powder fire extinguishers, and it is interesting to observe that the Committee is now undertaking a series of tests with plain water as applied with ordinary buckets. The report on these bucket tests seems likely to be useful reading, and the comparisons should be highly interesting, such tests being of considerable general utility. Another subject which the Committee has been taking up of late is that of the non-flammability of textiles. There is no doubt that a considerable number of fires are caused by swinging gas burners setting light to gauze or muslin curtains. If a simple means of impregnating curtains could be found, the large number of fires which occur in domestic dwellings would be much reduced.

Vents in Fire Doors. At a recent meeting of the National Fire Protection Association of America, one of the subjects under discussion was that of improving the present type of armoured door used in the United States. With a view to preventing the gases generated by the woodwork in armoured doors when subjected to heat, it has been proposed by the chairman of the Committee on Coverings to Windows and Door Openings that openings should be provided in the covering of the tin-clad doors on that side which would probably be the least subjected to the fire, these openings being furnished as a means for the escape of the gases generated in doors of this type when exposed to high temperatures for a considerable length of time.

It is considered that a 3in. opening would be about sufficient for reasonably small doors, but that larger vents will be found necessary for doors exceeding 54 ft. super. This suggestion has been made as the result of tests conducted at the Underwriters' laboratories. It was shown in these tests that where no special vent was provided, and where the chafing strips were not bolted through the door, the swelling of the covering has been as great as 18 ins. Further tests may be expected, but the rule as to vent openings in these doors will shortly be enforced by the fire underwriters in the States.

Fires from Petroleum Spirit.

So many fires have been occurring of late in places where dry-cleaning is being undertaken, not only in fully-organised factories, but in private premises, that it is interesting to observe that the London County Council has now issued a statement on the subject, and that some amendments in legislation may be expected. The statement is as follows:—"We reported on November 12th, 1907, with reference to the urgent need for the amendment of the Petroleum Acts, 1871 to 1881, especially in view of the grave dangers attendant on the use of petroleum spirit for cleaning purposes in private houses and small shops. The attention of the Secretary of State for the Home Department was directed to the question, but, as stated in our report on January 21st, 1908, he intimated his approval of the steps which were being taken by the Council for the enforcement of the existing law, but could not see his way at the time to initiate fresh legislation on the subject. Since that date further evidence has come to our notice of the need for more effective steps being taken in the matter. One danger arising from the domestic use of petroleum spirit is that after the spirit has been used it is often thrown away into the drains, and in some cases in sufficient quantities to cause serious accidents in the drains or sewers."

THE CONCRETE INSTITUTE

First Meeting of the Council.

The first meeting of the Council of the newly-formed Concrete Institute was held in London on July 21st, the president (the Earl of Plymouth, C.B.) presiding.

Prior to the meeting there was a luncheon of the Council at the Ritz Hotel to meet the president, at which the chairman of the Executive, Mr. Edwin O. Sachs, F.R.S.Ed., presided. Among those present were Mr. Ernest George (president of the Royal Institute of British Architects), Sir Henry Tanner, I.S.O., of H.M. Office of Works (vice-president), Mr. W. H. Johnson, B.Sc. (hon. secretary of the Institute of Metals), Mr. Searles-Wood, F.R.I.B.A. (hon. secretary of the Reinforced Concrete Committee), Mr. Max Clarke, F.R.I.B.A. (chairman of the Specification Committee of the Commission on Concrete Aggregates), Mr. Ellis Marsland (hon. secretary of the British Fire Prevention Committee), Mr. Ross, M.Inst.C.E. (Chief Engineer to the Great Northern Railway), Mr. Marsh, M.Inst.C.E. (Metropolitan Water Board), Mr. William Dunn, F.R.I.B.A., Mr. Hatch (Chief Engineer to the Metropolitan Asylums Board); Mr. Colson, M.Inst.C.E. (Admiralty), Lt.-Col. Winn, R.E., Mr. de Vesian, M.Inst.C.E., Mr. W. H. Topham, A.M.Inst.C.E., Mr. E. P. Wells, J.P., Mr. Bertram Blount, F.I.C., Mr. Workman, C.E., Mr. Seraillier, Mr. Munro, Mr. Purton, etc. After the loyal toast had been given, the toast of "The President" was proposed by Mr. Sachs, who dealt with the objects of the Institute and the necessity of thorough research work in matters appertaining to concrete and reinforced concrete. He pointed out that the membership already exceeded 225, of whom the majority were civil engineers and architects, but that co-operation with the representatives of the industries concerned was essential in order to obtain practical results. The Earl of Plymouth, in reply, referred to the necessity of considering the architectural rendering of structures in reinforced concrete, so that the aspect of our cities may not be spoilt. Mr. Ernest George proposed the success of the Institute, coupled with the name of Sir Henry Tanner, who, in reply, dealt with the necessity of architects and civil engineers doing their own designing in reinforced concrete.

FIRE INQUESTS IN THE CITY.

The utility of fire inquests as required within the precincts of the City of London has been frequently referred to in these columns, and it is to be hoped that some day the private Bill before Parliament suggesting the universal adoption of the fire inquests throughout Great Britain will become law.

We have now before us the report of last year's working of the fire inquests in the City conducted by Dr. Waldo.

Dr. Waldo reports that 145 fires had been officially notified to him during the year, as against 122 in 1906, and he had fully and carefully enquired into the cause and circumstances of each with the assistance of the police and his officers. There had also been inquests into eight non-fatal fires. Altogether he had enquired into the cause of 637 deaths and non-fatal fires.

Dr. Waldo says:—"I have continued to devote a considerable portion of my time and energies to the important subject of fire enquiries within the City, including a personal investigation on the spot of the fires reported to me. This system of personal investigation at the site of each fire has been the means of preventing the overlooking of any case of fire which should be publicly enquired into, whilst at the same time the cause of many fires has thereby been ascertained and unnecessary inquests prevented. Of the 145 fires reported, in 115 cases the cause of the fire was determined, and in only 30 fires does the cause still remain unknown. I have referred eleven fires, seven of which were reported to me as electrical in origin, to Mr. Voysey, the City Electrical Engineer, and as a result of his expert investigation five of the number were found to be due to defective electrical arrangements.

Continuing, he says:—

"In the course of my fire enquiries many suggestions have been made and put into practice by owners and occupiers with a view to future saving of life and property. As you are doubtless aware, the City of London Fire Inquests Act is confined to my jurisdiction in the City of London only, and I think the time has now arrived when the powers under this local Act might usefully be extended to my other jurisdiction in the borough of Southwark. Non-fatal fires, especially dockside fires, are both serious and frequent in Southwark, and in the absence of any judicial inquiry the causes often remain unknown."

FIRE PROTECTION IN SCHOOLS.

It would appear that special precautions should be taken in laboratories connected with schools, and this matter should have the attention of architects who undertake work for school authorities.

Fire protection in laboratories and science rooms especially demands attention.

This matter came up at last week's meeting of the London County Council, when the Buildings Sub-Committee reported as follows:—

"We have now had under consideration the question of the prevention of fires in laboratories and science rooms, and we have taken the opportunity of revising the existing regulations on the subject set out in section (*c*) of article 114 of the Provisional School Management Code. The amendments or additions proposed by us are indicated in italics. We are of opinion that the revised regulations should be printed in large type, mounted on cardboard, and supplied to each L.C.C. and non-provided school possessing a laboratory or science room, and that a notice should be inserted in the 'London County Council Gazette' drawing the attention of head teachers to the precautions to be observed in laboratories and science rooms to prevent danger from fire. We have communicated with the Buildings Sub Committee on the matter and they have informed us that they concur in the foregoing proposals, and that they propose that all chemical laboratories and the cupboards in other rooms in Council's schools where chemistry is taught shall be treated with fire-proofing solution, and buckets of sand provided. In this connection we have asked the Buildings Sub-Committee to arrange for the chemical cupboards in non-provided schools to be similarly treated to those in Council's schools. We recommend:—

"That the undermentioned regulations for the prevention of fire in laboratories and science rooms be printed in large type, mounted on cardboard, and supplied to each L.C.C. and non-provided school possessing a laboratory or science rooms—

Regulations for the Prevention of Fire in Laboratories and Science Rooms.

(1) When the laboratory is in use an adult teacher must always be in charge.

(2) In laboratories which are used on by day scholars, the head master or headmistress must have the custody of the key, which must not be left finally in the possession of the laboratory monitor after the close of the school;

(3) When there are evening classes a second key is provided, which must be in the custody of the responsible teacher;

(4) The person in charge, at the time of leaving, must satisfy himself that all taps are turned off;

(5) Charcoal that has been heated must be placed in galvanised sheet iron boxes *which must always be closed when not in use, and which should be mounted on asbestos or stone slabs*;

(6) No unauthorised person must be permitted to enter the laboratory when it is not in use;

(7) The receiver of the waste from the sinks must be carefully cleaned out at least once a week;

(8) Inflammable liquids (such as wash alcohol, methylated spirits, ether) must not be poured down the sinks;

(9) Very great care must be taken when using *sodium potassium*, or *phosphorus* (or when cleaning out bottles which have

contained these substances) to avoid dropping and losing small pieces about the laboratory;

(10) *Sodium, potassium,* and *phosphorus* must not be kept with other chemicals in the laboratory, but must be in the custody of the head teacher, who is responsible for keeping them in a locked compartment, of which he alone must retain the key. *Special lockers are supplied for this purpose*;

(11) When evening classes are held in the same laboratory, another supply of these materials must be similarly retained in the custody of the evening school teacher;

(12) *All bottles containing dangerous chemicals should be distinctly marked.*

(13) The schoolkeeper must make a round of inspection every night after work is over in the laboratory, in order to make certain that *all* taps are turned off, and that there is no danger of fire.

(14) *For the prompt treatment of burns and acid wounds a bottle of carron oil should be kept ready for use in each laboratory or science room.*

N.B.—These regulations are to be hung in a conspicuous place in the laboratory.

(The foregoing recommendations were agreed to by the Council.)

TESTS WITH FIRE EXTINGUISHERS

The British Fire Prevention Committee has now issued its report on one of the powder fire extinguishers, known as the "Diamond Powder Extinguisher." Much of the matter contained in the report is of technical interest to architects and surveyors, who have to specify extinguishers in connection with the equipment of buildings.

The preamble to the report, which is signed by Mr. Percy Collins, J.P., reads as follows:—

"The series of tests with the 'Diamond' Dry Powder extinguisher showed that hand powder fire extinguishers, as a class, if applied with skill, can often be usefully employed in the incipient stages of small fires. If a small fire has obtained such proportions that it cannot be extinguished by a number of hand powder fire extinguishers, they may still be useful to keep it in check until other fire appliances can be brought into play—this applies especially to loose material.

"The various tests undertaken with petrol point to the conclusion that, with a volatile liquid of this nature giving off a highly inflammable vapour, the powder extinguisher is only efficient when the area of the fire is small or narrow.

"The efficiency of powder extinguishers depends materially on the closeness of range, the position of the operator's shoulder, and on a certain knack or dexterity in handling the appliance.

"The action of powder extinguishers would appear to be largely mechanical."

This bears out very much what we have already indicated as to powder extinguishers generally in previous issues.

Upon analysing the report with a view to ascertaining what is meant by having "a sufficient number of extinguishers," it is to be observed that on some tests as many as 10, 12, 14, 15, 18, and 26 extinguishers had to be used, whilst in one instance the Committee apparently lost count, and put down the word "numerous."

Powder extinguishers, as a rule, we believe, cost somewhere about 5s. each; thus a fire requiring 26 extinguishers would necessitate an expenditure of £7 10s. in extinguishers, and one would have to be sure that that number was within reach.

We believe that chemical liquid extinguishers cost somewhere between £2 10s. and £3, and we think ordinary buckets containing two gallons of water cost on an average 1s. 6d. each.

It will certainly be a matter of considerable interest at a later date to see a comparison of the results of identical tests as between buckets, liquid fire extinguishers, and powder fire extinguishers. Buckets were under test last week, when there was an influential attendance of the Committee at the Regent's Park Testing Station, a most interesting series of tests with ordinary buckets and plain water being undertaken.

The sub-committee in charge of the powder tests comprised Mr. Collins, J.P., Mr. Ellis Marsland (district surveyor), Mr. James Sheppard (insurance surveyor), Mr. Herbert Dyer (vice-president of the National Fire Brigades Union), and Capt. Henderson (chief officer, Rickmansworth Fire Brigade).

MODERN PRACTICE IN TALL CHIMNEY CONSTRUCTION.

By Hector St. G. Robinson.

Whatever may be the opinion of mechanical engineers as to the relative merits of chimney and mechanical draught for supplying air for the combustion of fuel, the fact remains that there is still a considerable demand for tall chimneys, and while this demand exists architects and engineers will be called upon to design and erect such structures.

Briefly, chimneys are constructed for a two-fold purpose: (1) to cause a sufficient flow of air or draught through the furnace to maintain the perfect combustion of a fuel with the least waste of heat, and (2) to discharge to a great height the hot gases which, by reason of the noxious products contained, would be very injurious if ejected at a low altitude.

Draught is caused by a difference in density between the chimney gases and the external air, the intensity varying nearly as the product of the height into the difference of temperature, being independent of the area of the chimney, and being equal to from 0 to 2 inches of water in ordinary practice. The area of the chimney flue is governed by the volume of gases to be dealt with.

There are many well-known formulæ for the calculation of the power of chimneys, a full discussion of which would entail more space than this article warrants. The accompanying table, which can be used as a guide in estimating the dimensions required, gives sufficient examples of the more general cases met with in steam-boiler practice. The values given are believed to be ample for all cases in which the draught areas through the boiler flues and connections are sufficient.

The basis of calculation is as follows:—Fuel, bituminous coal, barometer 14.7 lbs. per sq. in., temperature of outside air 60 degs. Fahr., chimney gases 500 degs. Fahr., the grate surface having 40 per cent. effective area of opening.

Experiments and tests have shown that of all forms a round parallel flue is the best, though it may be smaller at the top without detriment owing to the fact that the gases, cooling down, contract in volume, and therefore require less space. A round flue has less retarding effect on the ascending gases than a square one. Connecting flues should be as direct as possible, and should not have sharp bends, with about 20 per cent. greater area than the chimney area, or a considerable drop in draught pressure will result.

Allowances for Wind-Pressure.

Wind-pressure is usually the only external force to be provided against. As regards stability, the best form of section for a chimney is the circular; next, the octagonal; and, lastly, the square form. When a solid body is presented to the wind, the front pressure is modified if the face of the body is not plane. For round and octagonal chimneys the wind-pressure is usually calculated upon two-thirds and three-quarters respectively of their area projected on a vertical plane. Some authorities give values for the pressure co-efficient as low as one-half for the round and three-fifths for the octagonal form.

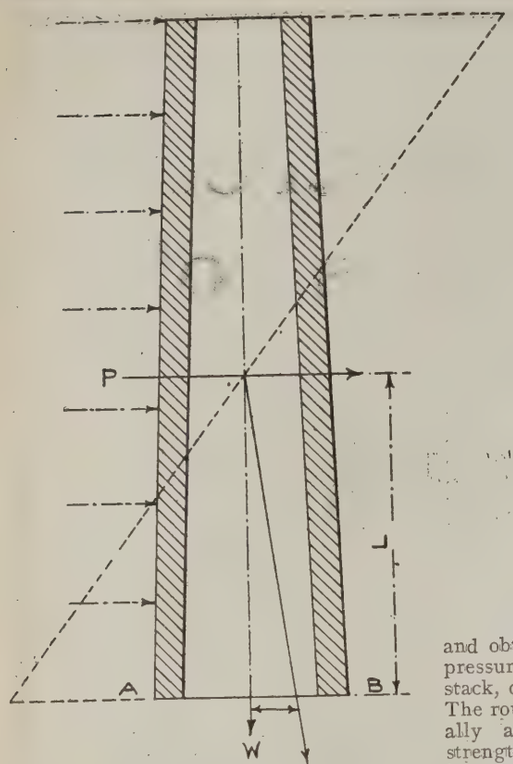
The maximum pressure used in calculation varies considerably. Fifty years ago Rankine gave 50 lbs. per sq. ft. as the highest recorded pressure in this country, and the data collected by the Board of Trade Committee on the Tay Bridge enquiry show that on pressure plate anemometers at Birmingham pressures of 20 to 27 lbs. per sq. ft. had been recorded, at Edinburgh pressures of 20 to 25 lbs. per sq. ft., at Glasgow pressures of 30 to 47 lbs. per sq. ft., and at Greenwich 30 to 40 lbs., per sq. ft.

In Germany chimneys inland are calculated on a wind-pressure of not less than 25 lbs. per sq. ft., and 40 lbs. on the sea coast; in Austria, generally 30 lbs. per sq. ft.; while the big chimneys at the Paris Exhibition, 230 to 260 ft. in height, and $14\frac{3}{4}$ ft. inside diameter at top, were calculated for no less than 55 lbs. per sq. ft.

Numerous experiments show, as might be expected, that the wind velocity, and, therefore, the wind pressure also, is greater as the height is greater. This fact led Professor Land, a member of the German Commission for drafting rules for the construction and dimensions of factory chimneys, to consider that the wind-pressure per unit of area on chimneys should be reckoned to increase with the height H

CAPACITY OF CHIMNEYS.

Grate Area. Sq. feet.	Coal. Tons per hour.	Draught. Inches Water.	Chimney. Inside Diam.	Chimney. Height.
			Inches.	Feet.
30	·23	0·41	30	70
34	·26	0·53	,,	90
38	·30	0·65	,,	110
44	·35	0·41	36	70
52	·42	0·53	,,	90
58	·48	0·65	,,	110
74	·60	0·53	42	90
80	·66	0·65	,,	110
92	·73	0·76	,,	130
104	·85	0·53	48	90
110	·88	0·65	,,	110
118	·98	0·76	,,	130
126	1·05	0·53	54	90
138	1·14	0·65	,,	110
150	1·24	0·76	,,	130
170	1·42	0·59	60	100
190	1·59	0·73	,,	125
206	1·72	0·87	,,	150
206	1·72	0·59	66	100
234	1·97	0·73	,,	125
264	2·21	0·87	,,	150
280	2·33	0·65	72	125
310	2·61	0·87	,,	150
326	2·80	1·03	,,	175
326	2·80	0·65	78	125
368	3·00	0·87	,,	150
398	3·25	1·03	,,	175
412	3·40	0·76	84	130
456	3·74	0·97	,,	165
500	4·10	1·18	,,	200
530	4·36	0·82	96	140
620	5·10	1·06	,,	180
676	5·60	1·30	,,	200
706	5·85	0·87	108	150
794	6·50	1·12	,,	190
882	7·30	1·41	,,	240
882	7·30	0·87	120	150
1030	8.45	1·18	,,	200
1148	9·40	1·48	,,	250
1236	10·20	1·18	132	200
1328	11·40	1·48	,,	250
1528	12·75	1·67	,,	300



above the ground according to the formula.

$$(Ph = Po \div 16\ H)$$

where Po is the wind-pressure at the bottom and Ph at the height H feet up. For the pressure per sq. ft. at the bottom he takes 25 lbs. for inland places, 30 lbs. for those particularly exposed, and 35 lbs. on the coast. Though lower pressures may be admissible for calculating other lofty buildings, nothing less than the maxima here given can be allowed for chimneys, owing to the small breadth of surface exposed to the wind, for the investigations on wind-pressure in connection with the Forth Bridge showed that the pressure per unit of area is greater on small surfaces than on large, although later experiments by Dr. T. E. Stanton, M.Inst.C.E., at the National Physical Laboratory, appear to disprove the accuracy of this.

Of the various types of chimneys, the following are, in their order, the most common: Ordinary brick, radial and shaped brick, wrought iron and steel, plain concrete, reinforced concrete, and reinforced tile and concrete.

Brick Chimneys.

Brick chimneys have become to be regarded as the standard form of construction in this country, but the superior merits of reinforced concrete are beginning to assert themselves.

The construction of brick chimneys is largely based on experience, and the many empirical rules as to thickness usually give results which err on the side of safety, the following rule given by the London Building Act being a case in point:—

The thickness of the walls should be 8½ ins. down to a distance of 20 ft. from the top, with a half-brick addition for every further 20 ft. downwards.

The half-brick addition every 20ft. is extravagant, and, if this figure were increased to 30 ft., in round and octagonal chimneys a reasonable factor of safety would still exist.

It is generally advisable to investigate

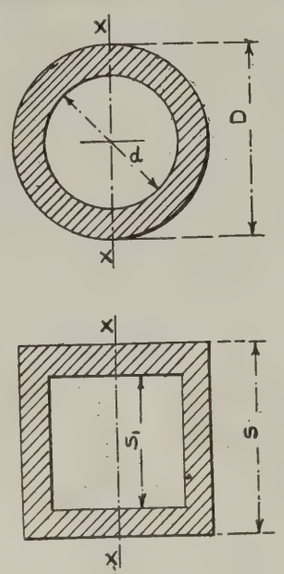


FIG. 1.

and obtain the stresses induced by wind-pressures, having due regard to shape of stack, quality of materials, and exposure. The round and octagonal forms are generally adopted as combining maximum strength with a minimum of complication in construction. A square pedestal with a round or octagonal shaft is extremely staple, the square pedestal being usually from one-fifth to one-tenth the height. Stock bricks built in English bond with a better-class brick for quoins and strings are usual. Round shafts are frequently built of radial bricks, but a radial solid brick is hardly a necessity, except for small shafts. Radial perforated bricks of the Custodis type are a great improvement on ordinary bricks for chimney construction, and should be adopted for all first-class work. These are a specially-made brick, and are stated to have a compressive strength of about 5,000lb. per sq. in., gross section.

The stress upon the rim of any transverse section of a brick chimney due to wind-pressure is the sum of the two quotients—the weight of the chimney above that section, divided by the area of the section; plus the moment of the wind-pressure divided by the section modulus. Let

W = weight above section.

A = area of section $= \frac{\pi}{4}(D_2 - d^2)$.

f = unit stress.

Z = section modulus.

$= \frac{\pi}{32}\frac{D^4 - d^4}{D}$ for a circular section (Fig. 1).

$= \frac{1}{6}\frac{S^4 - S_1^4}{S}$ for a square section (Fig. 1).

P = total wind-pressure acting through its centre of gravity.

L = lever arm *i.e.* distance of centre of gravity of wind-pressure above section.

PL = wind moment.

Then the stresses at the rim of section (Fig. 1)

$$= f = \frac{W}{A} \pm \frac{PL}{Z}$$

The distance of the resultant from the axis X X

$$= \frac{PL}{W}$$

The strength of brickwork is difficult to determine, depending as it does on the height of the chimney, the strength of the bricks and mortar, the thickness of the joints, and the excellence of the bonding.

Tensile stresses, if allowed to exist, have to be resisted by the adhesion between the bricks and mortar, which depends in a high degree upon the care exercised in building as well as the proportion of cement in the mortar.

The mixture of mortar usually employed in modern chimney construction where a high internal temperature has to be resisted has the volumetric composition of 1 part of Portland cement, 1 part lime, and 3 parts sand—*i.e.*, a 1-1-3 mixture. Experiments on the adhesion of this mortar to bricks carried out in the testing works at Charlottenburg gave the following results:— Adhesion per sq. in.

Age days.	Solid bricks.	Perforated bricks.
3	11.75	16.15
28	19.10	38.20
90	23.50	57.30

With this same mortar Professor Lang recommends the following limits of stress for any other joint at a distance D feet down from the top:—

Compression 71.1 + 0.65 D.
Tension 18.5 + 0.56 D.

These limits apply to chimneys newly built; later the work grows stronger, but thermal stresses accrue. If the gases are hotter than 480 to 570 degs. Fahr. in an unlined chimney the above limits must be lower, or the chimney must be lined.

On the leeward side of the chimney the limit of compression to which the cement mortar should be subjected ranges according to different authorities from 100 to 150 lbs. per sq. in. Notwithstanding the tension permitted by some authorities, the design should be such that the maximum wind-pressure does not overcome the initial compression on the windward side, which means that the resultant pressure should not fall nearer the rim of the section than one-quarter the diameter in round chimneys and one-sixth in square chimneys, as pointed out by Rankine. In chimneys built of perforated bricks, in which the adhesion of the mortar to the bricks is considerable, as much as 20 lbs. per sq. in. may safely be allowed. In a large circular Custodis brick chimney at Newark, N.J., U.S.A., 350 ft high, the maximum stresses in the brick work just above the base under a wind pressure of 38 lbs. per sq. ft. normal surface, or, assuming a pressure coefficient of ⅔ for the cylindrical surface, a pressure of 25 lbs. per sq. ft. of median plane, are Compression on leeward side 256 lbs. per sq. in., compression on windward side 17 lbs. per sq. in.

Temperature of Gases, and Lining.

When the temperature of the gases entering a brick chimney exceeds 500 degs Fahr. a firebrick lining laid in tempered fireclay is required, the height to which this is carried depending on the temperature. With steam boilers of average efficiency, the flue gases will be about 600 degs. Fahr. to as low as 300 degs. Fahr. if economisers are used. In some types of refuse destructors the temperature of the chimney gases will be as high as 900 degs Fahr., and if in conjunction with steam boilers about 550 degs. Fahr. In many cases much higher temperatures will have to be dealt with, especially in smelting and gas works, where temperatures up to 1,500 degs. Fahr. are usual. In such cases of great heat the lining should be carried to the top of the chimney. This, however, is sometimes done in norm

cases to increase the efficiency of the draught by providing an insulating envelope of air around the hot gases, retarding the transmission of heat from the gases to the atmosphere through the walls.

The lining has but its own weight to support and can therefore be comparatively thin. It should not be tied to or made to support the brickwork of the outer shell, but should be quite independent, so that it may expand freely and be replaced without endangering the structure. A heavy course of stonework near the top of a chimney is an excellent means of solidifying the work at this point. At the very top a cast-iron cap about ½ in. thick may be used with advantage.

Among the many forms of brick shafts that have been evolved, that shown in Fig. 2 is probably the most common modifica-

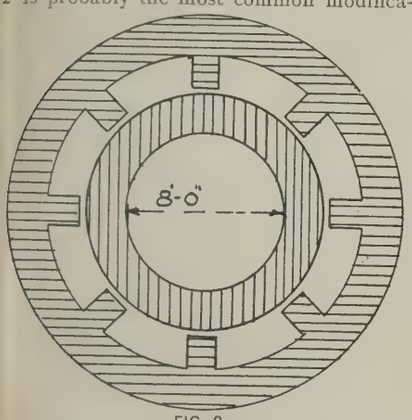


FIG. 2.

ion of the parallel shell. This type has a circular form with radial stiffening ribs projecting inwards, this greatly adding to the strength and reducing the necessary thickness of the wall.

Foundations.

In chimneys, as in other lofty structures, the foundation should receive special attention. A great deal of money is often wasted owing to an imperfect comprehension of this point. A rule that has been approved by many years of practice is to make the width of the base one-tenth the height for square, one-eleventh for octagon and one-twelfth for round chimneys, but this, like all other empirical rules, should be only adopted after investigation of all the conditions likely to affect the design. The width of the foundation slab should be governed by the bearing power of the earth, taking the maximum pressure obtained on the leeward side of the slab. The following safe bearing values represent good practice:—

Material.	Safe load per sq. ft.
Hard rock native bed	10 tons.
Clay, dry	4 to 6 tons.
Clay, moderately dry	2 to 4 tons.
Clay, soft	1 to 2 tons.
Gravel and coarse sand	8 to 10 tons.
Gravel, compact	4 to 6 tons.
Clean dry sand	2 to 4 tons.
Quicksand and alluvial soils	½ to 1 ton.

When the ground is soft and compressible the foundation should be some distance below the ground, or piles driven down to a hard stratum may be used. A considerable saving in concrete, and a consequent reduction of the dead weight, can be obtained by using some form of reinforcement such as expanded metal or one of the many patent bars now on the market. In engineering works old scrap may be to hand and can be used with advantage. Old chains and wire rope have been used in many instances.

(To be continued.)

Law Cases.

"DISEASE" AND "INJURY BY ACCIDENT" UNDER THE WORKMEN'S COMPENSATION ACT.—An interesting point in regard to the definition of an "injury by accident" was decided in the case of *Broderick* v. *The London County Council* which came before the Court of Appeal last week. The evidence showed that Broderick contracted enteritis by inhaling sewer gas while working in a sewer for the London County Council, and that the result of the enteritis was to accelerate long-existing heart disease, and to incapicitate him for work before the time at which such heart disease would otherwise have incapacitated him; but the judge of the Marylebone County Court, from which the appeal was now made, held that the contracting of enteritis in this manner was not an "injury by accident" within the meaning of the Act. The workman appealed, but the Court dismissed the appeal. The Master of the Rolls, in the course of his judgment (as reported in the "Times"), said the applicant was employed in a sewer, and his work necessarily exposed him to the risk of poisoning by sewer gas; he contracted enteritis, and it had been argued from this that this was an "injury by accident" arising out of the employment; and it was said to be accidental because it was an accident that this poison bacillus happened to attack this particular man, and that under the circumstances all the requirements of the Act had been complied with. His Lordship was not able to accept this contention. In the appeal case of *Steel* v. *Cammell, Laird and Co., Ltd.* (1905, 2 K.B., 232), where the applicant, the workman, was suffering from lead poisoning, Lord Justice Mathew said: "The man was following a dangerous occupation, because it might involve the risk of lead poisoning. But the evidence shows that in the majority of cases the workman would not be affected, though there is a minority in which the injury is sure to arise, and when the lot fell on a particular individual it could not be said that the case was fortuitous or unforeseen." Injury by disease alone, not accompanied by an accident, was expressly excluded by Lord Macnaghten in *Fenton* v. *Thorley and Co., Ltd.* True, these were cases under the Act of 1897, but the words in the Act of 1906 were the same, and the Act of 1906 also contained provisions in section 8 for compensation for certain scheduled or trade diseases as if they were "injury by accident arising out of and in the course of the employment," indicating that such diseases were not considered to be accidents. What the applicant was suffering from was not one of the diseases mentioned in this schedule. For these reasons the appeal must be dismissed.—The Lords Justices agreed.

THE FIRST CASE OF PERJURY UNDER THE WORKMEN'S COMPENSATION ACT.—An important case, being the first prosecution for perjury under the Workmen's Compensation Act, came before the Court at Tottenham on Thursday last. The accused was a carpenter named Saunders, who, it is alleged, committed perjury in an arbitration case between himself and H. E. Brown, builder, of Edmonton, before Judge Tindal Atkinson. For the prosecution it was stated that Mr. Brown was asked to raise a platform in the Edmonton Town Hall for a charity concert. Saunders alleged that a section of the staging had fallen on him, injuring his arm and rendering him unfit for work for an indefinite period, and he claimed £1 per week under the Workmen's Compensation Act, 1906, from Mr. Brown, and subsequently brought an action which was tried by the Edmonton County Court Judge, who, after hearing the evidence of Saunders, dismissed the case without calling for the defence.—Mr. Brown, giving evidence, said no accident had occurred, and no complaint had been made by the defendant.—A foreman carpenter gave evidence to the effect that Saunders had a boil or carbuncle on his arm, and that he attempted to make up a case of accident on that account.—Saunders was committed to take his trial at the Central Criminal Court.

CARPENTERS' COMPANY AWARDS.

The Worshipful Company of Carpenters held an examination in Carpentry and Joinery on June 10th to 13th in London and Manchester. The following is a list of the successful candidates in order of merit:—

London: Silver medal, Wm. D. May; bronze medals, W. Wright and A. J. Parker; first-class certificates, E. E. Brockwell, E. L. Adams, A. J. Polden, D. Ostle, Alfred Gymer, T. R. Hampshire, J. E. S. Jackson, J. L. Thomas, H. J. Pullen; second-class certificates, E. H. Day and E. Bird (equal), D. Jenkins, B. S. L. Bartlett. G. Webster, A. Walpole, O. J. Sharp, H. E. Copelin, A. H. Trevenen, H. E. King, W. E. Black, W. L. Franklin, M. W. Gentle, G. A. Sinclair and E. T. Wall (equal), A. J. Pinnock, A. C. Carter, E. D. Kemp, W. Addicott, A. E. Carter and T. H. Knell (equal), and W. G. Quested.

Manchester: Silver medal, S. J. Spargo; bronze medal, J. R. Halsall; first-class certificate, T. Gorst; second-class certificates, W. G. Lewis, R. Garnett, Rd. Williams, C. H. Overend, Jas. Moss, J. Roebuck.

In response to the repeated applications received from various societies and instructors connected with the carpentry trade, the Carpenters' Company this year, for the first time, decided to hold a provincial examination, simultaneously and on precisely similar lines as that held in London, and they selected Manchester as the most suitable city. The number of entries for the examination this year, namely, 67, constitutes a record.

Awards at King's College.

The following is the list of prize-winners at the recent examinations at King's College, London, in the classes carried on under the joint auspices of the Carpenters' Company and the council of the College:—*Building Construction*: S. Evans, silver medal; G. J. Calder, bronze medal; H. R. H. Coney, £3 in books; F. Wilson, £2 in books. *Constructional Drawing*: Elementary, E. G. Sapstead, £1 in books; Advanced, G. J. Calder, silver medal; C. R. Carhrow, £3 in books; S. Evans, £2 in books. *Quantities*: H. C. Lowick, £3 in books; S. Evans, £2 in books; W. T. Matthew, £1 in books. Sir George Faudel-Phillips' bronze medal for sanitary building construction, J. F. Wilson.

TRAMS OVER KEW BRIDGE.—A committee of the House of Lords commenced last week the consideration of the London United Tramways Bill, which seeks power to construct a tramway over Kew Bridge, to connect the systems owned by the company on the north and south sides of the river. The Bill is opposed by the Middlesex and Surrey County Councils.

"ETERNIT" SLATES AND SHEETS.

The asbestos-cement slates, tiles and sheets which have been put on the market by Messrs. G. R. Speaker and Co., of 29, Mincing Lane, E.C., are being very extensively used, both at home and in the Colonies, and this is not surprising when we consider the many advantages they offer for roofing purposes, for wall linings, partitions, and numerous other purposes.

The slates are of the same thickness as British first-quality roofing slates, but a noteworthy difference is the surface of "Eternit," which is perfectly smooth—almost polished. Moreover, the slates are cut with very clean edges, and it is thus possible to form a thoroughly tight roof covering which absolutely keeps out damp, rain, or snow driving up between the laps.

Another point in connection with "Eternit" slates is that they can be laid diagonally, with the result that seven slates, measuring about 16ins. by 16ins., will cover an area of 1 sq. yd., giving each slate a lap of 2¾ins., whereas nearly 14 Welsh slates of the same size are needed to cover a similar area. A great saving in weight is thus effected, which, in itself, is a considerable advantage, as, of course the lighter a roof can be constructed the better. The average weight of Welsh slate roofing is about 67lbs. per sq. yd., and of red tile roofing 80lbs. per sq. yd., whereas "Eternit" roofs average only 21lbs. per sq. yd.

Extensive tests and experience in Great Britain and in the Colonies during the last six or eight years have proved that these asbestos slates do not crumble nor scale, nor are they affected by changes of temperature. They are also fire-proof and acid-proof, and are proof against the attacks of ants or other vermin. In this respect, therefore, they are particularly suitable for use in the Colonies, especially as they can be so easily shipped, with no risk of breakage in transit, the slates being composed of asbestos fibre, and, consequently, not being brittle. Their tensile strength is 5,781lbs. per sq. in., and the resistance to crushing 8,281lbs. per sq. in.

At this time of the year one becomes unpleasantly familiar with the fact that, under a hot sun, rooms in the roofs of houses are rendered extremely stuffy, and an endeavour is constantly made to overcome this drawback by white-washing the slates. With "Eternit" slates, however, nothing of the kind occurs, as they are very bad conductors of heat and cold, so that rooms are kept cool in summer and warm in winter.

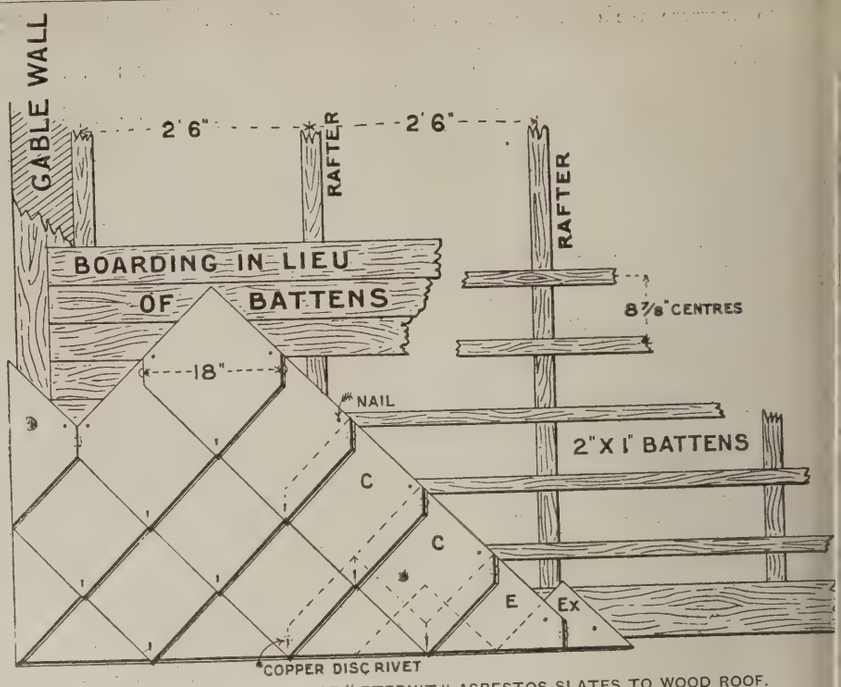


FIG. 1. SHOWING FIXING OF "ETERNIT" ASBESTOS SLATES TO WOOD ROOF.

With regard to fixing, there are several methods which can be adopted. Fig. 1 shows the method chiefly followed, and the illustration being self-explanatory, needs no detailed description. Fig. 2 shows how "Eternit" slates can be fixed to angle steel laths on iron roofs.

While the initial cost of "Eternit" roofs is less than that of any other durable roofing material, the ultimate saving to users is relatively great, inasmuch as "Eternit" roofs require no maintenance, but increase in strength with increase of age. Indeed, "Eternit" endures not for an age but for all time.

The material is also supplied in sheet form of various thicknesses for use fire-resisting lining to walls and ceiling the sheets range in size from 4ft. by 4 to 8ft. by 4ft., and cost from 2d. per ft. delivered to any part of Engla "Eternit" scale tiles, for turrets, e are also made, as well as ridges.

From the long list of buildings wh they have been used it is apparent t the merits of "Eternit" slates are w widely appreciated, for not only h they been extensively adopted by the miralty and the War Office, but they h also been used for innumerable facto and various classes of houses. As recent example, we would refer to new temporary law courts which h been erected at the Royal Courts of tice, which are roofed with "Eter slates, while another recent example be seen in the Embankment Gard where a small shelter is similarly roo

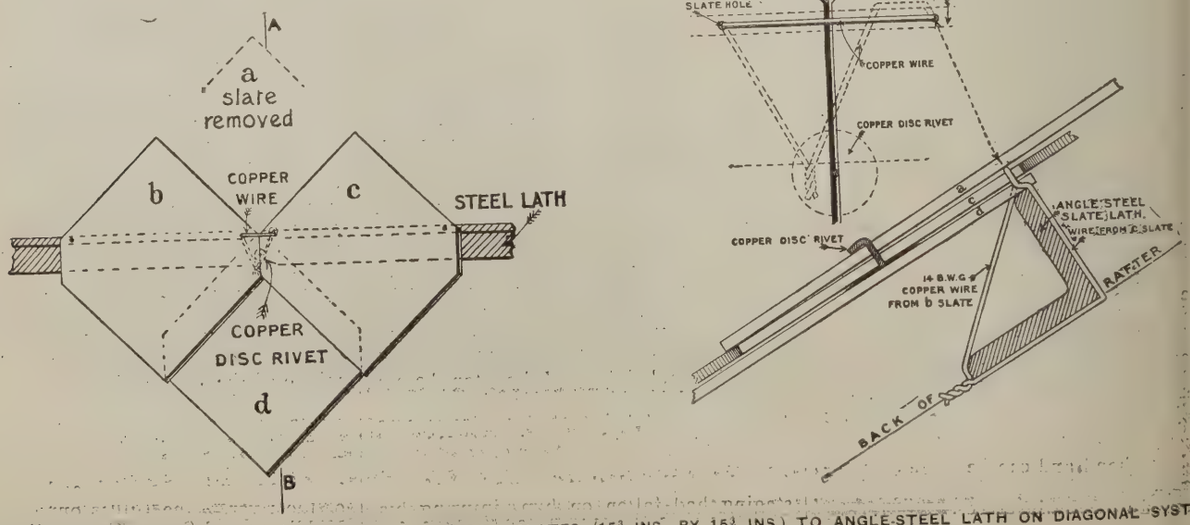


FIG. 2. SHOWING APPLICATION OF "ETERNIT" ASBESTOS SLATES (15¾ INS. BY 15¾ INS.) TO ANGLE-STEEL LATH ON DIAGONAL SYSTE

ELECTRICITY IN BUILDINGS. III.

By Harold Hastings, M.I.E.E., A.M.Inst.C.E.

(*Continued from page 18, No. 699.*)

A dynamo is a machine for producing rapid alterations in the magnetic fields enclosed by coils of insulated wire. It effects this by alternately presenting coils to opposite poles of magnets of great strength.

One of the earliest dynamos constructed was one in which powerful horseshoe permanent magnets revolved before a circle of coils. Later, the permanent magnets were replaced by electro-magnets excited by current from a battery of cells. Still later the magnets were excited by the current generated in the machine to which they belonged. Variations of this principle are still employed. The machines are so designed that they generate sufficient current to supply their own magnets with current, as well as the outside circuits which they supply.

The Essential Parts of a Dynamo.

are the field-magnets, the system of revolving coils—called the "armature"—and some form of collecting device for receiving the current from or conveying it to the revolving portion.

The accompanying diagram (Fig. 16) shows a simple type of dynamo. The direction of rotation is assumed to be clockwise. In their present position the poles A and B enclose the maximum amount of the magnetic field. During its passage to the position of B the field induced in coil A will produce a current in a certain direction, and during its passage to C the current will continue to flow in that direction.

The flow in the first quadrant is produced by the diminishing of the field due to a north pole, and during the next quadrant to the increasing field of a south. Referring to the results of experiment No. II. (BUILDERS' JOURNAL, July 1st, p. 18), it will be seen that these two sets of conditions produce the same result.

As the coil passes the position C, the field from the south pole changes from an increasing one to a diminishing one, and the direction of current will change. Again, the current produced by receding from the south pole is the same as that by approaching a north pole. It will now continue in the changed direction until it reaches its original position at A. Thus

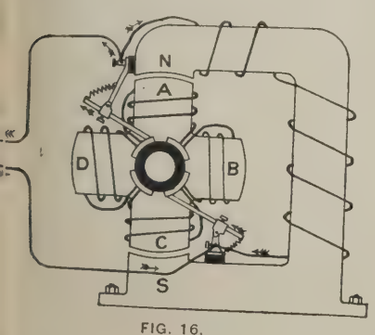


FIG. 16.

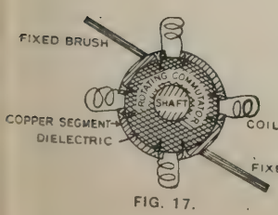


FIG. 17.

we have traced the revolution of one coil and found that every time it passes a pole the direction of the current is changed. The same sequence must be followed in the other coils. To make the current continuous in one direction it is necessary to introduce a device which will change the direction again every time that a coil passes in front of a pole. This is done by making a special form of collector. Four insulated segments are mounted round the shaft and revolve under two fixed contacts. If the contacts are placed opposite the two poles, the end of the coil from which the current is delivered to either contact will change as it passes the pole. A careful examination of the diagrams (Figs. 16 and 17) will make this clear. The revolving segmental part of this arrangement is called a "commutator" and the fixed contact pieces are the "brushes."

This is the entire principle of the continuous current dynamo. The number of pole-pieces of the field magnets may be increased, and there may be more coils in the armature and, consequently, more segments in the commutator, but throughout all such variations the principle remains unchanged.

The Alternating Current Machine.

is a similar apparatus without the commutator, and always having a small continuous current dynamo to energise its field magnets. The alternate coils are wound in opposite directions, and there

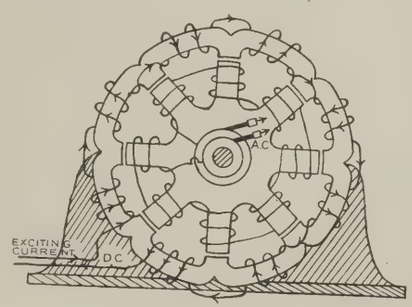


FIG. 18.

are always as many poles as armature coils. When two adjacent coils are approaching their respective poles the current induced by a south pole will be in the same direction as the current in the next coil, although that is approaching a north pole, because the coil is wound the reverse way. Similarly, all the coils are generating currents in the same direction at the same instant, but the next instant they have passed the poles and are generating a flow in the opposite direction. The current is collected by brushes resting on rotating rings, marked A C in the diagram (Fig. 18). The flow reverses many times per second. One flow in each direction is called a "period," having the symbol *v*. The number of periods per second is termed the "periodicity" of the system. The most common periodicity is 50, which indicates that 100 alternations in the direction of the current take place in one second. In between each alternation there is a point of no flow, or zero point. The eye cannot appreciate this when looking at a lamp, but it can be illustrated by swinging a stick in the light of an alternating arc lamp. There appear to be a series of sticks radiating from a common centre, like the spokes of a wheel, clearly demonstrating that there are instants during its travel in which there is no light with which to see it.

"Dynamos" and "Motors."

We found from experiment No. I. that a flow of electricity through a wire produced a magnetic field, and in experiment No. III. that the converse held—viz., that a magnetic field produced a current. This principle holds throughout. If we supply energy to revolve a dynamo we obtain electricity, and if we supply electricity to a dynamo it revolves, giving us mechanical energy. When the apparatus, hitherto termed a dynamo, is revolved in his manner, it is called a "motor." The difference is solely one of name. The action in the case of a motor is the mutual attraction of two electro-magnets. The coil A in the accompanying diagram (Fig. 19) has the current flowing through it in such a direction that its extremity remote from the centre is a south pole. It is, therefore, attracted by the north pole of the field magnets and repelled by the south pole. As soon as it passes the north pole the current in the coil is reversed by the commutator, so that it is now repelled by the north pole and attracted by the south. The force of repulsion was shown to be equal to the force of attraction in experiment No. II. Every coil re-acts in the same manner, and the result is mechanical power derived from electric power.

Enough has now been said to give the reader a good foundation to build up a more intimate acquaintance with the properties of electricity. We will, therefore,

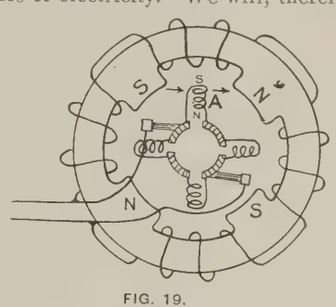


FIG. 19.

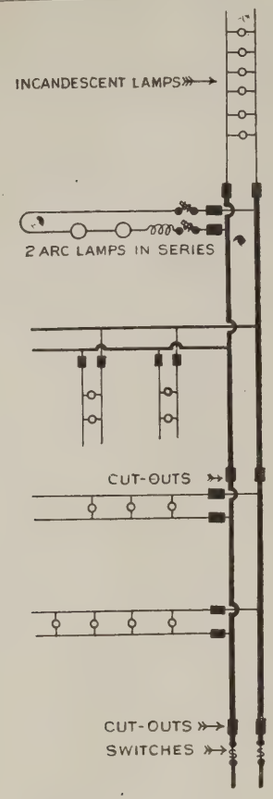
proceed from the generation of the electric current to investigate the particular uses in buildings.

Installation Work and Materials.

When designing an installation there are two systems to choose between. They are the "Tree-system" and the "Distribution-board system." The former was a universal method until supplanted by the latter some fifteen years ago. It is still used in isolated cases, but the majority of work is now carried out upon the more adaptable distribution-board method.

In the tree-system (Fig. 20) the mains are carried from bottom to top of a house, with reductions at each floor in the sectional area of the conductor. Sub-mains are tapped off these to convey the current to the circuits, to which the lamps and other apparatus are connected. Each reduction and each sub-main has to be protected by a safety cut-out, a device which will be considered in detail later.

In the distribution-board system (Fig. 21) the mains enter the house, and, at some convenient point, are connected to a board from which radiates a group of circuits. In small houses one such board forms the centre of the whole installation, while in large buildings there is a board for each floor. The safety cut-outs for all the circuits can thus be grouped together on the board, and, as they require to be examined when there is anything wrong with the light, it is much better to have



TREE SYSTEM.
FIG. 20.

them all in one well-chosen spot than to have to wander from place to place examining individual cut-outs scattered broadcast about the house. Another consideration of some importance in favour of the distribution-board system is that the sizes of wires used in the installation are not so numerous.

The diagrams show the points of difference in the two systems.

After the system for the particular building under consideration has been settled, the number of lamps and other apparatus should be scheduled. It is customary to reduce all lamps, etc., to their equivalent in 8 candle-power incandescents. The positions of the distribution-boards or cut-outs are fixed, and the routes of the wires decided.

The loss which may be allowed in transmission will have a great deal to do with the expense of the installation, and should be settled at this stage. It is false economy to allow a loss above 2 per cent. in the wires, as this is always increased to 3 per cent. when the loss in switch and fuse contacts is taken into account.

Having arranged all these details, the materials can be estimated and obtained.

Before we can discuss one or two typical installations it is necessary to explain the different articles required, and the points in design which serve as a guide to the buyer. We will, therefore, take each item in a list of materials and consider it exhaustively, so that the reader may understand all the functions of the apparatus before we apply it to particular cases.

It must be understood that we are dealing with electric-lighting installations only at present, in which we include wiring for electric fans, heaters, cookers, and even small motors, but not telephones, nor bells.

Cables and Wires.

It has already been shown that a conductor of electricity must be completely surrounded by a dielectric in order to convey the current to the point at which it is to be used. It also must have a path back to the source of supply provided for it. The conductor which is universally used for this purpose is very pure copper. High-conductivity copper is classified by comparing it with what is known as "Matthiessen's standard." It does not concern us how that standard was fixed, but it is important to know that there is such a standard when buying, and to obtain a certificate giving the conductivity. Nothing less than 98 per cent. should be used, and for good work 99 per cent. is the proper class to put in. If the conductivity is low the wire will be hard and brittle, requiring greater care in handling and jointing.

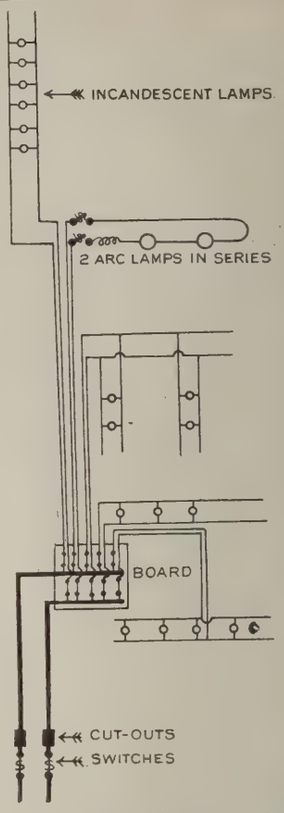
All wires must be well tinned, as the dielectrics most commonly employed contain substances which re-act chemically upon copper, but not upon tin. A badly tinned wire is easily detected by stripping back the insulation and looking for a black deposit upon the wire. Such a deposit indicates that the coating is inefficient. Tinning is also of value in facilitating the soldering of joints.

As a thick wire will not stand so much bending about as a thinner one, it is advisable to employ a stranded conductor, rather than a solid wire. In no case should a wire of greater size than No. 16 S.W.G. be used. Wires sometimes break inside the sheath of insulating material without being detected until current is switched on. Owing also to trouble with wires breaking, it is unwise to allow any *single* insulated wire of less size than No. 18 to be used.

A glance at the wiring table will show that it is quite easy to avoid using single wires altogether. A strand of three wires of No. 22 will always supplant a single No. 18, and a strand of three No. 20's can be used for No. 16.

Small conductors obviously have a much larger radiating surface than those of greater sectional area, and can therefore convey a current of superior density per square inch. This has already been referred to, and 1,000 ampères per square inch was given as an approximate rule.

The Institution of Electrical Engineers has issued a table showing the amount of



DISTRIBUTION BOARD SYSTEM.
FIG. 21.

current which may be passed saf through a conductor without incurri danger from overheating.

The accompanying table has b drawn up to show this and other useful formation regarding conductors.

It will be noticed that conductors always stranded up in 3's, 7's, 19's, 37's. This is done in order to comp the circle of wires in each case.

Insulation.

The dielectric most commonly used covering wires for house-wiring is c posed partly of pure and partly of vulcanised india-rubber. These are gener applied in three layers. The pure rub

No. of Strands.	Size of each Strand S.W.G.	Diameter each wire.	Diameter of completed Strand.	Area in sq. inches.	Resistance per 1000yds. in Ohms.	Amps at 1,000 per sq. in.	Loss in volts per 100 yds. with 1000 amps. per sq. inch.	Amps per IEE Max	Loss in volts per 100 yds. with IEE Max.
1	22	.028	—	.0006	3.9753	.6	2.5	—	—
1	21	.032	—	.0008	3.033	.8	2.5	—	—
1	20	.036	—	.0010	2.583	1.	2.5	4.2	5.77
1	18	.046	—	.0018	1.341	1.8	2.5	6.4	5.03
1	16	.064	—	.00318	.7602	3.18	2.5	4.26	5.90
3	22	.028	.060	.00183	1.3751	1.83	2.5	5.3	5.99
3	21	.032	.069	.00238	1.011	2.38	2.5	6.44	4.51
3	20	.036	.078	.00301	.861	3.01	2.5	10.31	4.81
3	18	.048	.103	.00536	.447	5.36	2.5	8.54	5.02
7	22	.028	.084	.00426	.567	4.26	2.5	9.56	4.78
7	21	.030	.050	.005	.489	5.	2.5	10.63	4.78
7	21	.032	.096	.00557	.435	5.57	2.5	11.19	4.73
7	20	.033	.099	.00592	.399	5.92	2.5	12.9	4.57
7	20	.036	.108	.00705	.3432	7.05	2.5	15.3	4.4
7	19	.040	.120	.0037	.2778	8.7	2.5	20.68	4.12
7	18	.048	.144	.0125	.1935	12.5	2.5	26.62	3.88
7	17	.056	.168	.01706	.1425	17.06	2.5	33.12	3.65
7	16	.064	.192	.02227	.1086	22.27	2.5	40.22	3.48
7	15	.072	.216	.02882	.0861	28.82	2.5	47.1	3.43
7	14	.080	.240	.03483	.0696	34.83	2.5	29.23	3.83
19	20	.036	.180	.03482	.1266	19.12	2.5	46.86	3.44
19	18	.048	.240	.01912	.0711	34.	2.5	60.33	3.28
19	17	.056	.280	.034	.0522	46.	2.5	75.06	3.07
19	16	.064	.320	.046	.0401	64.	2.5	108.	2.88
19	14	.080	.460	.061	.02565	94.	2.5	166.	2.6
19	12	.104	.520	.094	.01521	160.	2.5	50.47	3.41
37	20	.036	.252	.160	.0645	37.	2.5	80.9	3.06
37	18	.048	.336	.037	.03633	66.	2.5	129.	2.76
37	16	.064	.448	.066	.02053	117.6	2.5	187.	2.56
37	14	.080	.560	.1176	.01425	183.8	2.5	287.	2.32
37	12	.004	.728	.1838	.0078	310.5	2.5		

Specification, 600 megohm, Association class, H.C. wires tinned, insulated with pure and vulcanizin rubber, taped, braided and compounded.

is placed next to the conductor, the two classes of vulcanising rubber are next applied. These differ from one another only in the quantity of loading which they contain. The cable is put in a vulcanising receiver and thoroughly vulcanised. After this operation the three layers should closely adhere.

The dielectric is mechanically protected by tapes and braid, saturated with a preservative compound. To ensure obtaining permanently satisfactory cables it is only safe to buy those which are manufactured under the guarantee of the Cable Makers' Association. There is scarcely any manufacture which lends itself so readily to deception as that of rubber cables. It is to be regretted that the English market has been flooded with cheap insulated wires of foreign make which apparently satisfy the usual tests, but which are cheapened by the use of adulterants of unstable character. Such wires rapidly deteriorate and should be avoided.

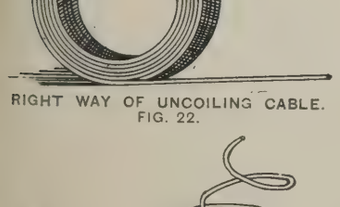
In order to compete with low-grade foreign cables, the Cable Makers' Association have found it necessary to classify two kinds of cables, which they call "Association" and "Non-association." The former are made in accordance with the British standards and should always be employed where the best work is desired. The latter may be used upon temporary work only.

Test for Quality of Rubber.

An easy test for the quality of rubber on cables is to cut off a length of 15in. and to carefully remove the wires, braids, and tapes so as to leave a tube of the dielectric alone. The tube thus obtained should be gripped between clamps at each end and stretched to double its original length. After it has been held in this extended position for 24 hours, it should be released and allowed to regain its former length as far as possible. If it is of good quality, it will only have an elongation of 15 per cent. more than its original length at the end of another 24 hours' rest. There should be no sign of any cracking or splitting, nor should the layers show any signs of separating from one another.

When this test is completed weigh the rubber tube carefully, then burn it and weigh the ashes. They should not exceed 40 per cent. of the original weight.

There is a right and wrong way of uncoiling wires and cables (see Figs. 22 and 23). The wrong way is to take hold of one end of the coil and to pull the wire off in a spiral. Each of the original turns of the coil becomes a twist when the wire is straightened out, and all these twists tend to displace the layers of tapes, braids, and dielectric.



RIGHT WAY OF UNCOILING CABLE.
FIG. 22.



WRONG WAY.
FIG. 23.

The right way is to turn the coil up on its side and roll it along the ground, leaving the wire behind in a straight line. This is one of the little points so often overlooked by workmen, and it makes all the difference when the final tests are taken.

Flexible Cords.

Flexible cords are stranded cables made up of a large number of very fine untinned wires. The usual size for wiring lamps is 35/40 S.W.G., and this is equivalent to 1/20. For heavier currents a size of 70/40 is used, equivalent to 1/18.

The use of a fine strand gives the conductor great flexibility, so that it can literally be tied in knots without any danger of breaking the wires. The strands are insulated with pure and vulcanised rubber and covered with braiding of cotton or silk. They are twisted together in pairs, and can be obtained in a multiplicity of colours to suit any scheme of decoration. As the two opposite poles are brought in such proximity, it is important to be sure that the cords are of good quality. Three classes are made—viz., cotton, silk, and workshop. The two former are for use inside houses, and the last is covered with a very heavy braiding, which is impregnated with damp-resisting compound.

(To be continued.)

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Casting a Sundial in Lead.

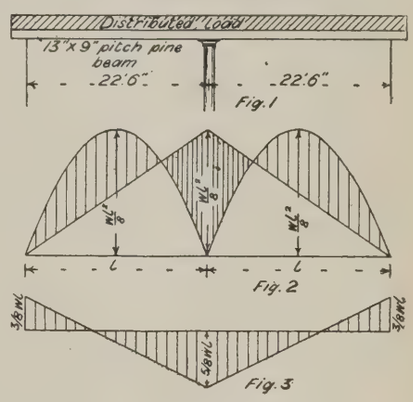
LONDON, S.W.—G.S.H. writes: "I have made a plaster model of a horizontal sundial, with raised lines and figures, of which I wish to cast a copy in lead. Will you kindly tell me of what material the mould should be made, and whether the lead should be poured over the surface of the mould in a horizontal position? I have tried a plaster mould, but failed, owing to bubbles in the lead."

The Bromsgrove Guild of Applied Arts have been good enough to inform us that the probable cause of bubbles appearing on the casting when executed from the plaster mould is the absence of vent holes to allow the air to escape. They add that this method of casting in plaster moulds, for lead, is never satisfactory—the work should be cast in a sand mould.

Strength of Beam Supported in Centre.

CHORLEY.—J. H. writes: "What would be a safe load, equally distributed, upon a pitch-pine beam 13 ins. deep by 9 ins. wide, 45 ft. between walls, and supported in the middle with large cast-iron pillars? What would be a safe load on the same beam if we bolted a 13 in. by 3 in. flitch on each side?"

The beam, being supported in the centre, becomes what is technically known as "a continuous beam" over two equal spans, and the stresses under a given loading will vary with the comparative level of the supports. In order that the theoretical conditions may be realised, it is necessary that the three supports should be rigid and remain permanently at the same level. In that case the equally-distributed load will not affect the supports quite as one would expect. Instead of the division being $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, it will be $\frac{3}{16}$, $\frac{5}{8}$, $\frac{3}{16}$, so that the centre column will have to carry 25 per cent. more than might be expected. The distribution can be brought to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{4}$ by slightly lowering the centre support, but the stresses in the beam are then increased, and it is practically inadmissible. The conditions of the beam being as Fig. 1, the bending moment diagram with level supports will be as shown in Fig. 2, and the shear diagram as Fig. 3. The



maximum stress will occur over the central support, where the bending moment $= \frac{wl^2}{8}$, the moment of resistance $= ZC = \frac{bd^2}{6} \times 14{,}000 = \frac{9 \times 13^2}{6} \times 14{,}000 =$ 3,549,000 lb.-ins. Then $\frac{wl^2}{8} = 3{,}549{,}000$, but $l = 22.5 \times 12 = 270$ ins., therefore $w = \frac{3{,}549{,}000 \times 8}{270 \times 270} = 390$ lbs. per foot run breaking weight. Allow a factor of safety of 7, then the total safe load on the beam will be $\frac{300 \times 45}{112 \times 7} = 22.4$ cwt. If the breadth be increased by bolting a 13 in. by 3 in. pitch-pine flitch on each side of the present beam, the strength will be increased in the proportion of 9 to 9 + 2 × 3, or 0 to 15, and the safe load will then be $22.4 \times \frac{15}{9} = 37\frac{1}{3}$ cwt.

HENRY ADAMS.

Staining Cement Stucco Green.

CO. TIPPERARY. — W.H.C. writes: "Please let me know how to bring cement stucco to a green colour (without use of paint) for external work."

It is assumed that the correspondent desires to know how to stain cement, before it is applied as a stucco, so that it may be of a green colour. Stained cement, especially when applied to large superficial areas, is apt, after a time, to look patchy and faded owing to the action of the contained lime. For a green tint, the following recipe has been recommended in a trade publication:—Add to 85 parts of cement 12 parts of oxide of chromium and 3 of iron or copper. A great point is to mix the stain and cement intimately in their proper proportions before use. Mr. H. Cohen, of King William Chambers, 27 and 28, King William Street, London, E.C., is agent for a firm of German manufacturers of stains, who say they guarantee them to be proof against alkalies, and that the quantity required is so small that the strength of the cement is very little diminished.

THOMAS POTTER.

Veneer Polish.

LONDON, W.—S.H.M. writes: "Three or four years ago, a traveller introduced to me a sample of a transparent preparation that might be applied to the surface of mahogany or other wood, after polishing, and when dry presented a hard (though not brittle), transparent, and highly polished surface, similar to that of the counters enclosed. If you know of such a wash, I should feel obliged if you would kindly quote the firm from whom it is obtainable."

The counter enclosed by the correspondent appears to be of polished bone. A material called "Liquid Veneer," which is an excellent article for polishing and keeping in good order mahogany and other polished surfaces may possibly meet the correspondent's requirements. The London agents are Messrs. Reinemann and Co., 7, New Zealand Avenue, London, E.C.

A. S. J.

Fixing Modillions at Gable End.

LONDON S.E. — ENQUIRER writes: "Which is the right way to fix modillions that form part of an eaves cornice—square off the rafter, or on the cant?"

It may depend somewhat upon the class of work, but usually the modillions or dentils are placed vertically under a sloping gable end or pediment. In Swiss cottage work the projections under the gable ends are square to the slope to show as ends of purlins. HENRY ADAMS.

Prices per Foot Cube.

LONDON, N.—CUBE writes: "What is a fair price per foot cube for cheap contract work, where several houses are built at one time to the same plans? Is it usual to make any difference in price for basements and back additions?"

The usually accepted prices for the buildings are as follows:—Labourers' cottages, 4½d. to 5½ per ft. cube; small houses, 6d. to 9d. per ft. cube; large town houses, 8d. to 1s. per ft. cube; the prices of course varying according to the quality and finish of the work. Basements and back additions are usually cubed out with the main blocks. It should be remembered that "cubing out" is only a rough and "rule-of-thumb" method of approximately ascertaining the cost of a building. F.S.I.

Reinforced Concrete Raft Foundation.

X writes: "The accompanying plans (not reproduced) show two new classrooms built about a year ago. Serious cracks have developed. The building is erected on a sloping site on clay, and the precaution was taken to have a good spread of concrete in footings, and two good buttresses built at the north end. On looking at the ground it appears that the bed of clay has moved towards the north. I have since been told that the clay in the district has a tendency to shift; so the use of more buttresses would not help. I think of underpinning the footings half-way and putting in reinforced concrete, thus standing the building on a frame. Do you think this will be satisfactory?"

A clay foundation is always unreliable, especially when the site is sloping. The ordinary form of foundation is not suitable for such conditions, as the clay shrinks and the building becomes supported only at points. Either frame construction or independent foundations should be employed. If the loads can be concentrated at points, the foundation should be so proportioned that the same nett pressure on the soil is given throughout; the whole of the foundations will then sink equally: the walls should be self-supporting. A frame construction can be designed so that the entire building will hang together, but if this is adopted it might sink down at one end, and such a tendency means that the raft must be strong, which consequently makes it not so economical a solution as the former method. Several specialist firms have had experience in this direction and might be consulted, or you could put the matter in the hands of a consulting engineer.

Steel and Concrete Bridge.

ASHBURTON. — F.J.B. writes: "It is proposed to build, on a main road, a bridge of 9ft. span by 20ft. wide, with 9ins. by 7ins. steel joists spaced 2ft. 3ins centres, with 3ins. by 3ins. steel joists at 2ft. centres, resting in bottom flanges of same; the whole encased in concrete 15ins. thick, projecting 3ins. below joists to form floor. Is this good construction?"

The cross girders, having so great a depth of concrete above them may be calculated by the writer's reinforced concrete beam formula. W = safe load at one month in cwts. distributed including weight of beam, b = breadth of concrete in inches, d = depth of concrete in inches to centre of reinforcement, p = percentage of reinforcement, L = clear span in feet, ends supported. Formula, $W = (\cdot37p + \cdot214)\frac{bd^2}{L}$. The span L will be the centre distance of main girders = 2ft. 3in. The breadth (b) will be the distance centre to centre of the cross girders = 2ft. The depth (d) will be 15in. total—3in. concrete underneath—1½in. half depth joist = 10½in. The percentage of reinforcement will be $100 \times \frac{area\ joist}{bd} = \frac{100 \times 2\cdot5}{24 \times 10\cdot5}$ = say 1 per cent. Then $W = (\cdot37 \times 1 + \cdot214)\frac{24 \times 10\cdot5^2}{2\cdot25} = 686\cdot6$ cwts. The weight of structure and road metal for this width will be about 9 cwt., leaving 686.6—9 = 678 cwt. safe load on an area of 2ft. by 2ft. 3in., or $\frac{678}{2 \times 2\cdot25} =$ 150 cwt. per foot super., so that there is a great excess of strength at this part. The main girders bear so large a proportion to the concrete embedding them that they should be taken as in their ordinary condition. A 9in. by 7in. by 58lb. rolled steel joist, with a span of 9ft. will carry 28 tons distributed. The weight of structure and road metal taken by each main girder, $\frac{9ft.\ span}{2ft.\ centres} \times 9$ cwt. on each iron girder = 40 cwt. = 2 tons, and 28—2 = 26 tons for external load. As they each serve an area of 9ft. × 2ft. 3ins. = 20¼ sq. ft., the safe external load will be $\frac{26 \times 20\ cwts.\ in\ 1\ ton}{20\frac{1}{4}}$ = say, 26cwt. per foot super., which is more than can be put upon it by the heaviest traction engine or road roller. The main girders might be placed 4ft. centres, and the cross girders 3ft. centres, and the concrete reduced to 13in. deep.

HENRY ADAMS.

Cottage Building.

BIRKDALE.—RUBEO writes: "(1) What books (cheap) will enable me to write a specification of a cottage or house? (2) How it is possible for a young man without capital to erect a house—that is, would it be easy to obtain a loan for th purpose, mortgaging the house?"

(1) "Specification," price 3s. 6d. net (Technical Journals, Ltd., Caxton Hous Westminster) will serve your purpose com pletely. (2) It will be by no means easy t obtain the capital unless our correspond ent happens to have a wealthy and trus ful friend who is willing to risk money i a decidedly dubious adventure. A build ing society might possibly be induced advance on mortgage a certain propo tion of the money, if the security seeme good enough, but would not be likely finance an inexperienced beginner, w would probably soon become hopeless embarrassed.

A Bridge Over a Stream.

C.H.H. writes: "Which would be th least costly method of erecting an ir bridge 18ft. 6ins. long, to carry a roadw of the clear width of 15ft. across a strea Would reinforced concrete be best?"

In this particular case we should thi an ordinary iron bridge would be a mo economical form of construction, and advise our correspondent to apply f estimates to several of the firms that ma a special feature of such work. So particulars of a small steel bridge over stream will be found on p. 288 of o issue for December 5th, 1906.

Rights of Adjoining Owners.

HULL.—W.B.B. writes:—"I have fo teen houses in a certain street. Adjo ing my property there is an iron found to which all the tenants object beca there is a continual knocking—sometim going on until late in the night, and ways starting at six o'clock in the mo ing,—and because when the wind sets a certain direction, a nasty sulphur smell is borne towards the houses, wh therefore let badly. Can I enforce foundry people to buy the property?"

The fact that one landowner choo to build cottages and another owner p fers an iron foundry has nothing wh ever to do with this case—each has eq rights in this respect. You can o legally complain with regard to the no and smell if the foundry is improp conducted and without due care, therefore in such a way as to cause necessary noise and smell—a most d cult thing to prove. You cannot com the foundry people to purchase your p perty; the legal remedy (if any) would by injunction and damages; but I i you will not find "the game's worth candle." F.S.

Mechanics of Building Construction

HUDDERSFIELD.—E.W.T. writes: the reply entitled 'Formulæ for Bea in your issue of June 3 (p. 481), Pro sor Henry Adams refers to his lecture teachers at the Royal College of Scie Are these the same as 'Strains in Ir work?' If not, where can the lecture question be obtained?"

The lectures to teachers referred to not yet published. They will be announced when ready. They are m more advanced and comprehensive t "Strains in Ironwork."

HENRY ADAM

STREET FIRE-ALARMS.—At Kings on Wednesday last, a boy was summo for breaking the glass of one of the alarms in the borough, though, fo nately, the brigade were not called A fine of 5s. was imposed.

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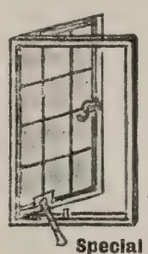
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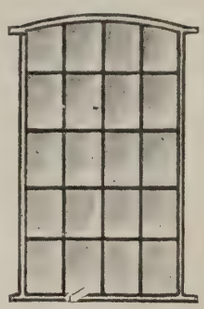
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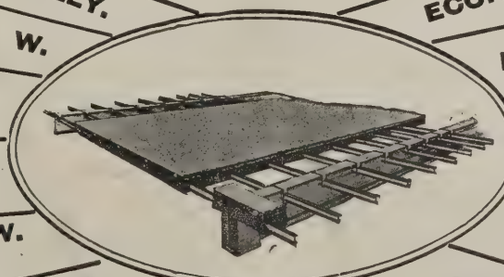
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Tenders.

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Abertridwr.—Accepted for the erection of new Council school at Abertridwr, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, F.S.I., county architect, Cardiff:—J. Williams, Abertridwr, £5,900.

Burnley.—For the construction of an open service reservoir (728,700 gallons capacity), in concrete, with receiving well and overflow chamber, etc., and excavating for, laying, and jointing about 2,490 lin. yds. of 6-in. cast-iron water-mains, etc., in connection with the Briercliffe (Herd House) water-supply scheme, for the Burnley Rural District Council:—

W. H. and J. R. Atkinson, Colne	£3,114
Smith Bros., Burnley	3,090
J. Bentley and Co., Bradford	3,049
J. Green and Sons, Burnley	3,012
T. E. Sugden, Keighley	2,748
Clegg Bros., Burnley	2,703
F. Barrick, Manchester	2,657
T. Dent and Sons,* Nelson	2,641

*Accepted.

Carmarthen.—For proposed remodelling of assize court and renovation of interior of the Carmarthen Shire Hall, for the County Council. Mr. W. V. Morgan, A.R.I.B.A., county education architect:—

T. and J. Brown, Llanelly	£2,112 17 10
R. Davies, Carmarthen	1,807 1 10
B. Howell and Son,* Llanelly	1,693 0 0

*Accepted.

Carshalton.—For the erection of a special subjects building at Camden Road, Carshalton. Messrs. Jarvis and Richards, 10, Queen Anne's Gate, Westminster, architects to the Surrey Education Committee:—

E. J. Burnand	£1,594 0 0
Martin, Wells and Co.	1,400 0 0
R. Jones and Son	1,398 0 0
R. T. Hughes and Co., and Howe and White	1,397 0 0
J. B. Potter	1,368 0 0
D. Stewart and Sons	1,339 0 0
D. Waller	1,301 0 0
J. Burges and Sons	1,298 10 0
T. J. Hawkins and Co.*	1,268 0 0

*Accepted.

Cardiff.—For extensions to the laundry at the Cardiff Workhouse, for the Board of Guardians:—

F. Bond	£2,700 0 0
R. Cox and Bards	2,649 7 6
Geo. Griffiths and Sons	2,599 0 0
Blackler Bros.	2,590 0 0
W. Thomas and Co.	2,587 0 0
D. Davies and Son	2,520 0 0
J. H. Maggs and Co.	2,432 0 0
W. Simons and Sons	2,440 0 0
E. Turner and Sons*	2,248 0 0

*Accepted.

Hull.—Accepted for town hall extension (second portion), for the Corporation. Messrs. S. B. Russell and T. Edwin Cooper, architects, 11, Gray's Inn Square, W.C.:—Quibell, Son, and Greenwood, Hull, £67,606 16s.

Kenley (Surrey).—For the erection of a special subjects building at Little Roke Council Schools. Messrs. Jarvis and Richards, 10, Queen Anne's Gate, Westminster, architects to the Surrey Education Committee:—

Martin, Wells and Co.	£1,567
J. Burgess and Sons	1,554
Goddard and Sons	1,549
D. Waller	1,523
D. Stewart and Sons	1,491
G. Kemp	1,489
T. J. Hawkins and Co.	1,423
R. Jones and Son	1,400
R. T. Hughes and Co.	1,350
W. Smith and Sons	1,342
W. Wallis*	1,270

* Accepted.

Kingston-on-Thames.—For the erection of a workmen's club and institute at Kingston-on-Thames. Mr. G. Smith, architect and surveyor, 7, Deacon Road, Kingston-on-Thames:—

Main Building.

H. J. Budd	£1,730
J. Casse	1,693
Limpus and Son	1,673
W. H. Gaze and Sons	1,623
F. Hawkey	1,600
J. Burgess and Sons	1,600

Architect's estimate, £1,600.

Extension of Billiard and Games Room.

Limpus and Son	176
J. Casse	160
J. Burgess and Sons	153
H. J. Budd	145
W. H. Gaze and Sons	139
F. Hawkey	120

Architect's estimate, £150.

London, N. — For the erection on a site in Cloudesley Road, Islington, of schools for the accommodation of (1) 80 mentally defective elder boys; (2) 60 mentally defective boys and girls; and (3) 60 physically defective children, for the London County Council. Mr. T. J. Bailey, architect (Education):—

Stevens and Sons, Yonge Park	£10,124 0 0
McLaughlin and Harvey, Ltd., 13, Brecknock Road	9,925 14 9
G. S. S. Williams and Son, Thornhill Square	9,843 0 0
G. Godson and Sons, Kilburn Lane	9,293 0 0
C. P. Roberts and Co., Highbury	9,221 0 0
McCormick and Sons, Essex Road	9,217 0 0
Treasure and Son, Upper Holloway	9,048 0 0
J. and M. Patrick, Wandsworth	9,025 0 0
Killby and Gayford, Ltd., 87, Worship Street	9,004 0 0
W. H. Lascelles and Co., Ltd., 121, Bunhill Row	9,003 15 2
L. H. and R. Roberts, Islington	8,998 0 0
Perry and Co., Bow	8,994 0 0
G. E. Wallis and Sons, Ltd., 1, Albemarle Street	8,984 0 0
Waring and White (1906) Ltd., 12a, Cockspur Street	8,966 0 0
Works Committee estimate	8,840 0 0
Patman and Fotheringham, Ltd., Islington	8,783 0 0
E. Lawrance and Sons, City Road	8,687 0 0
W. Johnson and Co., Ltd.,* Wandsworth Common	8,675 0 0

*Recommended for acceptance. Architect's estimate, £8,952.

London, S.W.—For heating and electrical work in connection with the extension of the L.C.C. School of Building, Brixton:—

R. Crittall and Co., 197, Wardour Street	£1,931 15 0
Rosser and Russell, Ltd., 22, Charing Cross	1,740 0 0
J. Simpson and Co., Ltd., Grosvenor Road	1,650 0 0
J. and F. May, Lincoln's Inn Fields	1,647 0 0
Moorwood, Sons and Co., Ltd., 30, Gray's Inn Road	1,629 0 0
G. and E. Bradley,* 68 and 70, Elfort Road, Highbury	1,489 0 0

*Recommended for acceptance.

(*Tenders continued on page viii.*)

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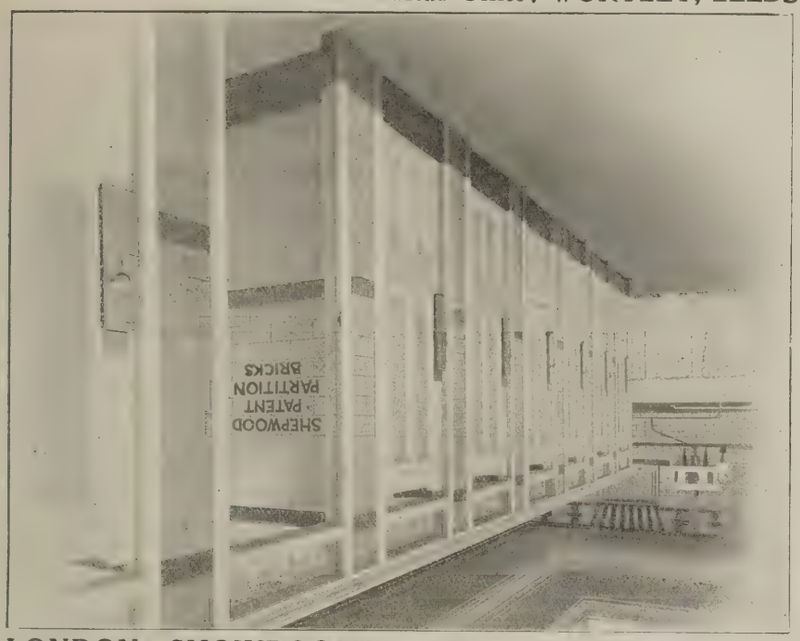
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(*Tenders continued from page vi.*)

London, S.W.—For the erection of a new central library in Fulham Road, for the Borough Council. Mr. H. T. Hare, F.R.I.B.A., architect, 13, Hart Street, Bloomsbury, W.C.:—

J. and M. Patrick	£11,636
Patrick and Son	11,556
J. Allen and Sons	11,200
W. Johnstone and Co.	11,193
H. L. Holloway	11,177
E. Lawrence and Sons	11,132
Patman and Fotheringham	11,123
Killby and Gayford	10,969
Prestige and Co.	10,963
G. P. Roberts and Co.	10,946
Langdale and Hallett	10,930
F. and H. F. Higgs,* Station Works, Hinton Road, Herne Hill	10,848

Architect's estimate, £11,300.
*Accepted.

Alternative for polished Hopton Wood stone, etc.

J. and M. Patrick	£345
Patrick and Son	332
J. Allen and Sons	367
W. Johnstone and Co.	339
H. L. Holloway	335
E. Lawrence and Sons	333
Patman and Fotheringham	320
Kilby and Gayford	312
Prestige and Co.	327
G. P. Roberts and Co.	321
Langdale and Hallett	330
F. and H. F. Higgs	336

London, S.W.—For improvements at Bolingbroke Road School, Battersea, for the London County Council. Mr. T. J. Bailey, architect, (Education):—

J. and M. Patrick, Wandsworth	£12,620 0 0
J. Smith and Sons, Ltd., South Norwood	12,519 0 0
J. Appleby and Sons, Southwark Park	12,456 0 0
D. W. Davies, Cardiff	12,346 9 0
Treasure and Son, Upper Holloway	12,170 0 0
E. Triggs, Clapham	11,978 0 0
J. Garrett and Son, 83, Balham Hill	11,868 0 0
W. Akers and Co., Ltd., South Norwood	11,749 0 0
Leslie and Co., Ltd., Kensington Square	11,704 0 0
G. E. Wallis and Sons, Ltd., 1, Albemarle Street	11,510 0 0
L. Whitehead and Co., Ltd., Clapham Road	£11,420 0 0
J. Parsons, Waterloo Road	11,204 0 0
J. and C. Bowyer, Ltd., Upper Norwood	10,857 0 0
W. Johnson and Co.,* Ltd., Wandsworth Common	10,688 0 0

*Recommended for acceptance. Architect's estimate, £11,972.

London, S.E. — For improvements at Laxon Street School, Bermondsey, for the London County Council. Mr. T. J. Bailey, architect (Education):—

J. Garrett and Son, 83, Balham Hill	£11,058 0 0
W. Downs, Walworth	11,036 0 0
F. and H. F. Higgs, Loughborough Junction	10,495 0 0
J. Appleby and Sons, Southwark Park	10,342 0 0
T. D. Leng, Deptford	10,233 0 0
W. Smith and Son, Harleyford Road	10,122 0 0
Rice and Son, Stockwell Road	9,978 0 0
J. Parsons, 190-192, Waterloo Road	9,916 0 0
Works Committee estimate	9,833 0 0
E. Triggs, Clapham	9,812 0 0
L. Whitehead and Co., Ltd., Clapham Road	9,699 0 0
W. Johnson and Co., Ltd.,* Wandsworth Common	9,366 0 0

*Recommended for acceptance. Architect's estimate, £9,970.

London, S.W.—For the erection of new infirmary buildings at St. James' Road, Wandsworth Common, for the Guardians of Wandsworth Union:—

Airey and Son, Leeds	£77,687
H. Lovatt, Ltd., Wolverhampton	75,980
Parnell and Son, Rugby	75,049
A. Leather, Wandsworth	74,989
E. P. Buller and Co., Croydon	74,650
Armitage and Hodgson, Leeds	74,613
Higgs and Hill, South Lambeth Rd.	74,474
J. Carmichael, Wandsworth	74,350
Leslie and Co., Kensington Square	73,790
J. and M. Patrick, Wandsworth	73,630
W. Moss and Sons, Loughborough	73,453
B. E. Nightingale, Albert Embankment	73,190
Patrinson and Sons, Parliament St.	72,991
Holloway Bros., Belvedere Rd., S.W.	72,300
F. G. Minter, Putney	71,759
F. and H. F. Higgs, Herne Hill	71,500
W. Watson, Ascot	£71,400
Kirk and Randall, Woolwich	70,820
G. E. Wallis and Sons, Albemarle Street, E.	70,880
G. Lloyd, Ltd., Lloyd's Avenue, E.C.	70,741
W. Wallis, Balham High Road	69,997
Holliday and Greenwood, Brixton	69,949
Waring-White Building Co., Cockspur Street, W.C.	69,864
Brand, Pettit, and Co., South Tottenham	69,560
E. J. Saunders, Croydon	69,500
Dove Bros., Islington	68,985
T. J. Hawkins and Co., Westminster	68,644
C. Gray, Acton	68,500
A. N. Coles, Plymouth	67,804
W. H. Lorden and Son, Upper Tooting	67,789
Spencer, Santo and Co., Kensington	67,389
W. Lawrence and Son, Waltham Cross	66,784
Patman and Fotheringham, 100, Theobald's Road, W.C.	66,683
W. Johnson and Co.,* Belle Vue Road, Wandsworth Common	66,550

*Accepted.

London, N.—For alterations and addition to the police station at Islington. Mr. J. Dixon Butler, F.R.I.B.A., surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

	£	A.
Treasure and Son	5,140	40
C. Ansell	5,100	—
Mowlem and Co.	4,964	—
Higgs and Hill	4,884	60
Lascelles and Co.	4,796	20
Holloway Bros. London	4,796	30
Killby and Gayford	4,742	24
Harris and Wardrop	4,690	15
Ashby and Horner	4,712	45
Prestige and Co.	4,648	20
Willmott and Son	4,637	10
Grover and Son	4,533	10
W. Eyre	4,390	7

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London, S.W.—For alterations and repairs to No. 16, Villa Road, Brixton. Messrs. McKilliam and Procter, architects and surveyors, 83, St. Paul's Churchyard, London, E.C.:—

Courtney and Fairbairn	£175 0 0
Lapthorne and Co.	164 0 0
Peacock Bros.*	155 0 0

*Accepted.

(*Tenders continued on page xxv.*)

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The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

July 30. HIGHTOWN (Dewsbury).—Erection of three houses at Hightown. Plans and specification can be seen at the offices of E. Vincent King, A.R.I.B.A., architect, 24, Westgate, Dewsbury, to whom tenders must be sent by July 30.

July 30. ROTHERHAM.—Alterations and extensions at the Rotherham Grammar School. Persons desirous of competing should forward their names and addresses to Spurley Hey, clerk of the Governors, Education Offices, Town Hall, Rotherham, by noon on July 30, together with £1 1s. deposit.

July 30. LONDON, S.E.—Taking down and rebuilding fire-brick lining to flues and renewing other brickwork of three boilers at the Ladywell Workhouse, Ladywell Road, Lewisham, S.E., according to the specification of A. H. Newman, F.R.I.B.A. Sealed tenders and other documents above referred to, endorsed "Tender for Brickwork to Boilers, Ladywell Workhouse," must be delivered to E. Pitts Fenton, clerk to the Guardians, 283, Tooley Street, London, S.E., by 6.30 p.m. on July 30. Fair wages clause.

July 30. RAMSGATE.—Reconstruction of the Council Chamber, Albion House, for the Corporation. Plans and specifications can be seen and full particulars obtained on application at the borough engineer's office, Albion House, between 10 a.m. and 4 p.m. (Saturdays excepted). Tenders endorsed "Council Chamber,' and addressed to the "Chairman of the Works Committee, are to be delivered at the office of T. G. Taylor, borough engineer, Borough Engineer and Surveyor's Office, Albion House, Ramsgate on or before noon July 30.

July 31. LLANTWIT-FARDRE.—Erection of 21 houses at Church Village, Llantwit-Fardre, in accordance with plans and specifications prepared by Ll. Thomas, A.M.I.M.E., architect and surveyor, Church Street, Pontypridd. Sealed and endorsed tenders to be sent to J. R. Thomas, auctioneer, Market Chambers, Pontrypridd, on or before July 31.

July 31. BRISTOL.—Additions to factory, Rowley Place, Temple Gate, Bristol, for Messrs. Todd and Co. Plans and specifications can be seen and quantities obtained at the offices of Henry Williams, architect, Alliance Chambers, Corn Street, Bristol, to whom tenders must be sent on or before July 31.

July 31. SETTLE.—Mason's (labour only), joiner's, plumber's, plasterer's and slater's work for proposed detached house at Settle. Plans may be seen with, and quantities obtained, from James Hartley, architect, Skipton. Sealed tenders must be sent to Mr. W. Sunderland, Thornfield Villa, Hellifield, on or before July 31.

July 31. HULL.—Construction of a bridge to carry Leads-road (leading from Stoneferry to Sutton) over Foredyke Stream, in substitution for the existing bridge, known as Leads Bridge. The abutments and arch will be in concrete, and the wing walls and parapet in brickwork. Forms of tender and other particulars may be obtained at the City Engineer's Office. Tenders endorsed "Tenders for Leads Bridge," are to be addressed to the Chairman of the Works Committee, and delivered at the Town Clerk's Office before noon on July 31.

August 1. SCORRIER, Cornwall.—Rebuilding of Scorrier House for Mr. J. Williams. Drawings and specifications may be seen at the office of B. C. Andrew M.S.A., architect, Biddicks Court, St. Austell, by whom sealed tenders will be received not later than August 1.

August 1. ORMESBY. — Alterations and additions to the Council Room and Offices in High Street, North Ormesby, for the U.D.C. Persons desirous of contracting for the work may see the plans and specifications, and conditions of contract on application to W. G. Harrison, surveyor, Council Offices, High Street, North Ormesby. Sealed tenders, endorsed "Council Office alterations," must be sent to A. H. Sill, clerk to the Council, 15, Albert Road, Middlesbrough on or before August 1.

August 3. CWM.—Erection of a goods shed at Cwm, Monmouthshire, for the G.W.R. Plans and specification may be seen, and forms of tender and bills of quantities obtained at the office of the engineer at Newport Station, between 10 a.m. and 4 p.m. Tenders, marked outside "Tender for Goods Shed, Cwm:" will be received by G. K. Mills, secretary, Paddington Station, London, on or before August 3.

August 3. DARLINGTON.—Forming playground, erection of conveniences, and alterations to cloak rooms, etc., at Beaumont Street Schools. Plans and specifications may be seen, and bill of quantities and form of tender obtained at the offices of Mr. George Winter, Borough Surveyor and Waterworks Engineer, Town Hall, Darlington, on depositing a cheque for £2 2s. Tenders, endorsed "Alterations to Schools," must be sent to Henry G. Steavenson, Town Clerk, Darlington, by noon on August 3.

August 3. LONDON, W.—Erection of six coal offices at Acton Station, and six at West Ealing Station, for the Directors of the Great Western Railway. Plans and specifications may be seen, and forms of tender and bills of quantities obtained, at the office of the engineer at Paddington Station, between the hours of 10 a.m. and 4 p.m. Tenders addressed to G. K. Mills, secretary, Paddington Station, London, and marked outside "Tender for Coal Offices," will be received on or before August 3.

August 3. KEYNSHAM (Bristol).—Extension of the station buildings, verandahs, etc., at Keynsham Station, near Bristol, for the G.W.R. Co. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Bristol Station, between 10 a.m and 4 p.m. Tenders, marked outside "Tender for Station Buildings at Keynsham," to be sent to G. K. Mills, secretary, Paddington Station, London, on or before August 3.

August 4. FERRYHILL.—Alterations and improvements to the hall property at Ferryhill Village, for the Parish Council. Sealed tenders must reach R. Willey, clerk to Council, Ferryhill Village, by noon on August 4.

August 5. COLWYN BAY.—Erection of the first portion of St. Paul's Mission Church. Plans may be seen and bills of quantities, forms of tender, etc., obtained on application to the architects, Messrs. J. M. Porter and Elcock, the Estate Office, Colwyn Bay, upon payment of a deposit of £1 1s. Tenders to be in on or before August 5.

August 5. LONDON, E.C.—Supply and delivery of Portland cement, for the East Indian Railway Co., as per specification to be seen at the company's offices. Tenders are to be sent to C. W. Young, secretary, Nicholas Lane, London, E.C., marked "Tender for Cement," not later than 12 o'clock noon on August 5. For each specification a fee of £1 1s. is charged, which cannot under any circumstances be returned.

August 5. SALFORD.—Erection of a new wall and entrance gates at the Bloom Street Gasworks Extension, Chapel Street, Salford. The drawings may be seen, copies of the specification, bill of quantities, and form of tender obtained (for which a charge of 21s. will be made), on application to Mr. W. Woodward, engineer, Gas Offices, Bloom Street, Salford. Sealed tenders, endorsed "Tender for New Wall, etc.," to be delivered to L. C. Evans, town clerk, Salford, not later than 3 p.m. on August 5.

August 5. CARDIFF.—Erection of laboratory and art block, for the Canton Municipal Secondary School, Cardiff. Plans and specifications may be seen and bills of quantities obtained at the offices of James and Morgan, FF.R.I.B.A., architects, Charles Street Chambers, Cardiff, on payment of £2 2s. Builders desirous of tendering should apply to the architects at once. Sealed and endorsed tenders, on the official form, must be delivered at the office of J. J. Jackson, Director of Education, City Hall, Cardiff, not later than noon on August 5.

August 5. SENGHENYDD.—Erection of a public hall (to seat 1,000), large gymnasium, etc., together with library and institute in Commercial Street, Senghenydd. Plans and specification may be seen with W. Beddoe Rees, architect, 3, Dumfries Place, Cardiff, and bills of quantities obtained on a deposit of £3 3s. Tenders, sealed and endorsed, are to be delivered to S. G. Worman, secretary, 18, Coronation Terrace, Senghenydd, on or before August 6.

August 6. BRISTOL.—Erection of a place of worship at Stapleton Workhouse. Forms of tender and contract may be inspected with J. J. Simpson, clerk to the Guardians, St. Peter's Hospital, Bristol, between 10 a.m. and 5 p.m. (Saturdays 10 a.m. to 1 p.m.), and on payment of a sum of one guinea in cash the drawings can be inspected at the above office between the hours mentioned, and a copy of the bills of quantities and the specification will be supplied. Tenders must be sent to J. J. Simpson, as above, by noon on August 6.

August 10. UXBRIDGE.—Erection of a post-office at Uxbridge, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract, may be seen on application at No 17, Delahay Street, Westminster, between 10 a.m. and 5 p.m. Bills of quantities and forms of tender may be obtained at the undermentioned address on payment of £1 1s. Tenders must be delivered before 12 o'clock noon on August 10, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Uxbridge New Post Office."

August 11. BIRKENHEAD.—Alterations to scullery and erection of four additional bedrooms at the Nurses' Home, Union Workhouse, Birkenhead. Persons desirous of tendering may obtain a copy of the specifications from E. Kirby and Sons, architects, 5, Cook Street, Liverpool, upon payment of £1. Sealed tenders must be delivered to J. Birkenhead, on or before noon on August 11, endorsed "Tender for Alterations to Scullery, etc." Fair wages clause.

August 11. ROMFORD.—Erection of certain new buildings at the Workhouse, and other work connected therewith, in accordance with plans and specification prepared by H. Harrington, A.R.I.B.A., architect, 65, Bishopsgate Street Without, from whom bills of quantities and form of tender may be obtained upon payment of a deposit of £2 2s. The form of contract can also be seen at the architect's office. The person whose tender is accepted will be required to enter into a bond with a guarantee society in the sum of £1,000, as security for the due performance of the contract. Any tender accepted must be subject to the approval of the Local Government Board. Sealed tenders, endorsed "Tender for New Buildings," must be sent to W. Smith, clerk, Romford, on or before August 11, by 10 a.m.

August 13. MULLINGAR.—Erection of an operation ward at Westmeath Infirmary in accordance with plan and specification prepared by A. E. Joyce, County Surveyor. The plan, etc., can be seen at the Infirmary, where full particulars may be had. Tenders to be lodged at Infirmary before noon on August 13.

No date. WILLINGTON.—(No. 1) Additions and alterations to a house at Willington, and pulling down old buildings at Fowke's Foundry, Osmaston Road, Derby, and erecting retaining and dock walls. Persons desirous of tendering are requested to make written application to Ridgway and Smith, architects, Long Eaton, with a deposit of £1 1s. for each contract. Quantities will be supplied to persons selected to tender.

No date.—Erection of Villa Property. Address No. 3594, "Scotsman."

No date. NEW WHITTINGTON (Chesterfield).—Alterations to licensed premises. Persons desirous of tendering are requested to apply to Tom S. Wilcockson, architect, Chesterfield.

No date. EAST COWTON (Northallerton).—Erection of a church to seat 150. Contractors desirous of tendering are requested to apply for quantities to Woolfall and Eccles, architects, Castle Street, Liverpool.

No date. ABERCRAVE (Breconshire).—Erection of a house at Abercrave, for Rhys Davies, Esq. Builders desirous of tendering are requested to send their names, together with a deposit of £2 2s. (to be returned on receipt of a bona fide tender), to Charles S. Thomas, M.S.A., architect, Wind Street, Swansea.

No date. THORNLEY (co. Durham).—Erection of a villa residence at High Wheatley Hill, near Thornley. Plans, specifications, and quantities can be obtained from H. F. Cowx, Avenue Hotel, Whitley Bay, on deposit of £2 2s., which will be returned on receipt of a bona fide tender.

No date. BELHELVIE (Aberdeen).—Mason and carpenter work of additions to steading at Hillhead, Potterton. Plans and specifications may be seen at the office of Mr. James M. Clapperton, solicitor, or Mr. C. Stephen, architect, 177, Union Street, Aberdeen, and offers will be received by Mr. Clapperton.

ENGINEERING.

July 30. GLASGOW. — Supplying and erecting steel binding rings and other work in connection with the strengthening of a 250ft. chimney stalk at the Refuse Despatch Works, Crawford Street, Glasgow. Particulars with Mr. D. McColl, Superintendent of Cleansing, 38, Cochrane Street, Glasgow. Tenders marked "Tender for Binding and Repairing Chimney Stalk, Crawford Street," to be lodged not later than 10 a.m. on July 30 to A. W. Myles, Town Clerk, City Chambers, Glasgow.

August 1. FOXHOLE (St. Austell).—Construction of a reservoir (100,000 gallons), trenching, and other works at Stennagwyn, near Foxhole, in the parish of St. Stephens-in-Branwell, for J. B. Fortescue, Esq. The plans and specifications may be seen at the office of the engineer, Mr. T. H. Andrew, Market Hill, St. Austell, by whom tenders will be received not later than August 1.

August 1. BATH.—Construction of a Concrete Apron about 150 ft. in length at the east end of the existing wall of the Sea Defences at Blue Anchor, in the county of Somerset, and other works to be executed at once. Particulars on remitting half a guinea to the Clerk of the County Council, 1, Chapel Row, Queen Square, Bath. Tenders, marked "Tender" on the outside, to be sent not later than August 1 to G. I. Simey, Clerk of the County Council, Bath.

August 3. BRYNMAWR.—Installing heating apparatus at the Brynmawr County Schools, for the Governors, in accordance with plans and specifications prepared by Mr. F. A. Bates, architect, Newport. Tenders to be sent to John Thomas, Clerk to the Governors, Brynmawr County School, Brynmawr, on or before August 3.

August 3. LONDON.—Reconstruction of bridge carrying Westbourne Terrace over the Great Western Railway, near Paddington Station. Particulars at the office of the engineer at Paddington Station, between 10 a.m. and 4 p.m. Tenders, marked "Tender for Westbourne Terrace Bridge, Paddington," will be received not later than August 3 by G. K. Mills, secretary, Paddington Station, London.

August 3. EVESHAM.—Erection of a new pier to the bridge carrying the railway over the River Avon near Evesham, for the Great Western Railway. Particulars at the office of the engineer at Paddington Station, between 10 a.m. and 4 p.m. Tenders, marked "Tender for Pier to Bridge at Evesham," will be received not later than August 3 by G. K. Mills, secretary, Paddington Station, London.

August 3. DARLINGTON.—Erection at Harrowgate Hill of (a) cast-iron water tank (capacity 60,000 gallons), (b) brick tower. Plans and specifications may be seen, and bill of quantities and form of tender obtained at the offices of Mr. George Winter, Borough Surveyor and Waterworks Engineer, Town Hall, on depositing a cheque for £2 2s. Tenders, endorsed "Brick Tower" or "Water Tank," as the case may be, must be sent to Henry G. Steavenson, Town Clerk, Darlington, not later than noon on August 3.

August 3. BUCKIE.—Water supply and drainage works at Portessie. Copies of the drawings may be seen at the office of Messrs. W. R. Copland and Sons, C.E., 146, West Regent Street, Glasgow; and copies of the specification and duplicate copies of schedule of quantities may be obtained from the engineers on payment of a fee of 21s. Sealed offers, endorsed "Tender for Portessie Water and Drainage Works," to be sent to John L. M'Naughton, Town Clerk, Burgh Buildings, Buckie, by noon on August 3.

August 5. LIVERPOOL.—Excavating and filling-in the trenches for gas mains, at Fazakerley Gasworks, for Liverpool Corporation. Particulars with Mr. A. G. Smith, Corporation Gas-testing Department, Hood Street, Liverpool. Tenders, endorsed "Gas Main Trenches," to be delivered not later than August 5, to Edward R. Pickmere, Town Clerk's Office, Liverpool.

August 5. LIVERPOOL.—Construction of a blow-off tank for boilers, at the workhouse, Smithdown Road, Liverpool, for the Guardians of the Poor of the Township of Toxteth Park. Copy of specification can be obtained and plan seen at the workhouse upon application to the Master. Estimates, endorsed "Blow-off Tank," to be sent to R. A. James, clerk to the Guardians, 15, High Street, Liverpool, on or before August 5.

August 5. TUTBURY, BURTON-ON-TRENT. Provision, laying, and jointing of about 1,450 yds. of 5in., 2,396 yds. of 4in., and 2,101 yds. of 3in. cast-iron pipes, together with all special castings, valves, and hydrants required; also for the construction of engine-house, service reservoir, and other works, for Tutbury R.D.C. Drawing and specification may be seen, and bills of quantities and form of tender obtained at the offices of the Engineers, Messrs. Willcox and Raikes, 63, Temple Row, Birmingham, on payment of a deposit of three guineas. Tenders, in envelopes, supplied, endorsed "Tutbury Water Supply—Contract No. 1," to be delivered not later than noon on August 5 to C. F. Chamberlin, Clerk to the Council, Union Offices, Burton-on-Trent.

August 6. OLLERTON (Notts).—Supplying, excavating for, laying and jointing of about 2½ miles of 4-in. and 3-in. cast-iron mains, valves, hydrants, etc., the erection of small brick service reservoir, and all works in relation thereto, at Ollerton, Notts. Plans and specifications may be seen, and copies of quantities and form of tender obtained from the engineers, Messrs. Sands and Walker, Milton Chambers, Nottingham, on payment of two guineas (by cheque). Sealed and endorsed tenders to be sent to G. E. Kirkland, Clerk to the R.D.C., Southwell, Notts, on or before August 6.

August 8. CRAMLINGTON.—Water Distributing works for the providing, fixing, and laying, etc., of 9,300 lineal yards, more or less, of cast-iron spigot and socket water mains, principally 8ins., 4ins., and 3ins. in diameter; 850 lineal yds., more or less, of ¾-in. lead service branches; and all the bonds, branch pipes, special pipes, etc., in accordance with the plans, drawings, specifications, and conditions prepared by Mr. Wm. J. Coulson, engineers and surveyors, Council Offices, Cramlington, at whose office the plans and drawings may be seen, and an explanation of the works, etc., obtained between 11 a.m. and 3 p.m., up to August 7 (Saturdays excepted), and from whom copies of the specification, conditions, approximate quantities, and form of tender may be had on depositing the sum of £1. Sealed tenders, endorsed "Water Supply Works," must be delivered at the office of R. Nicholson, Clerk to the Council, 51, Bridge Street, Morpeth, not later than noon on August 8.

No date. GLASGOW.—Erecting steel chimney 160 ft. high in vicinity of Glasgow. Apply 3375, "Glasgow Herald" Office, Glasgow.

IRON AND STEEL.

August 6. TIDWELL (Devon).—Supply and erection of 280 ft. of fencing at Tidwell, Staverton, to consist of oak posts and tubular galvanised iron rail. Particulars with Mr. S. S. Rendle, Highway Surveyor, Hillside, Paignton. Tenders to be sent not later than August 6 to F. K. Windeat, clerk, Totnes.

August 7. MERE (Wilts).—Supply of cast-iron pipes and specials from 6in. to 2in. in diameter, about 450 tons. Particulars from Mr. William Phelps, C.E., the Council's Engineer, at Charlton Road, Shepton Mallet, Somerset, in return for a cheque for £2 2s. Tenders to be delivered not later than August 7, endorsed "Tender for Pipes—Contract No. 3," to J. T. Humby, Clerk to the Council, Church Street, Mere, Wilts.

August 15. ECCLES.—Supply of steel steam and cast-iron circulating water pipes, etc., at the Electricity Works. Specification and drawings may be obtained from the Borough Electrical Engineer, Cawdor Street, Patricroft, on receipt of a deposit of £1 1s., which will be returned on receipt of a bona fide tender. Tenders, marked "Tender for Section C," to be delivered to Edwin Parkes, Town Clerk, Town Hall, Eccles, not later than 9 a.m. on August 15.

PAINTING AND PLUMBING.

JULY 30.—FULHAM.—Painting works at the Infirmary, St. Dunstan's Road, Hammersmith, W. Form of tender and specification can be obtained from E. J. Mott, Clerk to the Guardians, to whom tenders, endorsed "Tender for Painting," must be sent in not later than 10 a.m. on July 30.

August 1. ENDENDERRY (King's Co.).—Painting the outside of the workhouse and fever hospital according to specification, which can be seen on application to the Master of the Workhouse. Each tender must contain the names of two solvent securities, willing to join in a bond with contractor (at his own expense) for the due performance of the contract. Forms of tender can be had on application to T. Humphrey F. Bor, Clerk of the Union, Boardroom, Endenderry, to whom tenders must be delivered by 11.30 a.m. on August 1.

August 3. SWANSEA.—Painting, distempering, whitewashing, etc., the workhouse buildings at Penmaen, for Gower Union. Tenders, endorsed "Tender for Painting," to be sent not later than August 3, to H. I. Ind, clerk to the Guardians, Church Street, Swansea.

August 3. BELFAST.—Painting at Belfast goods sheds and passenger station. Specification at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens Street Terminus, Dublin; copy of it at the office of the District Engineer, Belfast. Forms of tender on payment of 1s. each (not returnable). Tenders to be delivered, under sealed cover, endorsed "Tender for Painting," not later than 10 a.m. on August 3, to T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin.

August 3. DROGHEDA.—Painting bridge over the River Boyne, near Drogheda Station, for Great Northern Railway Co. (Ireland). Specification at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens Street Terminus, Dublin; copy of it at the office of the District Engineer, Belfast. Forms of tender on payment of 1s. each (not returnable). Tenders to be delivered, endorsed "Tender for Painting," not later than 10 a.m. on August 3, to T. Morrison, secretary, Amiens Street Terminus, Dublin.

No date. SALFORD.—Painting the outside of Broughton Baths, and the outside of Regent Road Baths. Specification and form of contract from Mr. W. J. Ellis, Superintendent, Blackfriars Road Baths, Salford.

No date. BURSLEM.—Painting and renovation of the following schools:—1, Longport; 2, Park Road; 3, Jackfield, for the Education Committee. Particulars may be obtained upon application to A. R. Wood and Son, architects, Market Place, Burslem, at once.

ROADS AND CARTAGE.

July 30. DYKEBAR.—Formation of roads at the new asylum at Dykebar, near Paisley, for the Renfrew District Lunacy Board. Plans may be seen in the office of T. G. Abercrombie, architect, County Place, Paisley, and copies of the specification and schedule obtained from J. Caldwell, junr., clerk, County Buildings, Paisley, on payment of £1 1s. for each schedule. Sealed tenders, marked "Renfrew District Lunacy Board—Tender for Formation of roads," must be lodged with the clerk not later than noon on July 30.

July 30. PLYMOUTH.—Making a road between Rame Church and the Coastguard Station near Rame Head, Cornwall. Plans and specifications may be inspected on application (by appointment) to Mr. J. Sandercock, Empacombe, Mount Edgcumbe, or to Messrs. Bewes and Dickinson, Manor Office, Stonehouse, Plymouth, by whom tenders will be received on or before July 30.

July 31. HULL.—Flagging, macadamising, etc., in Aberdeen Street, to an amended specification. Forms of tender and other particulars may be obtained at the City Engineer's Office. Tenders, endorsed "Tenders for Aberdeen Street," are to be addressed to the Chairman of the Works Committee, and to be delivered at the Town Clerk's Office before noon on July 31.

August 1. BARROWFORD (Nelson).—Supply of setts, curbs, channels, gullies, grates, stone pitching, pitch and creosote oil, required in connection with the paving, etc., of certain streets within the district of the Council. Particulars, with form of tender, may be had on application to Mr. John Mallinson, surveyor, Council Offices, Barrowford, or 11, Church Street, Colne. Tenders, sealed and endorsed "Tender for Setts, etc.," addressed to the Chairman of the Building and Sanitary Committee, to be delivered to Arthur T. Chandler, Clerk to the Council, Council Offices, Barrowford, on or before August 1.

August 1. BARROWFORD (Nelson).—Paving etc., of Carr Hall Road, Barrowford, in accordance with the plans, specifications, and conditions which may be seen upon application to Mr. John Mallinson, surveyor, at the Council Offices, Barrowford, and from whom forms of tender may be obtained. Tenders, sealed and endorsed "Tender for Private Street Works," addressed to the Chairman of the Building and Sanitary Committee, to be delivered to Arthur T. Chandler, Clerk to the Council, Council Offices, Barrowford, on or before August 1.

August 3. HOLYWOOD (co. Down).—Supply (a) 600 tons broken stones and 150 tons screenings (more or less) at per ton, delivered, (b) steam rolling at per day. Conditions of tender to be obtained at the office of the U.D.C., Holywood. Separate tenders endorsed "Stones" and "Rolling" to be lodged in the Council Office not later than p.m. on August 3.

August 4. WALSALL.—Laying of about 7,5 sq. yds. of 5-in. by 4-in granite sett paving, in t Pleck Road, Walsall, in accordance with specific tion and drawings prepared by the borough s veyor, which may be seen at his office at t Council House, Walsall, where form of tender a bill of quantities may be obtained. Tende sealed and endorsed "Tender for Granite sett P ing," to be sent to John R. Cooper, Town Cle Council House, Walsall, by noon on August Fair wages clause.

August 4. FEATHERSTONE.—Private str works in Crossley Street, George Street, Fearn Street, and Phipps Street, including kerbing, fl ging, channelling, macadamising, etc. Plans specifications may be seen, and copies of the of quantities, with form of tender, obtained on plication to Mr. Fredk. B. Rothera, C.S.I., Er neer and Surveyor, District Council Offic Featherstone, on payment of £1. Sealed tend accompanied by the priced quantities, endor "Tender for Private Street Works," must be livered to Charles Lowden, Clerk to the Cour Council Offices, Featherstone, by 5 p.m. on Aug

August 5. RUISLIP-NORTHWOOD.—Making of the following road:—Highfield Road, east the line; Highfield Road, west of the line; Hi field Road, over the railway bridge. Plans m be seen, and specification, form of tender further particulars obtained, at the office of L. Carr, surveyor, Council Offices, Northw upon payment of £1. Tenders, endorsed "T ders for Private Street Works," to be sent to office of E. R. Abbott, clerk to the Council, C cil Offices, Northwood R.S.O., Middlesex, not than 10 a.m. on August 5.

August 8. SOUTHGATE.—Making up of seven private streets for the U.D.C., of a total length of about 2,466 yards. Plans may be seen on application to C. G. Lawson, C.E., Council's surveyor, from whom copies of the specifications, conditions of contract, and form of tender may be obtained on depositing £2 in cash. Tenders, endorsed "Private Streets," must reach W. M. Ellenor, clerk of the Council, Council Office, Palmer's Green, N., not later than noon on August 8.

No date. YORK.—Estimates wanted for tar-paving. For particulars apply F 352, "Herald" Office, York.

No date. GREENFORD.—Supply of about 500 to 1,000 tons of road gravel, picked chalk flints, and granite, to be delivered in or between the months of September, 1908, and January, 1909, for Greenford U.D.C. Tenders must be on the forms to be obtained from W. H. Read, F.S.I., surveyor, The Avenue, West Ealing.

SANITARY.

August 4. LONDON, S.W.—Carrying out drainage works at the infirmary, for the Guardians of the Wandsworth Union. Forms of specification and tender can be obtained at the office of F. W. Piper, clerk, Union Offices, St. John's Hill, S.W., upon payment of a deposit of £1. Tenders, must be sent in, endorsed "Tender for Drainage Works," in the envelope provided for the purpose, not later than 4 p.m. on August 4.

August 8. RUISLIP.—Construction of 1,148 yds. of pipe sewer, for foul and surface water, raising roadway, together with manholes and other appurtenant work, at Sharps Lane, Ruislip, for the U.D.C. Drawings and specification may be seen and bills of quantities and form of tender obtained from W. L. Carr, surveyor, Council Offices, Northwood, Middlesex, on payment of a deposit of £1. Sealed tenders, endorsed "Sewer Extension," to be delivered at the office of E. R. Abbott, clerk, Council Offices, Northwood R.S.O., Middlesex, not later than 10 a.m. on August 8.

August 10. WAINGROVES.—Construction of sewage disposal works at Waingroves, for Ripley Urban District Council, comprising subsidence tanks, percolating filters, and other appurtenant works. Particulars on application to the consulting engineers, Messrs. Herbert Walker and Son, King Street, Nottingham, or to Mr. George W. Bird, surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. required. Tenders to be delivered not later than noon on August 10, endorsed "Tender for Waingroves Sewage Disposal Works," to Geo. M. Capon, clerk, Town Hall, Ripley, Derby.

August 11. WOKING.—Construction of about eight miles of stoneware and cast-iron pipe sewers, manholes, and pumping station. Drawings, conditions of contract, specification, and bills of quantities at the offices of Mr. G. J. Wooldridge, the Engineer to the Council, Council Offices Woking. Copy of the specification, bills of quantities, and form of tender may be obtained from the engineer on payment of five pounds. Tenders, inclosed in sealed envelopes, addressed to the Clerk of the Urban District Council of Woking, and endorsed "Tender for Horsell Drainage," to be delivered at the Offices of the Council not later than noon on August 11.

No date. DUNFERMLINE.—Excavation, tunnelling, etc., in the construction of a new outfall sewer between the Burgh of Dunfermline and Ironmill Bay, Charlestown. (Contract No. 1). Particulars from the Burgh Engineer on deposit of £3 3s.—Providing, laying, and jointing of reinforced concrete sewer tubes between the Burgh and Ironmill Bay, Charlestown. (Contract No. 2). Particulars on deposit of £3 3s. with Andrew W. Bell, Burgh Engineer, Burgh Chambers, Dunfermline.

No date. LITTLEBOROUGH (Manchester).—Construction of 200 yds. of 15-in. and 260 yds. of 12-in. pipe sewer from Halifax Road to Hollingworth Road, together with manholes, etc. Persons desirous of tendering may obtain quantities and inspect plans and sections on application to the Surveyor, Hare Hill.

MISCELLANEOUS.

July 29. STAMFORD.—Excavating, Drains, floors, Wharf, etc., for extension of the workshops, Ryhall Road, Stamford, for the Martin Cultivator Co., Ltd. Particulars can be obtained from T. J. Ward, architect, Stamford. Tenders to be delivered by July 29.

August 1. STEYNING.—Supply of 24 enamelled iron lavatory basins, to be delivered at the Union Workhouse at Kingston-by-Sea. Full particulars as to the basins required can be obtained on personal application to the Master of the Workhouse. Tenders to be delivered at the Board Room, New Shoreham, not later than August 1, endorsed "Tender for Supply of Basins."

No date. MANCHESTER.—Supply and delivery of 65 porcelain wash baths for Bradford Baths, for the Baths Committee of Manchester Corporation. Forms of tender and full particulars may be obtained upon application at the City Architect's Office, Town Hall.

(Tenders concluded from page viii.)

Astwood Bank (near Redditch).—Accepted for the erection of stables and the carrying out of alterations and repairs to Tookeys Farm, for Mr. R. W. Smith. Mr. Bernard Perrins, architect, Redditch.:—G. Huxley, Astwood Bank, £660.

Gravesend.—Accepted for the erection and completion of new public elementary schools for 808 children in Cecil Road, Gravesend, for the Town Council. Mr. John J. Robson, architect, 335, High Holborn, London:—G. Gates and Sons, Frindsbury, Rochester, £9,353.

Gravesend.—For repairs and alterations to the "Royal Jubilee," Gravesend, for the New Cross Brewery Co. Messrs. McKilliam and Procter architects and surveyors, 53, St. Paul's Churchyard, London, E.C.:—

W. and F. Tuffee	£98 0 0
S. G. Allen	92 0 0
W. H. Archer and Sons* ...	88 10 0

* Accepted.

Histon.—For glazed iron roof over loading platform to west block of Messrs. Chivers and Son's factory at Histon:—

Rendle and Co.	£686 16 0
Henry Hope and Sons ...	640 0 0
A. Dawnay and Sons ...	579 0 0
Heyward Bros. and Eckstein* ...	568 10 0

*Accepted.

Harrow-on-the-Hill.—For public street improvement in Pinner Road, for the U.D.C. Mr. J. Percy Bennets, engineer and surveyor:—

Champniss, Wealdstone ...	£3,219
Mowlem and Co., London ...	3,202
C. Rayner, West Bridgford ...	3,179
T. Adams, Wood Green ...	3,158
F. G. Brummell, Willesden ...	3,155
G. Mann, Edgware	3,141
Free and Sons, Maidenhead ...	3,128
H. Brown,* Watford	3,095

* Accepted.
Surveyor's estimate, £3,200.

London, S.E.—For repairs and alterations to "The Arrows," Pomeroy Street, New Cross, for the New Cross Brewery Co. Messrs. McKilliam and Procter, architects and surveyors, 83, St. Paul's Churchyard, London, E.C.:—

Peacock Bros....	£347 0 0
Courtney and Fairbairn ...	290 0 0
Lapthorne and Co.	280 0 0
Douglas and Askew	261 15 6
W. Bailey and Son* ...	260 0 0

* Accepted.

London, W.—For removing an iron building to —and its re-erection on—the Brook Green site, and for alterations and additions to St. Hubert's School, Hammersmith, for the London County Council. Mr. T. J. Bailey, architect (Education):

W. Brown and Sons, Shepherd's Bush	£1,615
Lathey Bros., Battersea Park ...	1,565
G. Neal, Willesden Lane	1,485
R. A. Yewell, Wandsworth	1,175
A.F. Vigor and Co., 10, Grosvenor Road	1,136
C. Johnson, Hammersmith	1,120
Thompson and Beveridge, 151, Harrow Road	1,096
E. Triggs, Clapham	1,082
H. and E. Lea, Regent Street ...	1,070
A. Roberts and Co., Ltd.,* 74, Earl's Court Road	925

*Recommended for acceptance.

Nottingham.—For new front to Arkwright Street Baptist Church. Messrs. Geo. Baines and Son, architects, 5, Clement's Inn, Strand, London, W.C.:—

J. Bull	£1,150 0 0
J. G. Short	1,085 0 0
T. Barlow and Co.	1,060 16 6
G. T. Lovett	992 0 0
W. Maule and Co.	975 0 0
J. Wright*	948 0 0

*Accepted, with modifications.

Tipton.—For two cottages, Castle Road, Tipton, for Mrs. Oakley. Mr. G. H. Wenyon, M.S.A., architect, 194, Wolverhampton Street, Dudley, and at Tipton.

G. Ratcliffe	£797 0 0
Harvey and Sons	750 0 0
H. Smith	733 5 0
F. Sisman	715 0 0
J. Watchorn	697 10 0
A. H. Peary,* Upper Gornal ...	600 0 0

*Accepted.

Pencoed. — Accepted for the erection of new infants' Council school at Pencoed, for the Glamorgan Education Committee. Mr. D. Pugh-Jones, F.S.I., county architect (eastern division), Cardiff:—S. Shail, Llandaff, £2,872 11s.

Pleasley.—Accepted for the construction of sewage-disposal works at Pleasley, for the Blackwell Rural District Council. Messrs. Vallance and Westwick, engineers, White Hart Chambers, Mansfield:—R. and S. C. Lane, Hermitage Brickworks, Mansfield, £2,100 7s. 6d.

London.—For the construction of the section of the new northern low-level sewer from Trafalgar Square to Addison Road, Kensington, for the London County Council. Mr. Maurice Fitzmaurice, Chief Engineer:—

	£ s. d.	£ s. d.
J. Strachan, Cardiff	110,171 5 5	109,233 13 5
W. Scott and Middleton, Ltd., Westminster	109,384 3 4	95,320 3 4
D. R. Paterson, Ltd., Camden Town ...	101,762 7 0	Not stated.
W. Muirhead and Co., Westminster	97,905 3 7	93,217 3 7
H. and J. Martin, Ltd., Dublin ...	96,791 0 0	94,447 0 0
Perry and Co., Bow, E.	94,841 0 0	94,841 0 0
Shellabear and Sons, Plymouth	93,620 18 6	92,683 6 6
Westminster Construction Co., Ltd. Westminster	91,800 0 0	86,643 4 0
W. Kennedy, Ltd., Westminster	85,676 5 5	Not stated.
Kelletts, Ltd., Holborn, W.C.	83,385 1 1	81,041 1 1
Works Committee ...	79,376 0 0	Not stated.
J. Mowlem and Co., Ltd.,* Westminster	78,158 0 0	69,719 12 0
W. Manders, Leyton Green	76,773 8 7	74,546 12 7

*Recommended for acceptance.
Chief Engineer's estimates, £76,000 and £67,093 respectively.
A.—With compressed air. B.—Without compressed air.

London, S.E.—For repairs and re-decorations to St. James' Church, Hatcham, S.E., for the vicar and wardens. Mr. Edward Procter, architect and surveyor, 83, St. Paul's Churchyard, London, E.C.:—

T. Rider and Sons	£664 0 0
A. L. Moore and Co.	627 0 0
Havell and Sons	622 0 0
Jones and Willis	568 0 0
Campbell and Smith...	516 0 0
Courtney and Fairbairn	513 0 0
Peacock Bros.*	430 0 0

* Accepted.

Sherwood (Nottingham).—For the erection of lace-dressing rooms, etc. for Mr. E. Jardine, J.P. Mr. A. Harrison Goodall, architect, Nottingham:

F. Evans	£8,187 16 0
G. Hopewell and Son	7,821 0 0
Enoch Hind	7,720 0 0
Thos. Fish and Sons ...	7,603 0 0
F. M. Thompson and Sons, Ltd.	7,589 0 0
J. G. Short	7,535 0 0
Hodson, Rolley and Co. ...	7,495 0 0
W. Appleby	7,460 0 0
G. A. Pillatt	7,360 0 0
W. J. Hutchinson	7,350 0 0
H. Vickers and Son	7,340 0 0
T. H. Harper, Carlton ...	7,300 0 0
Fredk. Messom	7,250 0 0
W. Maule and Co.	7,195 0 0
Jas. Wright	7,189 0 0
Thos. Barlow and Co.* ...	7,167 0 0

*Accepted. Rest of Nottingham.

Willesden.—For the erection of Acton Wells School, Victoria Road, Willesden Junction, for the Education Committee of the Acton U.D.C. Messrs. E. C. P. and H. Monson, architects to the Committee, 182, High Street, Acton, W., and 22, Buckingham Street, Adelphi, W.C. Quantities by Mr. F. T. W. Miller, 8, Dartmouth Street, Westminster:—

(A) School with cookery and manual centre.
(B) School without cookery and manual centre

	A.	B.
Bruton and Sons, Bayswater ...	£23,599	£21,509
B. E. Nightingale, Lambeth ...	22,676	21,049
F. and G. Foster, Norwood Junction	21,983	20,183
J. Parnell and Son, Rugby ...	21,339	19,580
H. Willcock and Co., Wolverhampton	21,130	19,467
F. Webster and Son, East Dulwich	21,183	19,387
F. Lawrance and Sons, City Road	20,847	19,181
J. A. Jerram, East Ham	20,883	19,157
G. H. Gibson, High Wycombe ...	20,716	18,962
F. and E. Davey, Ltd., Southend	20,657	18,890
John Allen and Sons, Ltd., Kilburn	20,495	18,812
John Barker and Co., Ltd., Kensington	20,199	18,592
Brand Pettit and Co., Tottenham	20,150	18,470
Galbraith Bros., Camberwell Green	19,996	18,453
J. and C. Bowyer, Ltd., Upper Norwood	19,958	18,324
Spencer, Santo and Co., Ltd., Kensington	19,847	18,177
McCarthy E. Fitt, Reading ...	19,823	18,118
F. Gough and Co., Hendon ...	19,676	18,099
Abbot and Charlton, Acton ...	19,450	17,850
A. M. Coles, Chelsea	19,068	17,464
Albert Monk,* Lower Edmonton...	18,945	17,345

*Accepted—subject to the approval of the Local Government Board.
Architects' estimates: School with cookery and manual centre £19,600; school without cookery and manual centre, £17,376.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

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ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Fred Griffiths, 6, Bath Terrace, Hanwell, London, W. 4421

ARCHITECT'S Assistant, 9 years' experience; hon. mention, R.I.B.A., for design; working drawings, details, and competition drawings; London preferred.—Box 4434, Builders' Journal Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4462

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, Builders' Journal Office.

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities, R.A. Exhibitor; expert perspectives.—Box 4409, Builders' Journal Office.

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ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, Builders' Journal Office.

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ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, Builders' Journal Office.

BUILDER'S Clerk (21), good draughtsman, thorough practical knowledge of construction and details, certificates for geometry, building and carpentry, and joinery. Capable of assisting with estimates, and picking up decorative work.—Box 4,400 Builders' Journal Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, Builders' Journal Office.

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, Builders' Journal Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, Builders' Journal Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4473

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, Builders' Journal Office.

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 4455

IMPROVER or junior assistant (22), student R.I.B.A., excellent knowledge, practical building construction experience, supervising, neat draughtsman, surveying; assist quantities; small salary, specimens; good references.—Box 4090, Builders' Journal Office.

IMPROVER or junior assistant (21) desires position with architect or surveyor; working drawings, quantities, surveys, qualified P.A.S.I.; nominal salary.—R. R. F., 25, Queen Street, Hemel Hempstead. 4321

JUNIOR Draughtsman (19), desires re-engage ment; assist generally; good refs.; town an country; shorthand; probationer; R.I.B.A. — Weston, The Laurels, Rotherfield, Tunbridge Well 437

JUNIOR Assistant (20) requires situation in su veyor's or builder's office, 3 years' experience wi London surveyor; can assist in abstracting, wor ing up, variations, etc.; willing worker.—W. Cook 102, Faraday Road, Wimbledon, S.W. 43

JOINER-MACHINIST, or general assistant; use to office, bench, or building work, planer, sa spindle, mortise, or entirely bench; constructi certificates; good draughtsman; abstainer; refe ences.—Box 4419, Builders' Journal Office.

MANAGER to New York architect last sev years, 16 years' experience; expert in Americ hreproof construction, design, specifications a supervision, desires re-engagement. — Turla Goosey, 20, Primrose Hill, Northampton. 44

MACHINIST, good all-round, wants job, to or country; take charge or otherwise, thorou knowledge of gas-engine; good refs.—T. S., 4, To Terrace, King's Road, Herne Bay. 44

PRACTICAL Machinist (joiner), requires sit tion; good spindle hand.—H. Cruse, Boxford, Ne bury, Berks. 44

PLUMBER (gas and hot-water fitter) wants jo well up in all branches; would supply all tools; afraid to turn hand; would suit builder or jobb man; town or country; wages, 8½d. per hour constant employment.—S. K., Shanklin, Ben Road, Sutton, Surrey. 4

SANITARY Drainer (competent), wants situati good work; iron or earthenware; take charge; years' experience; good references; age 36.— Gent, 42, Westbrook Road, Thornton Heath. 4

STOREKEEPER and yardman (age 28), se re-engagement in builder's yard. Well up in bo ing materials in and out works. Fifteen ye experience. First-class references. Distance object.—M. Poole, 12, Jardin Street, Albany Ro Camberwell, S.E. 4

THOROUGHLY competent builder's book-kee and general assistant requires engagement, years' experience in London with builders shopfitters; good reasons for leaving present be excellent references. Age 32.—Apply Box 4 Builders' Journal Office.

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WANTED, architect and surveyor's assis shortly disengaged; thorough general perience; quick and accurate draughtsm supervising; entire charge.—Box 4447, Build Journal Office.

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YOUTH (age 18) requires situation in buil or surveyor's office. Desirous of learning mating. Three years' previous experience.— W. B., 8, Medley Road, West Hampstead,

Appointments Vacan

EXPERIENCED representative wanted by known firm of lock manufacturers; must influential connection amongst leading arch and contractors in London district; state s required and full particulars of experienc Box 4427, Builders' Journal Office.

TRAVELLER wanted, with established conn amongst architects, builders, contractors, d tors, etc., to sell our Artificial Marble, on and Commission; must have exceptional refer as to ability. Apply by letter only, givin particulars, and stating terms required, The I Marble Company, Ltd., 46, Cannon Street, L E.C.

WANTED, for a permanency in the office of a established firm of surveyors in the city, a of good appearance and education, with pr office experience, who can write a good quick and accurate.—Apply, in own handw with copies of testimonials, stating salary to Box 4457, Builders' Journal Office.

August 5, 1908. Volume No. 28, 704.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The "Stud" Tramway System.

Some additional facts have been made public in regard to the "G.B." (Griffiths-Bedell) surface contact system, as laid down on the Aldgate-Bow route, which put the matter in quite a different light. It appears that the County Council officials have seen fit to depart from the patentees' system in several important particulars, and the result has been disastrous. The "G.B." Company have thus suffered a great injustice, because the safety of their system has been stigmatised, whereas, when properly installed as at Lincoln (where, since its introduction in November, 1905, it has been a complete success), it is perfectly safe. At Lincoln there has not been a single instance of shock caused by "live" studs, and the "G.B." company affirm that there are no conditions prevailing in the Bow Road that militate against the safe working of their system, if carried out in accordance with their patents; in support of which assertion they offer to put the electrical equipment of the track in an efficient state, and to maintain it in that state for twelve months, provided the Council will equip the cars in accordance with their designs. Without question, the company have been most unfairly dealt with, and a grave reflection has been unwarrantably thrown on the safety of their system; and this is particularly to be regretted, because the system is cheaper (or, in any case, is no more costly) than the overhead system, while it possesses the merit of the conduit system in not being unsightly.

The Latest Competition Evil.

In these days, competitions appear to be as fruitful a source of trouble as any other of the world's imperfect institutions. From time to time we have chronicled more or less vehement outbursts and controversies concerning some phase of competition strife which had provoked its victims beyond the limit of silent endurance. The assessor was usually the evil genius of the piece; sometimes he adhered too strictly and literally to the conditions; sometimes he did not adhere to them at all: sometimes he was too stringent over cost; and yet another time he was oblivious to the question of cost; but, in any case, he was absolutely and entirely wrong; and the disappointed competitors clamoured loudly for his removal and the institution of a fresh trial. We were becoming inured to this class of competition aftermath when a new trouble developed on more or less original lines. This time it was the single assessor who was at fault. One man could not be safely trusted. He would not feel strong enough to fight unreasoning prejudice, to preserve an unbiassed opinion. He would be open to the subtle flattery of any competitor who played—or preyed—upon the assessor's work. There should be in all important competitions at least three or more assessors; so the reformers decreed; and the County Hall competition gave them a good opportunity of testing the theory. The result, as we all know, has left them even less satisfied than they were before; and still more forcibly persuaded of the general incompetence of assessors as a body. Then there were other troubles—unfair conditions—conditions requiring more accommodation and facilities than could possibly be provided with the sum available. There was the public body that would overthrow the assessor's work, and award the premium to some local aspirant or other competitor who, for the moment, had caught the members' fickle fancy. Such points of disagreement might be multiplied by a score of others, which do not need to be enlarged upon. Hardly a single phase or stage of competition work has failed to furnish an opportunity for dispute. Now, however fanciful some of the grievances have been in the past, due in many instances, to chagrin rather than to injustice, there is no gainsaying the fact that the latest trouble is a very real and annoying one. It has become a custom for the promoters of competitions to protect themselves against the machinations of the idle and curious, who had no real intention of competing, by exacting a deposit fee of a guinea and upwards for the particulars and conditions of the competition; and this sum was always refunded either on the return of the conditions or on the receipt by the promoters of a genuine design. But some of the modern bodies have gone one better. They refuse now to return the deposit unless they receive a genuine design, so that an architect is unable to withdraw from the competition if he thinks the conditions are unsuitable without losing his deposit fee. He is to be mulcted for merely learning the conditions under which he is expected to work. This is the latest and grossest phase of competition work, and there is only one word to express it. The people who practise this deposit snatching are just thieves, and as much entitled to the delicate attention of the Public Prosecutor as any other form of swindler.

The Shakespeare Memorial.

At a meeting held at the Mansion House on July 21st to discuss the question of the Shakespeare Memorial, the following resolutions were unanimously adopted:—"(1) That the Shakespeare Memorial Committee consist of the members of the present Shakespeare Memorial Committee and the members of the present National Theatre Shakespeare Memorial Committee. (2) That an executive committee be elected, consisting of 21 members, with the addition of an honorary secretary and a secretary, and with power to add to their number." The proceedings terminated after the election of the executive committee referred to in the second resolution, and thus, at any rate for the present, a truce has been arranged between the rival committees appointed to do honour to the memory of our great national poet. We are inclined to think that the policy of thus uniting the two committees, and issuing a joint appeal, with the view of obtaining the necessary funds for the erection of a National Theatre, is a wise one, because, to begin with, no one could look forward with any degree of confidence to the probability of attaining a satisfactory artistic result through the medium of a competition (limited to "English-speaking peoples") for the grandiose monument it was originally proposed to erect in Portland Place. But, on the other hand, we are not convinced that the proposal which is shortly to be brought under the notice of the public is likely to prove an ideal one. We presume that the National Theatre, if ever it be realised, will comprise a huge stone structure fashioned in the popular architectural style of the day, and therefore far more likely to be distinguished for its bizarre ornamentation and "picturesque" unrest than for any vast amount of monumental dignity. No doubt, a large stage, admirably designed and equipped for spectacular displays, will form a salient feature of the scheme, and thus will offer facilities to any popular actor-manager who may have control for the introduction of unduly elaborated scenic effects, and for the presentation of gorgeous interludes and pageants which, however pleasing in themselves, are altogether opposed to the

spirit and stagecraft of Shakespeare's dramatic writings. Given the facilities afforded by the luxurious equipment of a modern stage for a spectacular display altogether opposed to the conditions under which the author's work was first presented, it seems to us that much of the very essence of Shakespeare's plays will be lost in a blaze of artistic splendour produced by interpolated scenic effects. For this reason we frankly confess we are unable to feel any very great amount of enthusiasm for the proposals of the National Memorial Theatre Committee, assuming, of course, which we believe will prove to be the case, that the primary idea is the institution of a thoroughly well-equipped and up-to-date theatre in which Shakespearean revivals will be given with the splendid mountings to which we have now become accustomed. Instead of a palatial structure erected in a portion of London with which our poet had no immediate connection, we should infinitely prefer to see (on the south side of the river, in the locality associated for all time with his everyday life and work) a playhouse of modest architectural pretensions of which at least the stage portion would be an exact reproduction of one that was deemed sufficient for its purpose in the golden days of Queen Elizabeth. Adjoining the theatre, but placed at the opposite end of a "Shakespeare" garden, planted wholly with the flowers and plants mentioned in Shakespeare's works, and further embellished with a statue of the poet of modest pretensions, there might be a library and museum of sufficient capacity to house a large collection of Shakespearean books and relics.

SOUTHEND PIER has been improved by the addition of a promenade deck with bandstand, erected 13ft. above the existing pier extension. The band enclosure measures 120ft. by 36ft., and has seating accommodation for 600. The work has been carried out by Messrs. Wall and Co., contractors, of Grays, from the designs of the borough engineer, Mr. E. J. Elford, at a cost of £6,000.



DRAWN BY LESLIE WILKINSON, A.R.I.B.A.

This elegant fountain is one of the finest in Viterbo. It is executed in a dark brown sandstone and is surmounted by lions and a palm-tree—the cognisance of Viterbo. The design is attributed toVignola.

THE ALLIANCE BETWEEN GOVERNMENT AND ART

Three times in the history of the world has an experiment been made by which the centralising and governing system that regulates the material interests of a country has also been applied to regulate the interests of its art and literature. In the ages of Augustus, of Leo X., and of Louis XIV. homage was paid (by what, for want of a better name, may be termed the intellectual class) to obtain the favour, protection, and patronage of the governing class. In these epochs of art nearly every book was written with the view of earning the goodwill of the ruling sovereign, which, if graciously accorded, was regarded as the hall-mark of the author's intellectual eminence. The architect's designs for public buildings were submitted for the royal approval previous to the commencement of their realisation, and, in like manner, the sculptor's models and sketches were inspected and criticised by his regal patron before the work was cast in bronze or wrought in marble. Thus every man of letters became a vassal of the crown, and every artist was compelled, at least on occasions, to allow his own views to become subordinative to those of the dominant personality of the day.

Before proceeding to discuss the effect upon art of the protective spirit thus displayed by the Government, let us briefly summarise the results achieved by the adoption of the system in each of the three periods we have mentioned.

The Augustan Age.

The Augustan Age, which, in later times, the Romans regarded as being the most prosperous and most distinguished in their annals, was alike notable for the splendour of its attainments in art, literature, and arms. The system of government patronage, then first introduced, became the medium through which literature and the Imperial policy were united, and on that account no period afforded greater opportunities for the peaceful cultivation of letters. Latin literature was thus at its zenith when the majestic world-dominion of Rome was fully established.

The arts of architecture, painting, and sculpture were employed to magnify the state or the chief representative of the state, as in later times they were employed by the Flavian Emperors to conciliate the sovereign people, and Rome was thus embellished with stately temples, magnificent gardens, and bronzes and statuary. In short, Augustus carried out in a city that had recently become the capital of the world those vast public improvements which afterwards enabled him to proudly boast that he had "found it of brick and left it of marble."

The Great Patron of the Italian Renaissance

In his fame as a patron of arts and letters, Leo X. (Giovanni de Medici, 1475-1523), the most magnificent of popes stands alone as a prince who did not merely strike the usual bargain with the intellectual men by whom he was surrounded, of setting princely patronage against abject flattery. Unlike many a patrons, Leo X. (who was a scholar first and a sovereign afterwards) entered into the pursuits, the aspirations, and the ideals of men of genius from a thorough congeniality of tastes and temperament and aided their efforts, not only as patron, but also as a friend. Hence h



DRAWN BY LESLIE WILKINSON, A.R.I.B.A.

This doorway forms the south and most usual entrance to "The Church of the Altar of Heaven," which dates from the 14th century. It is set in a broad surface of plain red-tile walling, and is executed in white marble, with a fine mosaic of the Madonna and Infant Christ between two angels in the tympanum.

contact with the great intellects of the age was far more direct and personal than that of Augustus and Louis XIV. with the eminent men of their time, and Leo X. alone of the three, perhaps, rightly deserved to bequeath his name to a century highly distinguished by its fertility in authors and artists.

Although the Pope did not kindle the genius of Raphael and Michael Angelo, yet great and many were the unique opportunities he offered these distinguished men for the display of their supreme genius. The great intellectual movement for which his age is famous arose, and doubtless could have subsisted, without him; but it is certain that Leo X's enthusiastic encouragement of the Humanists, added to his love of art, and the incomparable greatness with which he presided over and directed the remarkable revival of arts and letters associated with the time, rendered his era the brightest to be found in the whole history of art.

Louis XIV. and His Motives.

Louis XIV. was the absolute ruler, the law-giver, the personification of the courts. His celebrated dictum, "L'Etat c'est moi," was his guiding principle, and never since the time of the Roman Emperors was the doctrine more arrogantly proclaimed. Thus identified with the King, the State was practically non-existent. The King's judgment was paramount, his decision was irrevocable; the expression, "The King wills it so," was accepted as the inevitable. The nobles fought for the glory of the *Roi-Soleil*, and the taxes which crushed the people were raised at his pleasure. The artificial magnificence of the Palace of Versailles is typical of the character and policy of Louis XIV. He built it on a sterile spot, and carried water to it at a prodigious cost. Its gardens reproduced the regularity and majesty which never failed to charm the King, and the splendour of its buildings faithfully reflected the inordinate vanity of this prodigal patron of the arts.

The adornment of the park of Versailles was commenced in 1662, and Perrault's famous colonnade of the Louvre a few years later. Bernini was summoned from Rome to assist the King in his gigantic schemes for the embellishment of the capital, and the services of Mansart, Le Notre, Coyzevox, Lebrun, Tuby, Cafferi, and a host of other artists were in constant demand in connection with his other architectural projects at Versailles and elsewhere.

To stimulate and direct the advancement of knowledge, new learned and scientific academies were established in Paris, and the French School was founded at Rome. In arts and letters, rule and organisation reigned supreme; but the real golden age of literature scarcely touches the reign, because many of the greatest masterpieces of the period belong to the earlier times of Richelieu and Mazarin. Thus, Corneille wrote the Cid in 1636, and after 1646 his powers visibly declined. The earlier works of Molière were produced under the régime of Mazarin, and Racine's best period terminated in 1677.

In the epochs which bear their names the three dominant personalities of the time and country associated with the movement for the advancement of art and letters fostered and supported it for widely different motives—Augustus for reasons of state, Leo X. for his genuine love of art and learning, and Louis XIV. for his personal glorification.

The General Argument.

Whilst it is not denied that, at any rate for a limited time, the principle of the application of royal patronage to art and literature has produced good results, yet the opponents of the system assert that when the highest honours are the exclusive gift of the governing power the marks of favour bestowed are apt to become little more than badges of servitude. It is also contended that the active exercise of royal patronage has a very deleterious influence upon art, and that for one instance in which a sovereign has recompensed a man who is in advance of his age there are dozens of instances of rewards bestowed upon men whose artistic or literary productions afford conclusive evidence that their authors do not rank with the best artists of their time.

Again, those opposed to the system point out that in order to produce the highest degree of excellence in a work of literature or art it is necessary that its author and the public should participate in some common feeling of admiration for beauty and sublimity. When, therefore, the patrons and the arbiters of works of genius are in totally different ranks of life from the authors, an artificial state of art must be cultivated in order to secure the approval of the small and exclusive circle of individuals to whose judgment the works are submitted. Often the very fact that this taste, which the author or artist is called upon to gratify, is more in the nature of a task of artificial study than an effusion of natural feeling tends to produce exaggeration and mannerism. But whilst we are fully prepared to admit the truth and justice of these arguments, we are still of the opinion that the stimulus to artistic production resulting from the alliance between the government and artists on the three occasions to which we have referred was of great benefit to the development of art. The ephemeral nature of the connection was, in each case, due to causes not under the control of the respective regal patron, who should be honoured by the civilised world for having accomplished so much, rather than cavilled at and blamed because the result of his efforts sometimes fell short of the ideal.

C

THE LIGHTING OF SCHOOL BUILDINGS.*

By G. Topham Forrest,
Architect to the Northumberland Education Committee.

In the following paper my intention is not to touch upon the principles involved in the lighting of a new school building, but more especially to discuss the architect's part in the re-modelling of old buildings, and to lay before you some suggestions as to the best types of classroom windows, which may perhaps afford a field for discussion.

As regards the question of site, the value of high ground is inestimable, as it secures more light by reducing the height of obstructions, and gives a freer play for the sun's rays. The building should be placed so that it is possible for each child to see the sky from his desk. The control of trees should be secured with the purchase of the site. If they do not interfere with the lighting of the building, well and good, but this point should be carefully considered when inspecting suitable ground.

The Question of Aspect

The question how to secure sunlight for all the rooms during some part of the day has led to considerable discussion as to the best direction for a building to face. Buildings should not be placed so as to coincide with the points of the compass, otherwise the north-side rooms, if lighted on one side only, are cut off from the sun, while south rooms may become too warm in hot weather. To avoid this the building should face the middle points of the compass. By this arrangement each side receives the sun at some time during the day. A frontage of this sort makes south-east rooms most desirable, south-west next, then north-east, while the north-west is least desirable, as the effects of the sun are only felt after the children have gone for the day. These distinctions, however, must not be carried to an unnecessarily fine point, but when such a site can be obtained as readily as another it should be given the preference.

If a building is so planned that it is impossible to secure the sun for each room, the deficiency should be made up by increasing heating and ventilation.

Having determined the character of the building, be careful to put the light in the rooms used for school work. This, of course, is the mandate of common-sense, but how many times do we see that these considerations are not always regarded, *e.g.*, assembly halls put on the south side, teachers' rooms monopolising windows which should go to light classrooms, and staircases often on the side of the building having the best light.

Proportion of Window Area.

The relation of window space to floor space should be at least 1 to 6.

Lighting should be from the left, and it must be borne in mind that the light from the highest part of the room is by far the most valuable. That which comes through the lower panes goes to the floor. For reading purposes, front lighting is exceedingly bad, as the light is thrown on the binding of the book instead of on the page. Of all possible combinations of bilateral lighting, that with windows at the left and right is much to be preferred, though care should be taken that the lighting from the right hand is shaded, leaving the chief source of illumination from the left.

*Abstract of a paper read before the Congress of the Royal Sanitary Institute at Cardiff on July 16th, 1908.

Width and Structure of Windows.

So many varieties of classroom windows are in vogue, both as regards design and construction, and as regards ventilation, that it will be sufficient here to outline a few of the main principles which determine their use. It is well to remember when designing windows that the light should enter the room as a unit; hence there will be no distinguishing cross lights, no distinctly outlined shadows, and one light will shade into another without any visible lines: in other words, there should be broad piers or mullions between the daylight openings. On that account I am not an advocate of planning classrooms having only two windows, as this necessitates a considerable amount of wall surface between them. I am of opinion that the best and most suitable form of classroom window for an ordinary sized classroom to accommodate, say, 50 or 60 children, is a three-light one; but it is hardly possible to construct brick piers of sufficient strength in a building of any height that will not interfere considerably with the light. Eighteen inches seems to be the width usually adopted, but as this width throws a shadow on the desks nearest the window, cast-iron mullions are, I believe, now used (although I have not seen any). These are cast with heavy webs, and with the window-frame bolted directly to them. In this way it is possible to put the windows sufficiently close, and at the same time to provide sufficient strength. When brick piers are used they should always be bevelled on the inside.

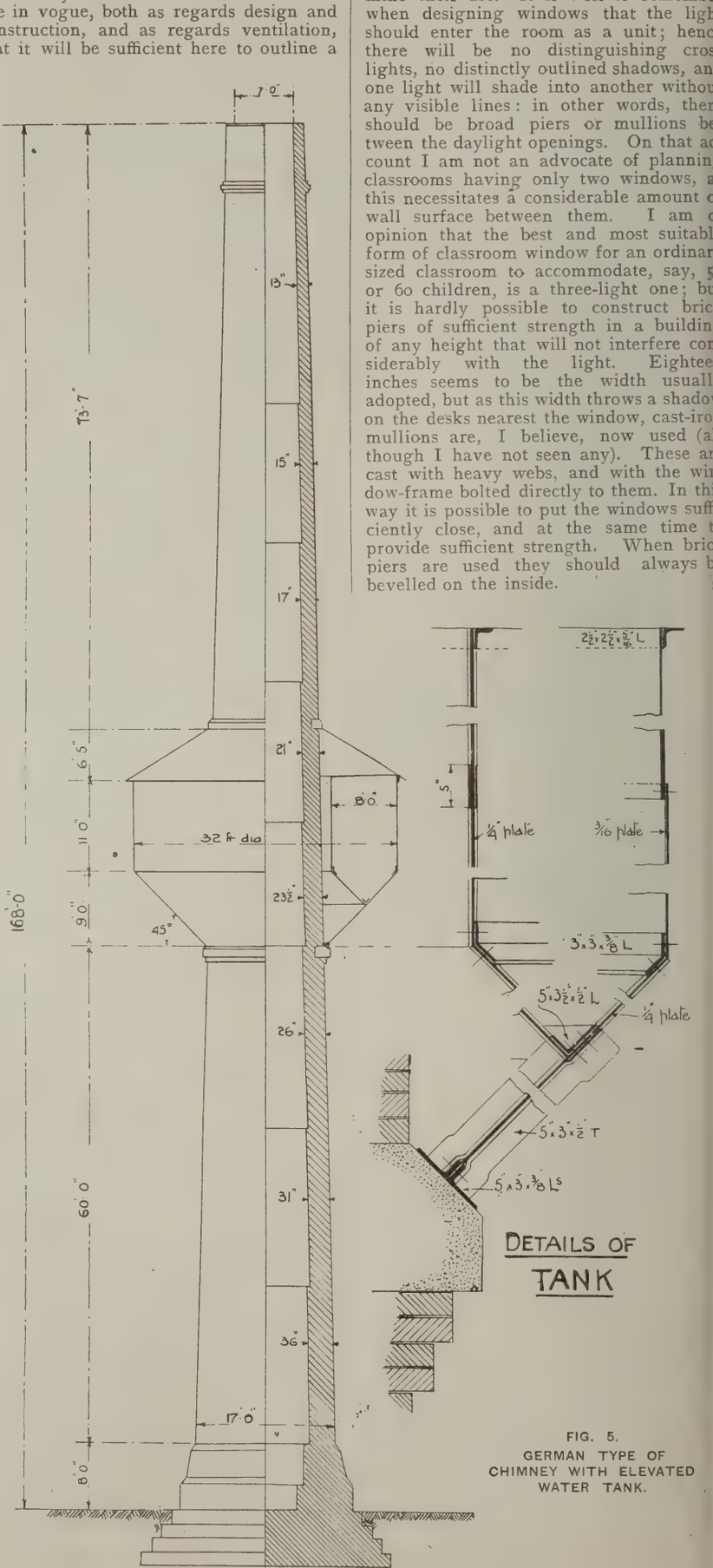


FIG. 5.
GERMAN TYPE OF CHIMNEY WITH ELEVATED WATER TANK.

In furnishing a classroom special care should be paid to securing

School Desks of Practical Construction.

The eyesight of the pupils may be seriously impaired, the desks may be too high or two low, and the advantage of having a good building may be counter-balanced by this mistake.

Some little time ago the writer was called upon to report very fully on the question of adjustable desks for secondary schools, and some valuable statistics were volunteered by various principals, who all agreed as to the absolute necessity for grading the heights of the desks in a classroom to suit the pupils. In a classroom of a secondary school three different sizes are commonly met with, and, in my opinion, some such system would be advantageously applied in the furnishing of our elementary schools. The failure to adjust the desks to suit short-waisted children is a neglect of duty to care for the eyesight.

MODERN PRACTICE IN TALL CHIMNEY CONSTRUCTION.

By Hector St. G. Robinson.

(*Continued from page 83, No. 703.*)

A typical example of a stock brick chimney is shown in Fig. 3. It was built to serve both for the destructor station and the electricity installation at the King's Road works of the St. Pancras Borough Council. It is 207ft. 6in. in height, and stands upon a concrete slab 36ft. square and 8ft. thick, resting upon the London clay at a depth of 23ft. 6in. below the ground surface. The shaft is built of stock bricks and Ruabon red brick quoins and strings. The capping is formed of Derbyshire stone, three courses in depth and eight stones in each course, which are all cramped together with copper cramps. For a height of 80ft. from the bottom the flue is lined with fire-brick, between which and the main structure a 3in. air-space is left, ventilated with openings from the outside. The diameter of the flue is 9ft. at the base to 7ft. 9in. at the cap. This chimney, although very graceful in appearance, is very heavy. The position it occupies is not very exposed, and there is no apparent justification for the excessive wall thickness. As a comparison, one of the two brick chimneys recently built by Messrs. Nicholls and Reynolds, engineers, of Westminster, in an exposed position on the sea-coast is instructive. This chimney (Fig. 4) built for the Central Zinc Co., Ltd., of Seaton Carew, Durham, on the Alphons Custodis system, is extremely light, and is an example of what can be done in districts where no antiquated building by-laws are in operation. Owing to the high temperature of the gases entering this chimney, it was considered advisable to place wrought-iron bands around the stack. Otherwise, the details given are self-explanatory.

A type of structure rather common in Germany is a useful combination of chimney and elevated water tank (see Fig. 5). The economy of such an arrangement is obvious. This type of chimney can be computed in practically the same manner as an ordinary brick chimney. The area exposed to wind is greater, and the worst condition as regards stability is when the tank is empty and high winds are encountered.

Protection from Lightning.

The protection of tall brick chimneys from lightning is most important, and numerous improvements on the old "lightning rod" have been evolved from time to time. Many years ago a writer on the subject recommended the use of a heavy band or coronal at the top of the chimney, with copper points 1ft. high at intervals of 2ft. on the circumference. This method of protection is now coming into general use. The common practice in this country for conductors is a copper tape about $\frac{3}{4}$in. by $\frac{1}{8}$in., terminating in an earth terminal composed of a 3ft. by 3ft. by $\frac{1}{16}$-in. copper plate. It should be borne in mind that the best earth terminal is water, and when a deep well or other large body of water is at hand the

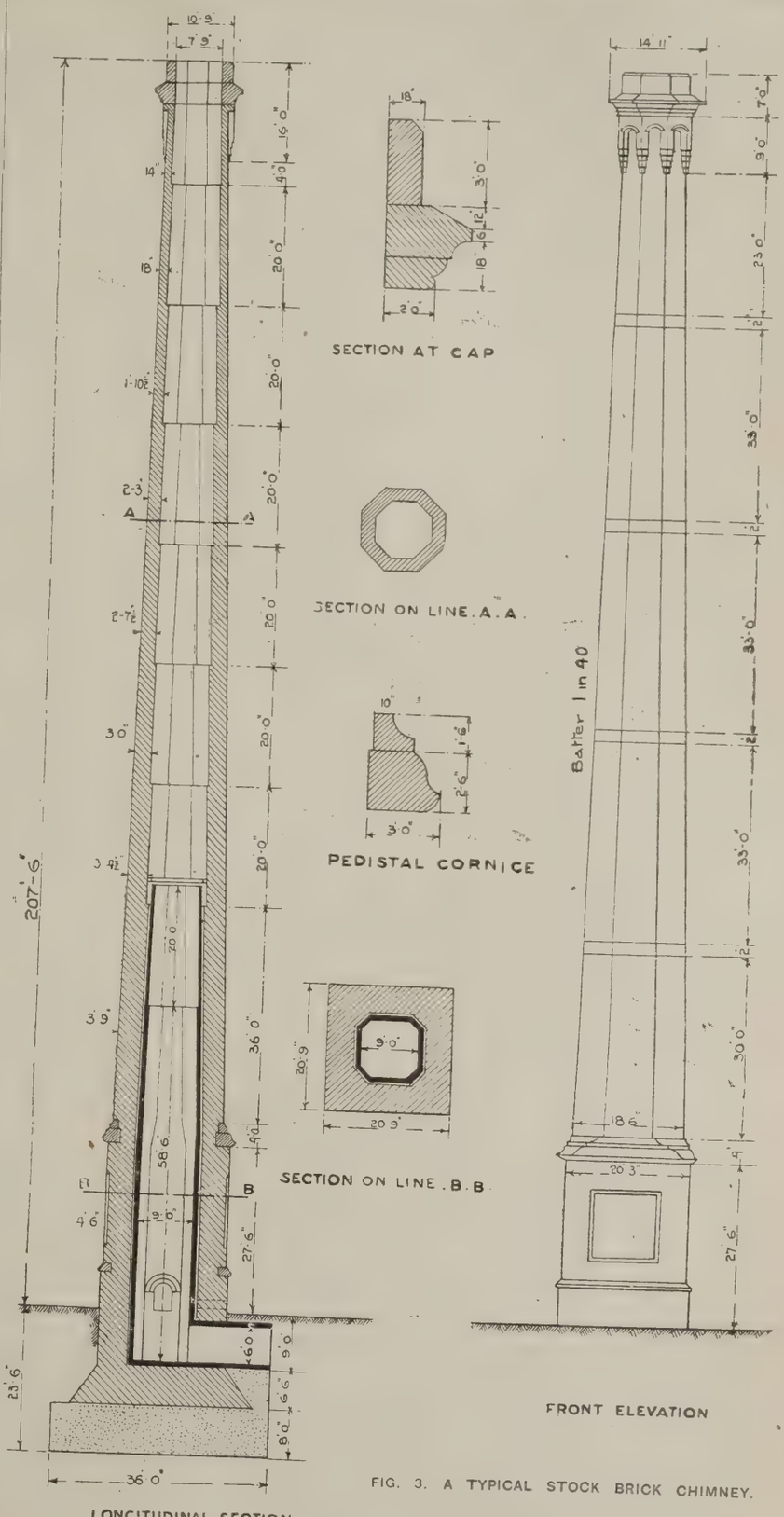


FIG. 3. A TYPICAL STOCK BRICK CHIMNEY.

conductor should be carried down into it.

In a recent paper which appeared in the Journal of the American Society of Naval Engineers, Mr. W. M. Hopkins discusses at length the modern theory of protection against lightning. An abstract of this paper, together with a portion of the specification of the apparatus for the protection of brick power plant chimneys, as issued by the United States Navy Department, appeared in THE BUILDERS' JOURNAL of September 25th, 1907, and should be referred to.

(To be continued.)

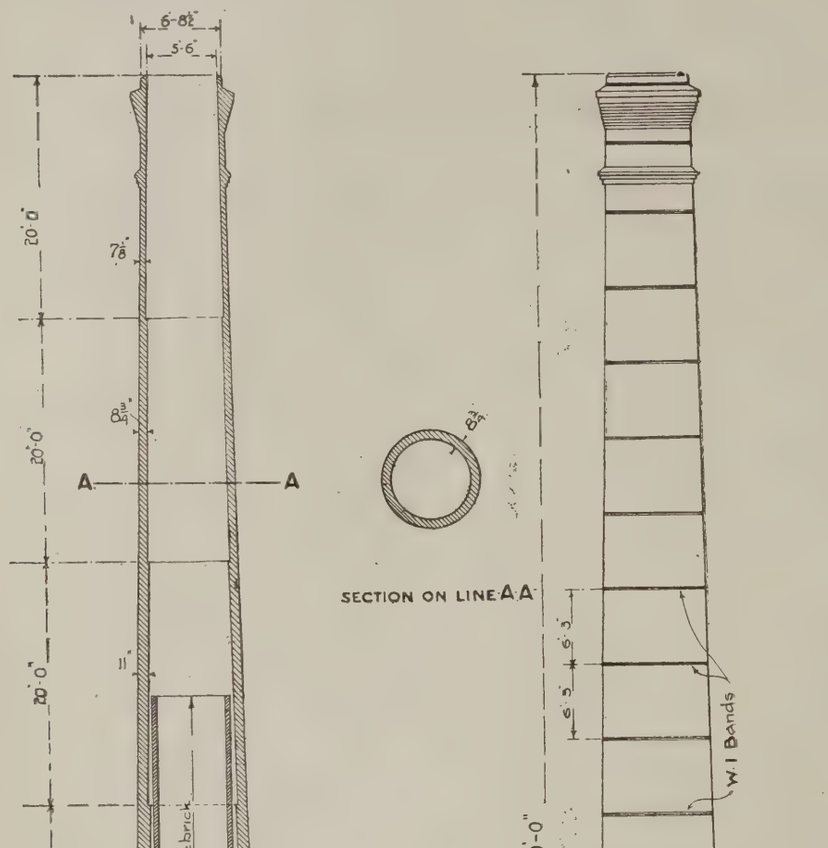


FIG. 4. CHIMNEY AT SEATON CAREW, DURHAM, ON THE ALPHONS CUSTODIS SYSTEM.

ARCHITECTURAL PERSPECTIVE.

By W. E. B.

Perspective drawing is an everyday requirement of the architectural and engineering draughtsman, yet, out of nearly 100 junior draughtsmen whom the writer interviewed in connection with applications for positions in an office where a knowledge of architectural perspective was necessary, only 10 were able to prepare a sketch or drawing in perspective accurately, or quickly enough for practical purposes.

This want of knowledge upon so useful a subject is caused chiefly by the unpractical nature of most of the books that are supposed to teach the rudimentary principles of perspective.

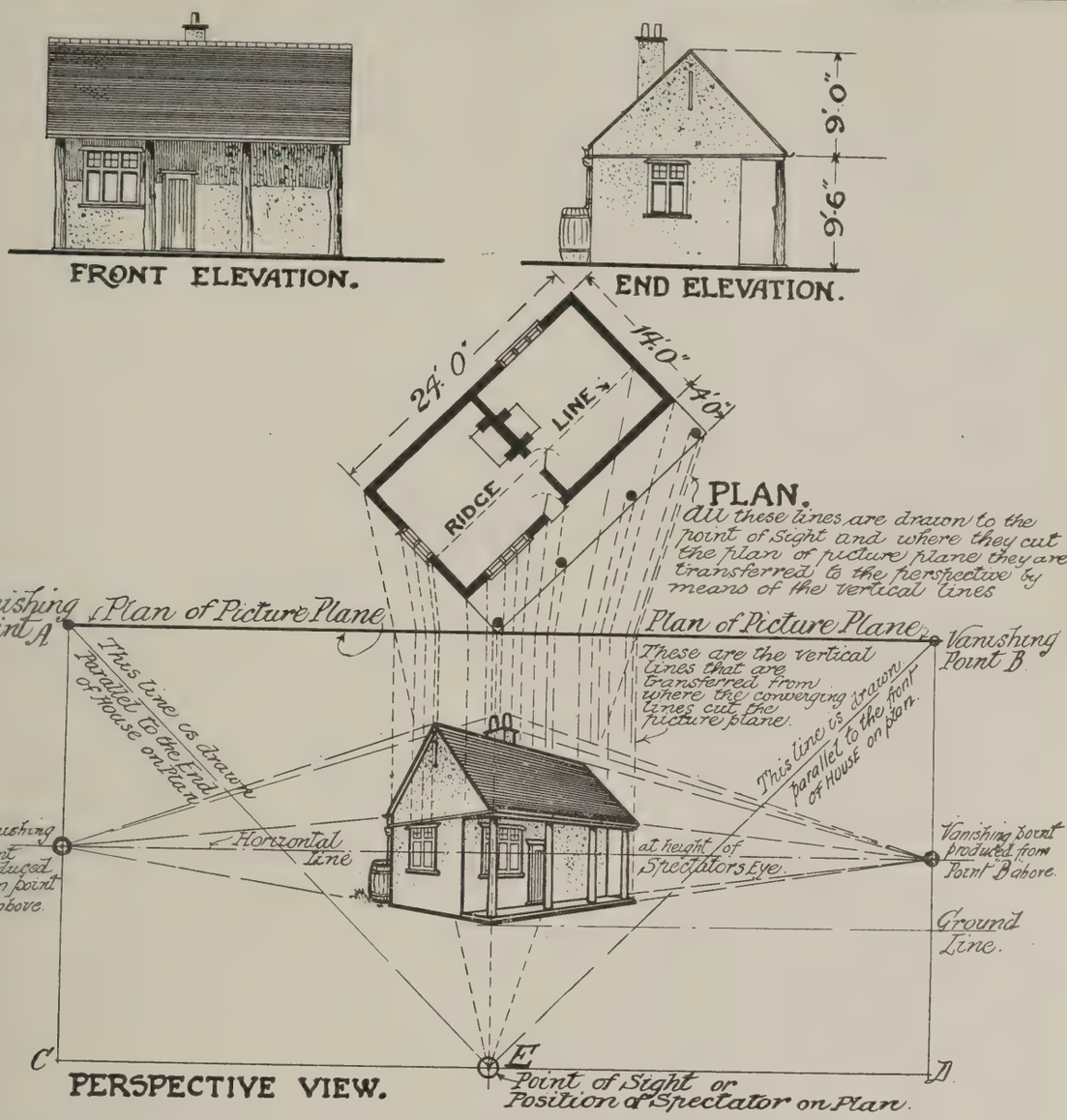
Therefore, in preparing these notes, the writer's aim has been to provide an example showing in a clear and simple manner how a building, for instance, can be readily and easily drawn in perspective after a few hours' study.

Linear perspective is based on the fact that a straight line passes from any point in an object at which the spectator is looking to the eye of the spectator, a ray of light carrying with it the impression of the point of the eye.

If there be two objects which in reality are of the same size, but one is farther away from the spectator than the other, the farther one will appear smaller—much smaller if the distance between the objects be great. This apparent difference in size is explained by the convergence of the straight lines or rays of light from every point in an object to the eye, and it is the primary principle upon which all the rules of linear perspective are based. It can, therefore, be taken as an axiom that parallel lines which recede from the spectator appear to converge, and, produced far enough, eventually appear to meet at a point.

Ruskin, in the preface of his book, "The Elements of Drawing," describes a very good method by means of which the student can readily understand perspective. He says: "The best way the student can learn it by himself is by taking a pane of glass, fixed in a frame, so that it can be set upright before the eye at the distance at which the proposed sketch is intended to be seen. Let the eye be placed at some fixed point opposite the middle of the pane of glass, but as high or as low as the student likes; then with a brush at the end of a stick, and a little body colour that will adhere to the glass, the lines of the landscape may be traced on the glass as you see them through it. When so traced they are all in true perspective. If the glass be sloped in any direction the lines are still in true perspective, only it is perspective calculated for a sloping plane, while common perspective always supposes the plane of the picture to be vertical."

Now, to make a perspective drawing of a building it is necessary to have first of all the plan, a front or back elevation and one end elevation. Having these ready, the draughtsman should proceed as follows:—First determine the point of sight, or the position of the spectator. This distance from the building should be at least the length of a diagonal line from corner to corner of the plan of the building; it is, in fact, always as well to be a few feet further away from the nearest point than this, because the further one is from the object (up to a reasonable distance, of course) the better view one gets of its general character and proportions.



Note: A.B.C.D. represent the Picture Plane in Elevation. This can be taken as the plane of Glass mentioned by Ruskin.

Having determined the point of site in elation to the plan, mark it on the drawng paper by means of an ordinary pin stuck upright into the paper and the drawing board, as indicated by E on the accompanying illustration. Now, from ill points of the building visual rays are ndicated on the drawing by converging lotted lines; before drawing these, howver, the line to indicate the plan of the picture plane should be drawn, touching he point of the building on plan which s nearest the spectator; and this picture-plane plan line is always drawn at right ngles to a straight line from the point where the spectator stands to the nearest oint of the structure on plan—in the preent case the corner of the verandah floor ear the verandah post.

Next find the vanishing points, which ndicate the extent of the spectator's vision ither to the right or left of the building. rom E draw a dotted line E, B, paral-el to the front of the house on plan and ontinue this line until it intersects the ne of the picture plane. The point of ntersection B is the vanishing point required.

From E to A also draw a line parallel to the end of the house on plan to intersect the line of the picture plane at A; the point of intersection is the left-hand vanishing point.

We are now ready to draw the converging lines to indicate the visual rays.

From the plan draw lines as shown to the point of sight E. If preferred (and I thing it makes the work clearer), these lines can be stopped where they cut the picture-plane plan line. Then from the points of intersection transfer them to the perspective drawing as shown. (If the drawing is a large one, it is better to make the points where the converging lines cut the picture-plane line on a separate slip of tracing paper, and then transfer them to their positions on the horizontal line of sight).

Having proceeded so far, it will be as well to indicate by straight lines the area of the elevation of the picture-plane A, B, C, D. Next mark in the ground line, or the lowest point of the object. Then draw another line parallel to this ground line, about 5ft. 6in. above it, according to scale. This is the horizontal line of sight. If the house is drawn to a scale of $\frac{1}{4}$in. to 1ft. on elevation, the distance of 5ft. 6in. should also be drawn to $\frac{1}{4}$in. scale. Where this horizontal line, which should be at the height of the spectator's eye, cuts the lines A, C, and B, C respectively, these points will be the positions of the vanishing points on the elevation of the picture plane, and should be marked by pins, as was previously done to indicate the point of sight, so as to facilitate the drawing of the converging lines as shown; the pins acting as pivots, as it were, for the ruler or tee-square. Of course, if the eye be raised, the horizontal line of sight will also rise with it.

It may be mentioned here that the point where the object touches the plan of the picture plane becomes the measuring line from which all heights are measured off according to scale, and then drawn to the vanishing points.

For the sake of clearness all the converging lines have not been shown on the accompanying illustration, but only sufficient for the student to follow out the idea easily: more dotted lines would only tend to make the drawing complicated.

THE NATIONAL FEDERATION OF BUILDING TRADES' EMPLOYERS.

Conference at Birmingham.

The half-yearly meeting of the National Federation of Building Trades Employers of Great Britain and Ireland was held in the Council House, Birmingham, on Wednesday last. Mr. C. H. Barnsley (president), Birmingham, occupied the chair. The Lord Mayor (Alderman H. J. Sayer) attended the opening proceedings, and gave the delegates a hearty welcome to the city.

Among those present were three Colonial representatives, namely, Mr. P. Clark (president of the Johannesburg Association), Mr. J. M. Pringle (ex-president of the Master Builders' Association of New South Wales), and Mr. A. E. Parfitt (of Bloemfontein, formerly a member of the Newport, Mon., Association), each of whom gave some account of the building trade in their particular Colonies. Mr. Clark said they had experienced some trouble in securing an alteration in their conditions of contract, but he was pleased to say the matter had now been brought to a successful issue, embodying the conditions arrived at in England about eight years ago, with the exception of a few alterations necessitated by local conditions. As a result their status had been considerably improved, and all this had been brought about purely and simply through their being combined in local associations and a national federation.

Mr. J. M. Pringle, speaking of the building trade in Australia, said they had had a troublous time, owing to the interference of a political party—the Labour party—which had existed in Australian politics for sixteen years. One of the aims of that party was to have a system of State employment so far as public works were concerned, and they gradually attained their object in New South Wales to a great extent, and also in other Colonies.

Mr. A. E. Parfitt observed that when he got to Bloemfontein in 1903 there was no building trade association, but before he had been there eight or nine months he was able to induce the builders to form an organisation. It was accordingly started, and he had the honour that day to be the president of that Association.

Half-Yearly Report.

The sixtieth half-yearly report of the Federation was presented. With regard to the building trade, no general improvemen could yet be reported, and in some parts it is stated to be worse than a year ago.

In regard to conciliation boards it was reported that during the past half-year a good many notices from the operatives in the northern centre and elsewhere had matured, and these boards had been freely made use of. A special committee had been endeavouring to induce the outstanding trades to come into the scheme, but the operative plasterers preferred to maintain the agreement between the Federation and the N.A.O P. The operative plumbers did not consider the time ripe for asking their members to reconsider this question, while the operative painters do not at present view the scheme with favour. The Amalgamated Builders' Labourers' Union had made application to be admitted to the scheme, and, subject to certain formalities, their application had been accepted. (This Union has branches in the following towns: Aston, Birmingham, Barnsley, Bradford, West Bromwich, Burton-on-Trent, Derby, Doncaster, Hull, Hinckley, Huddersfield, West Hartlepool, Kidderminster, Leicester, Leeds, Loughborough, Malvern, Middlesborough, Manchester, Newark, Newcastle-on-Tyne, Shipley, Stockton-on-Tees, Scarborough, Selby, Sunderland, Smethwick, Sheffield, Tamworth, Worcester, Wakefield, York.)

Reference was made to the case of *Smithies* v. *The N.A.O.P.*, heard by the Lord Chief Justice on May 13th and following days, the judgment in which was considered to be very unsatisfactory, because while it was in favour of Mr. Smithies, as against the two workmen who broke their contracts with him, for £25 damages and costs each, the action as against the N.A.O.P. and the local secretary was dismissed with costs. A request had been laid before the Administrative Committee that they should recommend the Federation to grant further financial support for a projected appeal. The committee, however, were of opinion that the appeal would not prove successful, and, consequently, could not see their way to make any recommendation to the general meeting for a further grant.

It was recorded that arrangements had been made by which THE BUILDERS' JOURNAL would become the official organ of the Federation.

Other matters referred to in the report were the Building Accidents' regulations (already dealt with *in extenso* in these columns), the Miners' Eight Hour Day Bill (against which the Federation had lodged a strong protest), the Sweated Industries Bill, the second International Congress relating to the industry of building and of public works, to be held in Paris from September 21st to 24th (when the Federation will be represented by their secretary); the Housing and Town Planning Bill, from which it seems probable that the building trade will reap some benefit, by reason of the considerable expenditure of public money which will be entailed in carrying out the provisions of the Bill; and the progress of organisation within the Federation, in connection with which it was reported that an earnest attempt was being made in the Manchester district to effect a much-needed reform by absorbing the separate trade associations into a general Building Trades Association.

On the motion of the President, the report was adopted.

National Form of Contract.

Mr. Macfarlane moved the following recommendation of the Administrative Committee: "The conditions of contract issued by the R.I.B.A., and approved of by this Federation, having now been in continuous use since July, 1903, during which time they have been found to give general satisfaction, the Council be, and are, hereby instructed to approach the R.I.B.A. with the object of obtaining their support in a united effort to extend the use of these conditions to districts that have not already adopted them." He said it was a very important thing for the trade that they should have a uniform form of contract, and that it should be a just contract. As they knew, some had already adopted the new form, but others stuck to the old style. What they wanted throughout the country was to have the contract acknowledged as a fair and equitable form. In various parts of the country it was not acknowledged, and they wished to bring it before the Royal Institute of British Architects, so that they might talk about it and urge their fellow members to adopt it. It was a fair thing to builders, and they should leave no stone unturned until it became universal.

The President suggested the addition of the words after "R.I.B.A." in the resolution, "with the co-operation of the Institute of Builders, should they think it desirable."

Mr. Macfarlane accepted the alteration and Mr. Hope seconded the motion. He said that, seeing that the Institute of Builders were the pioneers in the matter it would not be derogatory to the Federation to call them into consultation.

Mr. Biggin moved, as a supplementary resolution, "That the Administrative Committee approach the Government Departments and the various Association and different local authorities in order to obtain recognition of the national form of contract, and that the Federation and Local Associations be recommended to follow up any action of the National." He said this National form was being adopted very slowly throughout the country. The resolution which had already been passed should give the movement a little filli In the provinces they found very gre difficulty in getting a satisfactory agre ment with the local bodies and wi Government Departments. The resoluti was intended to push on the National for of contract, and to get all local governi bodies and the various Government D partments to adopt it.

Mr. Thompson seconded the motio He remarked that almost every one them, at one time or another, had do work under local authorities where th thought many of the forms or contra were very onerous, and contained claus which were derogatory to members of t trade. Many of such contracts had be drawn up by solicitors who were anythi but in sympathy with the builders. T time had come now when they ought push the matter, and try to induce ev local authority to adopt the appro form. Recently it was put before Local Government Board, and some the officials there, in reply to a quest as to whether it might be adopted b local body, said they saw no objecti and commended it very highly.

The motion was passed.

Mr. Wright said that in order to furt the policy of endeavouring to extend form of contract as widely as possible wished to move a resolution which thought would go a long way in t direction: "That this meeting requ the Administrative Committee to cons the desirability of approaching the o societies of architects with the view of ting them to adopt the National form contract." He said the form of cont had been drawn and arranged by Royal Institute of British Architects conjunction with the builders. T were, he believed, two other societie architects that they ought to appro and the resolution requested the c mittee to approach them with a vie getting them to adopt the form.

Mr. Blackburn seconded the motion

Mr. Cook pointed out that there wa Institute of Irish Architects, and should be glad if they could be incl in the motion, so that the Federa might open communications with the

Mr. Wright said the resolution w enable them to include the Irish or other Institute.

Mr. Hope thought that in whatever did he doubted whether they woul

wisely advised in acting without the British Institute.

The President said that the Administrative Committee would look at the matter from the point of view of the suggestion of Mr. Hope.

Mr. Bowen supported the proposition, but said he should like to go a little further. He thought it would be well if the forms of contract could be sent to city authorities. He should like to see them go to town clerks, city clerks, county councils, clerks of the peace, and such like people. It was a well-known fact that engineers to city and county authorities had their own ideas, and they were pressing them forward, and not going in for broad lines such as were adopted throughout the country by the building trade and architects. He was alarmed the other day, for instance, to learn that even in the advanced city of Birmingham there were contracts being signed without an arbitration clause. If for no other reason than that, he thought the resolution was a good one.

The President agreed that the resolution was valuable, and it was carried.

The action of the Administrative Committee in entering into an agreement by which THE BUILDERS' JOURNAL became the official organ of the Federation was approved, and a resolution was passed earnestly requesting the respective Federations and Local Associations to do their best to make the agreement a complete success for all concerned.

Parliamentary Action.

Mr. Hope explained that a letter had been received from the Earl of Wemyss, requesting the consideration of the following resolution, which it was proposed to move in the House of Lords:—"That central societies for the advancement of trade, commerce, industry, law, science and art be invited to name three Peers each, who may be willing to represent their interests and speak and act in their name, and that the names of such Peers be entered in the Journals of the House. Further, that the selection of the societies to whom this privilege is to be accorded be left to the Lord Chancellor and Lord Halsbury, and to Lords Crewe and Lansdowne, the respective Leaders of the Government and Opposition." Mr. Hope went on to say that they were one of the few trade organisations that had not a member in the House of Commons to voice their views. The trade unionists had their own members, whom they paid and maintained, and he knew an association that was not a trade union which had not a member of its own in the House but it had made an arrangement whereby it was able to call on a member to voice their opinion as occasion arose. They had a member on the Government side, one on the Opposition side, and one in the Labour group. The suggestion of Earl Wemyss was somewhat similar to that working arrangement, and it was proposed that there should be peers who would be at the disposal of the Federation. The peers who would be selected would be in the House in case of necessity, and any representation would be sympathetically received and intelligently placed before the House, seeing that the members would be made conversant with the particular question by the Federation. The matter had been before the Council, and they were inclined at first to leave it, but as there would be nothing to the disadvantage of the Federation, but everything to its advantage, it had been decided to submit the resolution to the meeting.

Mr. Davidson seconded the proposition. He said it was highly desirable that there should be someone in the House of Commons who could give an intelligent interpretation of the wishes and desires of the Federation, or if any resolution were introduced which it was considered should be seriously amended, they could bring sound and intelligent reasons to bear, and could ask with confidence for the support of other members.

The resolution was passed.

On the proposition of Mr. Storr, seconded by Mr. Matthews, it was decided to hold the next meeting in London.

The Federation and the N.A.O.P.

Considerable discussion followed on a proposition by Mr. J. B. Johnson, of Liverpool, in reference to the agreement between the Federation and the National Association of Operative Plasterers in regard to disputes. Mr. Johnson said this agreement had been more or less a source of contention, and, in his opinion, the time had come when the agreement should be revised. He moved the appointment, therefore, of a special committee to deal with the question.

Subsequently, however, he accepted the terms of an amendment proposed by the president (Mr. Barnsley), to the effect that the Administrative Committee be requested to consider the desirability of amending or ending the N.A.O.P. agreement, and confer with the National Association of Master Plasterers thereon, and report to the annual meeting, and that one plasterers' representative from each Centre be invited to sit for that purpose.

This proposal was adopted.

The Conciliation Scheme.

Mr. Storr moved "That the consideration of the question of admitting plasterers' labourers to the conciliation scheme be deferred to the next half-yearly meeting, and that meanwhile this question be referred to the Federations for consideration and report." He said application had been made by the builders' labourers in certain districts to be parties to the conciliation scheme. The Conciliation Board was unanimously of opinion that where the builders' labourers were recognised by the employers, and they signed the rules, if they desired to become parties to the conciliation scheme they should be allowed. When the Conciliation Boards were first established, it was only intended that they should apply to certain trades unions, such as the bricklayers, masons, carpenters and joiners, and painters and plumbers. The question of labourers was never under consideration. If the labourers were to be admitted into the scheme, it would have to be approved not only by the National Association, but by the various centres forming the National Association. The resolution he moved was to have this dealt with in a proper form. The matter was one which ought to be conceded, but there were districts where the builders' labourers had never been recognised and had no working rules with the employers.

Mr. Matthews seconded the proposition, which was agreed to.

Building Operations and Engineering Works' Bill.

Mr. Macfarlane said that, as many members would know, a Bill had been presented to Parliament by the Home Secretary for the purpose of widening the scope of the present Factory Act. As they would remember, the Home Secretary appointed a committee to suggest regulations for building operations. The Bill was to empower the Home Secretary to include building operations as a dangerous trade. At present all building operations were not under the Factory Act as a dangerous trade, only those concerned with buildings over 30 ft. high, and where machinery was used. The new Bill would empower the Home Secretary to enforce new regulations, such as had been suggested by the Departmental Committee, to all building operations—to buildings below 30 ft., and where no machinery was used. It also empowered the Home Secretary to compel builders to affix registers on new buildings and, where the buildings were too small, to fix them in the office of the builder, and certain reports required by the new regulations had to be entered. At the present time the factory inspectors administered the Factory Act, but under the new Bill so far as building and engineering operations were concerned, the onus of administration was put on the Town Council and County Council inspectors. The Factory inspectors were to have the right of stepping in should the Town Council and the County Council inspectors fail, as they thought, to administer regulations as they should do. At the present time the factory inspector had the almost entire administration of the Act. The new Bill introduced the element of the Town and County Council inspector. It would be well for members to keep their eyes and ears open as to what was going on, so that when it came before Parliament they might use their influence with members of Parliament or take other steps to safeguard their interests. He proposed that the matter be left in the hands of the Administrative Committee.

Mr. Blackburn seconded the motion, and it was passed.

A Builders' Foremen's Association.

The following resolution was passed:—"That the National Federation be requested to consider the advisability of forming an Association of Builders' Foremen whose members would be quite independent of trade unions."

This concluded the business of the meeting.

In the evening the President of the Birmingham Master Builders' Association (Mr. F. G. Whittall) gave a reception at the Botanical Gardens, Edgbaston, where supper was served in a marquee on the lawn.

THE LATE SIR JOHN EVANS, the well-known antiquary, who died on May 31st last, aged 84, left estate which has been proved at £147,347 gross.

THIS YEAR'S GRAND PRIX DE ROME has been won by M. Louis Boussois, a pupil of M. Pascal. The subject was an institution of medicine and pharmacy.

AT THE FRANCO-BRITISH EXHIBITION, Messrs. Chance Brothers and Co., Ltd., of Lighthouse Works, near Birmingham, show an exhibit of optical apparatus for lighthouses, as well as ship lights, the "Harcourt" 10-candle standard Pentane lamp (as adopted by the Metropolitan Gas Referees as their standard for testing candle-powers), and a sunshine recorder. The firm's works are equipped with every possible mechanical appliance for the completion of lighthouses, from the iron tower to the incandescent oil burner, and include special plant for the manufacture, grinding and polishing of the optical glass required.

R.I.B.A. MIDSUMMER EXAMINATIONS.

Pass List.

The following are the results of the Midsummer examinations of the Royal Institute of British Architects:—

Preliminary Examination.

The Preliminary Examination, qualifying for registration as Probationer R.I.B.A., was held in London and the undermentioned provincial centres on June 15th and 16th. Of the 188 candidates admitted 21 claims for exemption from sitting for the examination were allowed. The remaining 107 candidates were examined, with the following results:—

District	Number Examined	Passed	Relegated
London	79	60	19
Birmingham	6	5	1
Bristol	13	9	4
Cardiff	9	6	3
Glasgow	2	1	1
Leeds	14	12	8
Manchester	33	25	8
Newcastle	11	10	1
	167	128	39

The passed and exempted candidates—numbering altogether 149—who have been registered as Probationers, are as follows:—

C. D. Allderidge (Hull).
R. C. Arnold (Ilford).
G. O. Barrass (London, S.E.).
H. A. Bastable (Southport).
F. H. T. Bell (Burton-upon-Trent).
J. C. Beswarick (Cambridge).
H. J. Bionstinge (London, W.).
H. H. Bond (Plymouth).
E. F. Bothwell (Forest Gate).
C. F. Bowhill (Thornley, co. Durham).
J. V. Bowring (Eastwood).
W. W. Brindle (Beckermet).
K. S. Broad (London, N.W.).
M. C. Broad (London N.W.).
W. Broughton (Groby, Leicester).
M. Brown (London, W.C.).
F. A. Buckley (Llandaff).
C. H. Buckley (Boscombe).
A. S. Burnett (Shawford Down).
J. J. D. Burt (Dartmouth).
R. O. Caldwell (Penzance).
C. B. Chadwick (Dewsbury).
R. B. A. Chambers (London, N.W.).
F. J. Chant (Gillingham).
G. E. Charlewood (Newcastle-on-Tyne).
H. R. Chasseaud (Alexandria, Egypt).
R. A. Cheers (Twickenham).
S. W. Chester (Nelson).
J. Clack (London, S.W.).
J. A. Clarke (Manchester).
F. Clemes (Weston-super-Mare).
A. R. Clucas (Douglas).
E. J. Connock (Yeovil).
G. A. Cosser, (Fareham).
B. Crabtree (Todmorden).
G. L. Crocker (Swansea).
B. Dangerfield (Brentford).
T. L. Daniel (Ilford).
P. F. Dixon (Ilkley).
T. A. Dryden (Landore).
R. A. Duncan (Bristol).
J. M. Eaton (London, W.C.).
T. G. Ellis (London, W.).
E. Fincham (Colchester).
I. C. Fowell (Beccles).
C. R. Fowler (London, N.).
C. P. Garrard (Ipswich).
B. P. Gaymer (London, W.C.).
G. H. Gibbs (Bristol).
H. B. S. Gibbs (Sheffield).
W. L. Gissing (Wakefield).
R. H. Goodsall (Whitstable).
G. H. Gray (North Shields).
F. N. Groves (Newport, Mon.).
H. V. de C. Hague (Blackpool).
P. E. Hale (London, N.E.).
E. B. Hamilton (Haslingden).
P. W. Hannah (Nottingham).
C. K. Harper (Woodford Green).
F. G. Hawkins (London, N.W.).
B. R. Hebblethwaite (Beckenham).
H. J. Higgs (Goring).
C. J. Higson (Newcastle, Staffs.).
C. B. Hill (Todmorden).
G. W. Hill (Leeds).
G. Hines (Newcastle-on-Tyne).
W. Holden (Bishop Auckland).
F. W. J. Howell (Porthcawl).
V. J. Hull (Garstang).
F. L. Johnson (London, N.W.).
H. D. Kidd (London, N.).
A. J. Knott (Weston-super-Mare).
E. C. Lavender (Walsall).
H. B. Leighton (Sheffield).
W. J. Lingley (Manchester).
R. Lowry (London, W.).
W. F. Lucas (Torquay)
A. M. Luty, Elland, Yorkshire).
R. Lynn (Belfast).
M. Y. Maclagan (Edinburgh).
R. H. Maddock (Belmont).
B. J. S. McFie (Oxford).
J. E. Marchinton (Sheffield).
T. Maxwell (Manchester).
S. D. Meadows (Leicester).
E. Meredith (Newbridge-on-Wye).
E. R. Midgley (Leeds).
R. N. S. Mills (Urmston).
W. G. Mooney (London, E.C.).
J. H. Morrison (Gloucester).
W. Mossom (North Shields).
A. H. Mottram (London, N.W.).
J. J. Nathanielsz (Cudworth).
H. B. Neely (Bromley).
A. C. Newman (London, W.).
F. W. Nicholson (Liverpool).
W. Noble (Barnsley).
J. H. Odom (Sheffield).
R.W. Parker (Gateshead).
F. H. Pentelow (Manchester).
H. A. Petch (Scarborough).
A. R. D. Pictor (Bruton).
H. Pollitt (Manchester).
E. W. Prance (Plymouth).
P. A. Punter (Bridgend).
R. A. Richmond (Redhill).
O. M. Roberts (Carnarvon).
N. S. Robinson (Bedford).
C. E. F. Roe (London, E.).
C. W. Rogers (London, S.W.).
A. Rome (Liverpool).
W. E. Rothwell (Swinton).
L. Rowell (Newton Abbot).
C. Rowntree (London, W.).
J. W. Rudd (Manchester).
H. Sawyer (Kenley).
L. P. Sedgwick, Chiswick).
W. L. Semple (Newcastle-on-Tyne).
F. Shepherd (Bridgwater).
E. R. Silver (Twickenham).
I. L. Simpson (Blackburn).
H. G. Smith (Monkseaton).
T. H. Smith (Bolton).
A. R. Sortwell (London, W.).
G. W. Spurlock (London, E.C.).
G. P. Stainsby (Stockton-on-Tees).
C. E. Steel (London, W.).
F. J. Stevens (London, E.).
R. C. Stevenson (London, S.W.).
W. R. Stransom (Reading).
F. Sutcliffe (Colwyn Bay).
P. E. Sweatman (Gerrard's Cross).
W. E. W. Terrell (Kendal).
J. C. P. Toothill (Sheffield).
H. F. Trew (Gloucester).
C. A. Walker (Preston).
T. J. Waller (Durham).
F. Warwick (London, N.W.).
G. Waterhouse (Kendal).
D. H. Webber (Birmingham).
C. W. West (Ashford).
L. E. Williams (Purley).
A. J. Wood (Leicester).
P. A. Woolams (Walsall).
R. Woolley (Wembley).
C. Wright (London, W.).
J. A. Wright (Bushey Heath).

Intermediate Examination.

The Intermediate Examination, qualifying for registraton as Student R.I.B.A., was held in London and at the undermentioned provincial centres on June 15th, 16th, 18th, and 19th; 126 candidates were examined, with the following results:—

District	Number Examined	Passed	Relegated
London	105	47	58
Bristol	15	9	6
Glasgow	4	3	1
Leeds	14	7	7
Manchester	22	8	14
Newcastle	16	9	7
	176	83	93

The successful candidates are as follows, being given in order of merit, as placed by the Board of Examiners:

H. S. Besant (London, N.).
D. W. Day (Leicester).
H. Cherrington (Tipton).
W. Milburn, jun. (Sunderland).
T. A. Swan (Edinburgh).
N. B. Robertson (Leicester).
F. E. Howard (Oxford).
J. Page (London, S.W.).
F. R. Cooper (Leicester).
C. D. Carus-Wilson (Sevenoaks).
L. H. Bucknell (London, N.W.).
G. Vey (London, W.).
A. Lakeman (London, N.W.).
S. G. Livock (London, N.).
C. M. Swannell (London, N.).
F. Dowdeswell (London, N.).
D. Harvey (Hull).
R. Stokoe (Sunderland).
N. Wigzell (Sunderland).
A. Booth (Barnsley).
R. Cromie (London, (S.W.).
S. Riches (London, S.W.).
T. C. Howitt (London, W.C.).
E. J. Sutcliffe (Hebden Bridge).
H. R. Martin (London, S.E.).
W. V. Coates (Grimsby).
J. A. Parker (Colne).
F. Suddards (Bradford).
G. Stanley (Trowbridge).
S. Grabham (Sunderland).
S. P. Schooling (Enfield).
J. R. Maugham (Newcastle-on-Tyne).
E. W. Gisby (Stafford).
P. O. Platts (Wakefield).
W. A. Orton (London, S.E.).
J. Moodie (Goodmayes).
H. Goldstraw (Hanley).
P. N. Logan (Bristol).
O. F. Davidson (Newcastle-on-Tyne).
E. Roughley (St. Helen's).
W. C. Watson (West Hartlepool).
T. B. Bansor (Fen Ditton).
R. A. Barker (Wimbledon).
H. J. Benians (Gouldhurst).
W. Beswick (Chester).
A. C. Blackmore (Cottingham).
H. J. Blenkinsopp (Sheffield).
H. E. Bunce (London, N.E.).
W. H. Burgum (Birmingham).
C. F. Butt (London, W.).
C. H. Calvert (Nottingham).
W. D. Cathcart (London, W.).
K. A. Cockrill (Great Yarmouth).
C. Cooke (Westcliff-on-Sea).
G. A. Cope (London, W.C.).
L. A. Culliford (Acton).
A. M. Durrant (Hemel Hempstead).
B. A. Dyer (Hereford).
G. S. Ford (Nottingham).
J. G. Gibbons (Birmingham).
T. C. E. Green (London, W.).
C. O. Gruffydd (Wellingborough).
H. W. Hall (Liverpool).
H. Harper (Birmingham).
J. C. Harvey (Northampton).
M. M. C. Jones (Glasgow).
P. C. Jones (Leicester).
G. F. Jotham (Cardiff).
M. Leybourne (South Shields).
L. S. Littlejohn (Eccles).
W. Lucas (London, W.).
F. W. Marshall (Solihull).
F. N. D. Masters (Doncaster).
E. E. Morgan (London, N.).
W. H. Pearson (Reading).
V. H. Peart (Gorleston-on-Sea).
E. J. Polglase (Bristol).
T. A. Skinner (Bristol).
F. W. Smith (Newark-on-Trent).
W. B. Stedman (Margate).
A. G. Taylor (Kingston-on-Thames).
L. T. Weaser (Southend-on-Sea).
W. E. Willis (Ystrad).

Exemptions from the Intermediate Examination.

The following candidates who had attended the architectural courses and obtained first-class certificates at the Universities mentioned against their names, were granted exemption from sitting for the Intermediate Examination, and have been registered as Students R.I.B.A.:—

A. F. Evans (Prescot). (School of Architecture, Liverpool University).
E. G. Newnum (London, N.W.). (School of Architecture, University College, London).
H. P. Smith (Birmingham). (School of Architecture, University College, London).
H. G. Taylor (London, S.W.). (School of Architecture, Liverpool University).
C. Wright (London, W.). (School of Architecture, Liverpool University).

The Final and Special Examination.

The final and special examination, qualifying for candidature as Associate R.I.B.A., was held in London from June 25th to July 3rd. Of the 116 candidates examined, 36 passed, and the remaining 80 were relegated to the studies. The names and addresses of the successful candidates are as follows:—

W. Baird (London, S.W.).
C. G. Boutcher (London, S.E.).
F. H. Bromhead (Baldock).
S. Burgoine (London, S.E.).
A. C. Burlingham (Evesham).
J. S. Cable (London, S.W.).
C. W. Clark (London, S.W.).
W. B. Colthurst (Taunton).
A. Crampton (Southport).
D. W. Ditchburn (Leytonstone).
R. A. Dixon (Birmingham).
D. Y. Dyke (Bristol).
H. V. M. Emerson (London, S.W.).
W. M. Epps (Bexley Heath).
G. R. Farrow (London, S.W.).
C. Forsyth (Glasgow).
J. Grieve (Bradford).
H. J. Gravenor (London, S.E.).
E. R. Green (London, N.W.).
H. G. Holt (London, E.C.).
H. G. Jeffries (London S.W.).
J. McN. Jeffrey (London W.C.).
F. W. Langman (London, W.).
E. Loveluck (Bridgend).
F. Meakin (London, S.E.).
D. Milne (London, W.C.).
W. H. Mitchell (Sale).
F. J. Osborne (Birmingham).
J. T. Penfold (London W.).
R. A. H. Phipp (Manchester).
J. H. Sayner (London N.W.).
J. M. Scott (London S.W.).
A. Smithers (London S.E.).
A. W. Stelfox (Belfast).
S. P. Taylor (Letchworth
J. R. Truelove (London S.W.).

The Failures.

The following table shows the number of failures among the eighty relegated candidates in each division of the Final Examination:—

I. Design	52
II. Mouldings and Ornaments	68
III. Building Materials	27
IV. Principles of Hygiene	25
V. Specifications	54
VI. Construction, Foundations, etc.	40
VII. Construction, iron and steel, etc.	20

Colonial Examination.

The following candidate passed the Colonial Examination held in Johannesburg last year:—

E. H. Woodcock (Cradock, Cape Colony).

ALTERATIONS IN EXAMINATIONS.

The Intermediate.

The following subjects will be omitted from this Examination in future:—

1. Classic Ornament.

2. The characteristic mouldings and ornaments of each period of English architecture from A.D. 1000 to 1550, with their application.

3. The Orders of Greek and Roman architecture: their origin, development and application.

4. Outlines of the history of Mediæval and Renaissance architecture in Europe.

Instead of the above, two papers will be set on (1) the General History of Architecture; and (2) the Purpose of Architectural Features in Relation to the Buildings in which they occur.

Answers to be accompanied by explanatory sketches.

The Final and Special.

The following subjects will be omitted from this examination in future:—

Subject II.—The principal styles of architecture: their features, mouldings, and ornament. (i) The characteristic mouldings, etc., of the special style selected by the student; (ii) The characteristic mouldings, etc., of the principal styles of architecture.

Instead of the above the following papers will be set:—

Morning.—The Principles of Architecture: their Theory and Application. Illustrated by drawings.

Afternoon.—A written thesis. Illustrated by sketches.

The first Examinations under these new conditions will be held in June 1909.

The above changes are the outcome of the deliberations of a Joint Committee of the Board of Examiners and the Board of Architectural Education, and their object, as stated in the recent annual report of the latter body, is to simplify the examinations and bring them into line with the Board's syllabus of training published in the "Kalendar." It had been felt for some time that the headings of the subjects on the Art side of the examinations were too precise, and rather tended to foster cramming, which the Board of Examiners are anxious to avoid. The examiners have felt themselves precluded from going beyond the exact limits of the headings of the subjects, and the candidates have been handicapped by the narrow scope of the questions. It it not intended to make the examinations harder; but the desire of the Board of Architectural Education and the Board of Examiners is to give the candidates fuller opportunities of showing their knowledge and the results of their study than has hitherto been possible.

THE ARTIFICIAL LIGHTING OF THE ROMAN HOUSE.

The palatial luxury of many of the innumerable villas with which Italy was once crowded may be fairly well pictured in imagination from the incidental allusions to these structures which appear in the works of the ancient poets, and from the special descriptions of the domestic architecture of the period contained in the writings of the historians of ancient Rome. Indeed, the old literature of the Eternal City affords sufficient indication of the architectural magnificence of the stately home of a Roman patrician to dazzle and astonish the present more prosaic and utilitarian age. But, enshrined as they were, amidst charming surroundings, of which statuary, paintings, mosaics and fountains formed a very customary part, the living-rooms of a Roman villa could have been, on occasions, anything but comfortable, owing not only to the inadequate arrangements provided for the diffusion of artificial light, but to the fact that no means was then known of preventing the smoking of the lamps which formed the illuminating medium.

In the earliest times the rooms were lighted by means of pans filled with chips of resinous wood tied together with bands of bast, but afterwards light was supplied by torches, the cases of which, formed of metal or clay, were filled with resinous substances. Dry wicks of linen, or oakum, dipped in wax or tallow, were also much used for artificial lighting in the early days of Roman civilisation.

The invention of oil-lamps caused a revolution in the hitherto accepted methods of lighting, and soon after their general introduction they began to be constructed and ornamented in an almost endless variety of ways. The lamp consisted of two parts (1) a saucer, or receptacle for the oil—round, oval, or angular in shape—which was often covered with a lid having a perforation for pouring in the oil, and (2) the wick holder, or rostrum, which took the form of a projecting socket. Sometimes a second hole was pierced in the surface of the oil vessel through which the wick could be pushed by means of a needle. Portable lamps were constructed with handles, and those that were intended to be suspended were provided with two or more ears to which light chains could be attached. Lamps made to contain any number of wicks from one to twenty were thus either hung from the roof or set upon a lofty stand.

At first made only of clay, the generality of their use caused the manufacture of lamps to become an important feature of the Italian pottery trade, but afterwards lamps of bronze and other metals, alabaster, and, still later, of glass, became common.

Decoration of Roman Lamps.

Many of the Roman lamps were profusely decorated on their surfaces and handles with ornamental reliefs and modellings of varied character, and were veritable works of art, bronze lamps in particular being especially distinguished by the artistic nature of their design. Suitable implements, often fastened by a chain to the lamp handle, were provided for trimming the wick, and small vials for filling the lamp with oil were sometimes also attached to the lamp itself.

The word *candelabrum* was originally applied to a lamp furnished with a metal point, on which a taper *candela* was fixed; but after the use of lamps had become general, the term was used to designate the wooden or metal support composed of a base, a tall thin shaft and a disc, on which the lamp was placed. Sometimes the *candelabrum* was fitted with a simple apparatus for raising or lowering the lamp, in which case its shaft was hollowed and fitted with a movable rod supporting the arms or disc, which could be fixed, by means of bolts, at any requisite height.

Like the lamps themselves, the *candelabra* were made in diverse shapes and ornamented in a number of different ways, and many of the designs were of extraordinary grace and beauty. In addition to the small portable ones in general use in Roman houses, which were usually either set on a stand or placed upon the floor, many of the temples and palaces were adorned with massively constructed *candelabra* which, shaped like columns and profusely enriched, were placed upon elaborately-decorated pedestals.

The *lampadarium* (lamp-bearer) was merely another form of the *candelabrum*. It had no disc, but it was provided with arms or branches corresponding with the number of lamps it was intended to carry. Until the introduction of glass, lanterns made of transparent material, such as oiled linen, talc and horn, were in very general use.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters

Studentships and Prizes.

ALPHA (Wilts) writes: "Where can I obtain particulars of prizes and studentships for 1908 of the Royal Academy, the Architectural Association, and the Society of Architects?"

Apply to the secretaries of the societies in question at the following addresses:—Royal Academy, Burlington House, Piccadilly, W.; Architectural Association, 18, Tufton Street, Westminster; Society of Architects, Staple Inn Buildings, Holborn.

Openings for Architectural Practice.

MERIDIAN writes:—"Can you give me any idea of the districts in which building of any extent is going on, and what prospect there is of work (architectural) being available?"

It is quite impossible to give any definite reply to your enquiry. The building trade is very much depressed everywhere, though naturally more is going on in the big centres than elsewhere; but as regards participating as an architect in what work is projected or in progress, that must necessarily be an individual matter for yourself, and dependent on your own ability, resources, and influence.

Attaching Slates to Steel Purlins.

MOTHERWELL.—A. B. writes: "I should be glad to know how to attach slates directly to steel purlins, and other forms of steel framing."

You will see an illustration of this on p 84 of our issue for last week which will probably give you the details you require.

Renovation and Preservation of Stonework

LONDON.—E. G. S. writes: "Can you tell me the best method of renovating decayed stonework where it is necessary to retain as much of the old work as possible: also, what is the best silicate solution to use to prevent further decay?"

The best treatment for decayed stonework is with baryta-water, as used by Professor Church on the Chapter-house of Westminster Abbey. You will find details of it on p. 246 of our issue for May 3rd, 1905, and in our issues for February 3rd and 17th, 1904. There are also several patent preservative fluids on the market.

WALKER COTTAGE EXHIBITION AWARDS.

The awards in the North of England Cottage Exhibition at Walker, Newcastle-on-Tyne are as follows:—

Class A.—Cottages costing £195. Gold medal, Nos. 71 and 72: Architect, A. T. Martindale; builder, T. V. Martindale. Silver medal, Nos. 3 and 4: Architect, E. Cratney; builder, Jas. McHarg. Bronze medal, Nos. 1 and 2: Architect, Jos. Potts and Sons; builder, W. D. Allison.

Class B.—Cottages costing £235. Gold medal, Nos. 79 and 80: Architects, White and Stephenson; builder, T. Clements. Silver medal, Nos. 7 and 8: Architect, E. Cratney; builder, Jas. McHarg. Bronze medal, Nos. 57 and 58: Architect, C. A. Clayton-Greene; builders, J. W. Braithwaite and Co.

Class C.—Cottages costing £260. Gold medal, Nos. 25 and 26: Architect, E. Cratney; builder, Jas. McHarg. Silver

medal, Nos. 39 and 40: Architects, Barnes and Burton; builder, E. M. Tweddle. Bronze medal, Nos. 23 and 24: Architect, E. Cratney; builder, Jas. McHarg.

Class D.—Cottages costing £350. Gold medal, Nos. 45 and 46: Architects, T. E. Davidson and Son; builders, J. W. Braithwaite and Co. Silver medal, Nos. 47 and 48: Architect, E. Cratney; builder, Jas McHarg. Bronze medal, Nos. 35 and 36: Architect, Karl B. Spurgin; builder, John Milne.

All the cottages are built in pairs and the prices stated above include the architects' fees.

Notes and News.

A MEMORIAL TABLET TO GENERAL WOLFE has been placed on the house in Bath—No. 5, Trim Street—where the great soldier once lived.

* * *

A COLONY OF ARTISANS' DWELLINGS is to be established on Garden City lines by the Corporation of Bury, the houses to be let at rentals varying from 3s. 6d. to 5s. 6d. per week.

* * *

THE A.A EXCURSION.—This year the annual excursion of the Architectural Association will take place in Holland, with Bruges as the centre. The party leaves on Saturday next, August 8th, and returns on August 15th.

* * *

LONDON COUNTY HALL.—The large water-colour perspective of the revised design for the London County Hall which we reproduced in our issue for July 22nd is by Mr. Harold Wyllie, not Mr. C. W. Wyllie, as stated.

* * *

THE ART GALLERIES AT THE WHITWORTH INSTITUTE, Manchester, were formally opened on Wednesday last by Sir Charles Holroyd, Director of the National Gallery. The architects of the new buildings, which have cost £50,000, are Messrs. Beaumont and Son.

* * *

MESSRS. RICHARD CRITTALL AND CO. have secured the contract for the heating, ventilating and hot-water services at the Cavalry Club, under the supervision of the architects, Messrs. Mewès and Davis. As this is an extension and alteration to existing buildings, the "Cable" system of heating is being utilised as the most adaptable.

* * *

MESSRS. H. H. MARTYN AND CO., LTD., the well-known firm of architectural sculptors and carvers, have just moved into new and extensive premises known as "Sunningend," Lansdown, Cheltenham. These new works are in direct communication with the main railway lines, and, standing as they do on some five acres of land, will enable the company to bring their various branches together, and afford them splendid facilities for dealing with their rapidly developing business.

Our Plate.

Palazzo Nobili, Montepulciano, Italy.

This palace by Antonio da Sangallo the Elder is built of a warm brown stone and roofed with the usual red tiles. Its position in the corner of the Piazza Vittoria Emanuele, which is surrounded by the cathedral, the town hall, and several sumptuous mansions, makes the reasonableness of the open loggias quite evident.

Notes on Competitions.

Extensions to St. Chad's Church, Leeds.

In a limited competition for chancel and extensions to St. Chad's Church, Leeds, the design submitted by Mr. J. Harold Gibbons, F.R.I.B.A., of Manchester, has been selected by the assessor (Mr. H. C. Corlette, F.R.I.B.A.), and approved by the committee.

New Schools at Tiverton.

No fewer than 231 designs were submitted in this competition. The awards are as follows:—1st, Mr. W. H. Ashford, A.R.I.B.A., Birmingham; 2nd. Mr. W. H. Ansell, A.R.I.B.A., London, W.C. These two designs will be on exhibition at the School of Art, Tiverton, from September 21st to 28th. Mr. C. Harrison Townsend, F.R.I.B.A., was the assessor.

New Schools in the Birmingham District.

In the competition for a new infants' school at Cotteridge the design by Mr. J. P. Osborne, of Birmingham, has been accepted, and that by Messrs. Ewen Harper and Brother, of Birmingham, for new schools in Grove Road, King's Heath. Mr. J. L. Ball, F.R.I.B.A., has been appointed assessor in the competition for a new infants' school at Stirchley Street, and Mr. A. N. Bromley, F.R.I.B.A., in the competition for new schools in Pershore Road.

Competitions for Students and Apprentices

We have received from the promoters of the Midland Counties Building Trades' Exhibition (to be held at Bingley Hall, Birmingham, from October 12th to 21st) a copy of the particulars issued in connection with the competitions for students and apprentices which are being held in connection with the Exhibition. The competitions are divided into two classes, namely, (A) work done prior to the opening of the Exhibition, and (B) work to be done at the Exhibition. Class A includes the following subjects:—Design for Workmen's Cottages, Design of Ornamental Enriched Plaster Ceiling, Wall Decoration, and Ornamental Metalwork; while Class B comprises: A Gauged Brick Arch, Plumbing (various joints), Plumbing (working of sheet lead to competitor's model), Queen-post Roof Truss, Clay Modelling (a panel), Masonry (plan and model of groin springer). The prizes offered range from £1 to six guineas.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Aug. 7	SECONDARY SCHOOL AND TECHNICAL INSTITUTE AT CLECKHEATON (150 places).—Premiums £50, £30, and £20. Particulars from J. H. Linfield, Clerk, Town Hall, Cleckheaton.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.

ELECTRICITY IN BUILDING IV.

By Harold Hastings, M.I.E.E., A.M.Inst.C.

(Continued from page 87, No. 703).

Jointing Cables.

The end of a cable is prepared f jointing by cutting away the insulati and bareing a short length of the co ductor. The amount of conductor bar should be approximately 1in. with single wire, 2ins. with a stranded co ductor of two layers of wires (such as 7/16s), 3ins. with a conductor of thr layers, and so on. The vulcanised rubb should be stripped of braid and tapes about 1in. In cutting away any part the covering the knife should always used in a slanting direction with the bla cutting towards the end of the cable. doing it in this way the dielectric is l likely to be cut when removing t mechanical protection, and the copp less likely to be nicked when cutti away the rubber.

The strands should be cleaned with f emery-cloth, but not enough to remo the tinning. The wires are spliced gether as shown in the sketches. In case of a single wire they are mer twisted. The seven strand has centre wire removed, the 19 strand l the centre wire removed on one side a the six wires of the second layer remov on the other, for half the length expos A 37 strand is more complicated, as has the 7 centre strands removed for h the exposed distance on one side, and third layer, consisting of 12 wires, moved an equal distance on the other si The wires are spliced as shown in e case, and the extremities of the joint soldered, but not the middle part.

When the joint has cooled after be soldered, any sharp points of solder m be removed, and burnt or scorched rub cut away. It is then taped over w pure rubber tape, each turn covering h the former turn, and each layer being w smeared with india-rubber solution.

A cotton tape which has been satura with preservative compound is applied the final mechanical protection.

A well-made joint when comple should not exceed one and a half tir the diameter of the cable (Fig. 29).

Tee-joints are made in exactly same way except as regards the metl of splicing. A single wire is sim twisted (see Figs. 30 and 31). A stranc wire has all its inner strands removed a



Fig. 24.

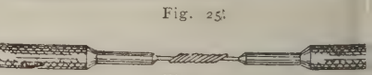


Fig. 25.

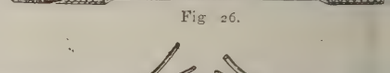


Fig 26.

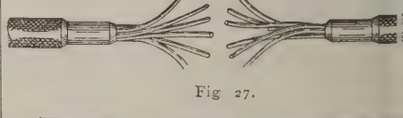


Fig 27.

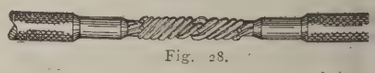


Fig. 28.

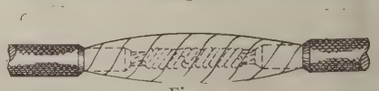
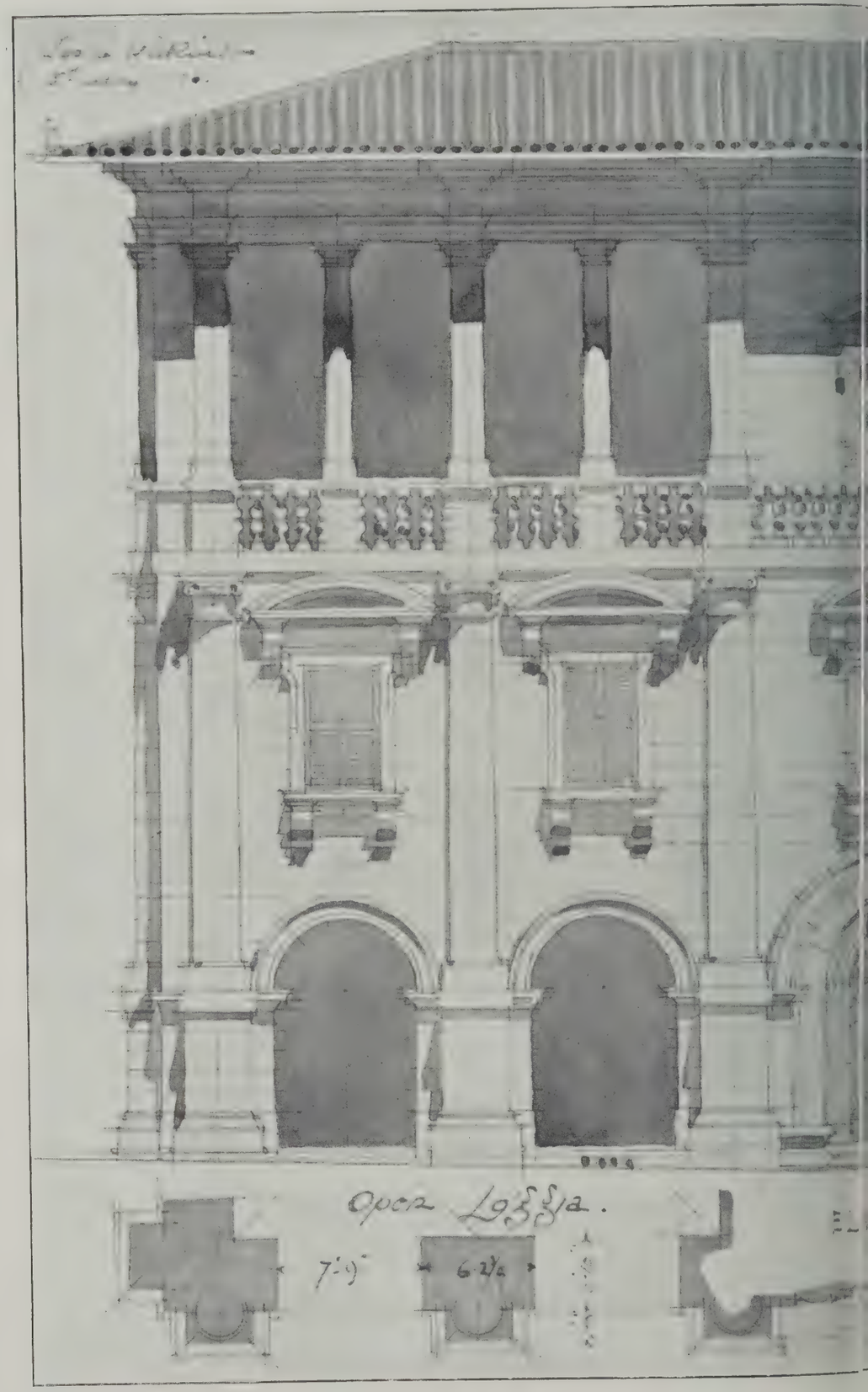
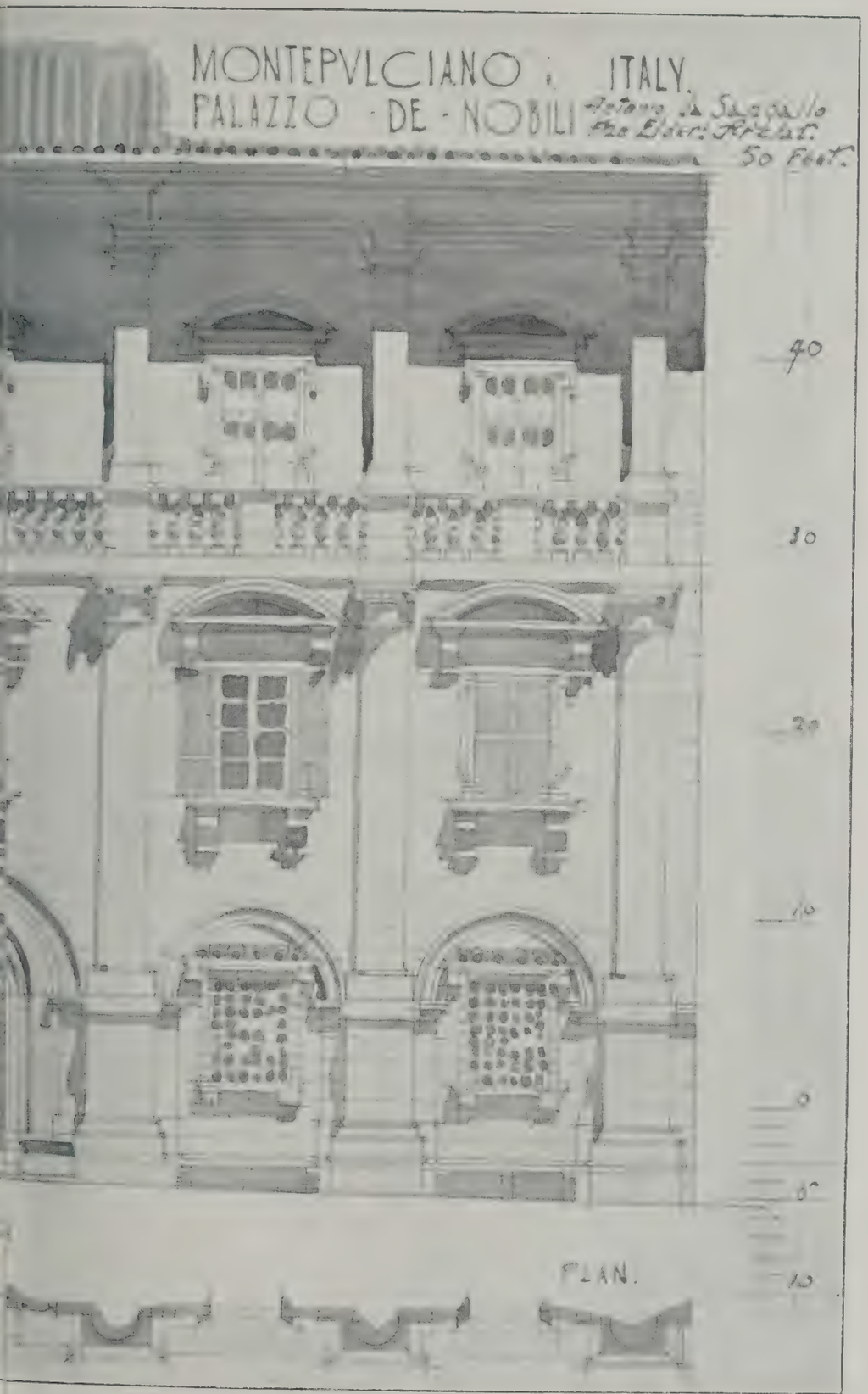


Fig. 29.

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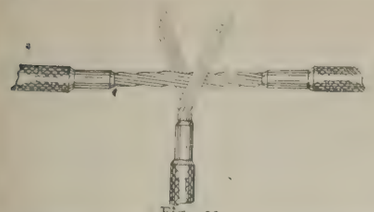


Fig. 30.

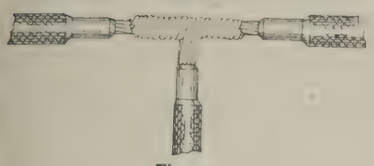


Fig. 31.

those of the outer layer are divided into two equal parts, which are twisted on to the main conductor in opposite directions. The main conductor never has any of its strands cut. In no case should soldering be omitted.

Casing and Tubing.

As rubber insulated wires and cables are not mechanically strong enough to be exposed in buildings without further protection, and are generally considered somewhat unsightly, it is necessary to adopt a suitable means of covering them throughout their length.

The channel must be decorative where exposed to view, and strong everywhere. The two classes chiefly employed are metal tubing and wood casing. Both have advantages and disadvantages and must be selected according to the nature of the proposed work.

Tubing.

The material used for metal tubes is sheet steel, and the qualities vary according to the way in which it is formed into a conduit. The simplest form is made by cutting the sheet of steel to the required width and bending it into the form of a tube, leaving the cut edges butting together and not joined in any way. It is coated with enamel and the various lengths are jointed together by being pressed into sockets. This class of tubing is only suitable where the situation is quite dry, and even then it cannot be highly recommended.

A slightly superior tube is made in which the joint is brazed, and a still better where it is welded.

The chief objection to this form of tube is not in the longitudinal joint, but in the method of joining the lengths together. It is not a good mechanical job to simply push a tube into a socket and take no other means of securing it. It is also important to maintain electrical continuity throughout the system of tubing, as will be explained later. In order to meet these objections a heavier kind of tube has been introduced which has a brazed or welded longitudinal joint and which is thick enough to take a gas thread. With this class the lengths are joined by screwing them into sockets in the same way as with gas piping. If the screwed threads are clean and tight-fitting the electrical continuity will probably be sufficiently good.

For the very best work a solid drawn steel tube is made, and, with this, the lengths are screwed together. It is seldom necessary to use this class of tube, as the heavy tube with a brazed joint is quite good enough for its purpose. Therefore, anything stronger is a luxury.

Ordinary gas piping should never be used, as its interior surface is far too rough and will damage the wires.

There is little to be gained by using a conduit having its interior surface covered with an insulating material, though there are many such upon the market. If extra insulation is required it should be added to the wires rather than to the conduit. The insulated conduits are always expensive, and there is a difficulty in maintaining the insulation where the lengths are joined together.

These remarks do not apply to enamel, of which a thick coating should cover both the inside and outside surface. The object of the enamel is to prevent rusting, not to insulate.

"Earthing."

It has been mentioned above that it is important to maintain electrical continuity throughout a system of conduits. The reason for this should be thoroughly understood. The tubes also need to be efficiently connected with "earth" at one or more points. One of the best "earths" obtainable is the water service pipe, the connection being made by twisting a bare copper wire round the pipe and sweating it. The wire is then taken, without a joint, to the nearest tube, twisted, and sweated to that, the enamel being removed for the purpose, and afterwards replaced.

Suppose that, in a certain case, the tubes were not connected with "earth," and that one of the wires inside a tube became damaged and made good electrical contact with the tube. There would be no flow of current through this fault because there would be no complete circuit. But at supply stations it is usual to "earth" one pole. Thus the tube under consideration might be "alive" on the pole opposite to the one earthed at the station, in which case anyone touching any part of the system of tubing would receive a very unpleasant shock.

Again, in the case of an installation which is improperly "bonded"—that is, which has not electrical continuity throughout—one such fault might occur at one point and a similar fault on the opposite pole at another point. One set of tubes would be alive with one pole and the other set with the other pole. At some point the two sets of tubes might be almost touching. A slight accumulation of damp or dust might start a flow of current. A spark would be formed, an arc started, and the house would soon be in flames.

By proper bonding and earthing these dangers can be entirely avoided.

For unscrewed tubing a nipple has recently been introduced for bonding the lengths together. It apparently gets over the electrical difficulty, and goes a long way towards solving the mechanical objection.

Fittings for Tubing System.

The various fittings for a tubing system are bends of different angles, sleeves, elbows, tees, inspection boxes, etc., all of which can be obtained either in one piece or split through the centre line for placing round the tube after it is in position. There are also bases forming suitable mounts for the various fittings.

Junction boxes can be obtained up to any reasonable number of ways.

The methods of placing the wires in the tubes are two. The tubes can be threaded on to the wires, or the wires can be drawn into the tubes. If the threading-on method is employed care must be taken when screwing the tubes together to see that the wires are not damaged by twisting.

In the drawing-in system the chief danger lies in abrasions from drawing the wires over rough places and round too sudden bends. It is advisable to have plenty of inspection and junction boxes, so that only a short length need be drawn in at a time.

The practice of crowding as many wires as possible into one tube is bad. It is best to have only two wires in each—viz., the lead and return of a circuit. If the wires of several circuits are in the same pipe, a fault upon any one will affect them all.

Installation of Tubes.

When placing the tubes in position in new buildings the work should be commenced before the plasterers begin, and before the floors are put down. In large buildings a casement should be provided from bottom to top, and provision left for tappings at each floor. Where tubes of any size run over walls they should be recessed into the brickwork. This is unnecessary where they are of small diameter, say up to ½in., as the thickness of plaster will more than cover them. They are held in position by pipe-hooks on brickwork, and by saddle-pieces on woodwork. The main run of pipes in a casement should be supported at frequent intervals, say, every 3ft., by saddle-pieces screwed into wood plugs. Clips are obtainable having a screw-hole on one side only. These should not be used for long vertical runs, as they cannot properly grip the pipes.

Under floors the tubes can be let into the joists, and slack wires are left coiled up just above the position in which the fitting will be placed.

As metal tubes are given to "sweating"—that is, the interior surface becomes coated with moisture with every fall of temperature—it is necessary to provide cables of a somewhat superior class. It is also advisable to arrange the tubes with a definite fall and to have an opening at the lowest and highest points. Any moisture which may collect will run out at the lowest points. They should be chosen in such places that a few drops now and then will not be harmful to any of the surrounding decorations. Such places are the spaces between the floors and ceilings of a house. By providing holes, as described, the effects of condensation are very much lessened, since the air can circulate inside the tubes, entering at the lowest apertures and coming out at the highest.

Best Tubes to Use.

To summarise our remarks upon tubes, the best class to use, when considered in conjunction with cost, is the heavy pipe with a brazed longitudinal joint and screwed together. The next best is the light butt-jointed tube used in conjunction with an earthing nipple. Either kind should be enamelled inside and out. Electrical continuity must be maintained throughout the system, and one or more good earth connections made. The wires of each circuit should have a separate tube to themselves. Junction and inspection boxes should be generously distributed. Wires of good quality should be used. Ventilation and drip holes should be provided.

The size of tubing required can be easily determined by obtaining the overall diameter of the wires which have to be drawn in from the wiring-table already given. By drawing small circles to scale, and a larger circle around them, the smallest diameter into which they can

TABLE D.

	External Diameter.	⅜	½	⅝	¾	⅞	1	1¼	1½	2
Internal Diameter	Light Gauge	.30	.43	.54	.66	.77	.90	1.13	1.38	1.87
	Heavy Gauge Brazed and Screwed	—	.40	.50	.63	—	.88	1.06	1.31	1.81
	Heavy Gauge Welded and Screwed	—	.38	.44	.58	—	.83	1.03	1.36	1.73

possibly be drawn is obtained. The size of tube nearest about this size is the one into which the wires can be threaded, while one size larger should be used if they are to be drawn in. The internal diameters can be taken as in Table D.

Casing.

Wood casing has had a longer reign than metal tubes, and, even now, can at least be said to share popularity equally. The usual quality is made of American whitewood, and has a great deal to be said in its favour.

Casing is supplied in lengths of about 12ft., and is made in various sizes to suit different sizes of conductors.

It is a plain lath of wood having two grooves to take the wires, U-shaped and as deep as they are wide.

The following table will show the standard dimensions for each size:—

TABLE E.

Size of wire S.W.G.	Total width of casing.	Width and depth of grooves.	Distance between grooves.
1/16	1⅜	3/16 = .188"	⅜
1/18 to 2/18	1½	¼ = .25	½
2/16 to 1/8	1⅝	5/16 = .313	⅝
1/8 to 1/7	2¼	⅜ = .375	¾
1/16 to 1/7	2½	½ = .500	1
1/6 to 3/17	3	⅝ = .625	1
1/8 to 3/16	3½	¾ = .750	1⅛
1/12 to 3/17	4	⅜ = .375	1½
1/2 to 1/12	4½	1 = 1.000	1½

This table is prepared for use with the wire scheduled in Table C (see BUILDERS' JOURNAL, July 22nd). If lower grade wires are used the size of casing can be easily determined by comparing column 3 in decimals with the new overall diameters.

Casing is always provided with an equal length of "capping," as the ornamental cover is called. In the smaller sizes up to 2½ins. in width, the capping is screwed on with brass screws in the centre. In larger sizes the screws are placed in the sides.

Wood casing maintains its popularity in spite of all competition, because it is so easy to cut and fix; it enables the wires to be kept apart; in dry situations it increases the insulation resistance; and the wires are not subject to severe handling when being placed in position. The value of the insulation resistance of dry casing may be taken as 30 megohms per mile, so that this consideration, in conjunction with the fact that the wires are not handled excessively, makes it possible to use a lower grade of wire than would be used with tubing.

It is quite good practice to use taped wires, instead of taped and braided, up to the size of 7/20½, and considerable saving can be effected thereby. The overall diameters are reduced and, therefore, smaller casing can be used. The amount of the reduction is .45 of an inch, so that if the diameters given in table C (see BUILDERS' JOURNAL, July 22nd, p. 74) are reduced by .045, it will be seen that the smaller sizes of casing have a much greater range of utility. Sizes from 7/20 upwards are invariably braided.

In close-cut work 300 megohm grade may be used if it is carefully handled, but it cannot be strongly recommended. The alteration of grade does not affect the overall diameter, as the same thickness of rubber compounds is applied, but a poorer quality.

The mechanical protection offered by wood is poor when compared with steel tubes, but this is not of so much importance where the casing is exposed to view. Casing cannot be recommended for damp or steamy situations, but even here a fairly good job can be made with it by giving it two coats of shellac varnish, or boiling it in Stockholm tar. In such places it should also be blocked away from the wall to the extent of two or three inches.

Fixing Wood Casing.

In buildings which are in the course of erection casing may be run in the same way as recommended for tubes. It is usually nailed on walls in such a way that the plasterers will ultimately arrive at the same level as the casing with capping removed. Some prefer to put the capping in position and let the plaster be made level with its outer surface. In no case should casing be entirely buried under the plaster as there is great danger that nails may be unwittingly driven into it. It must always be placed vertically or horizontally, otherwise it will present an ugly appearance when the work is complete. All joints in the capping must make a true fit, and corners carefully mitred. Under floors it should be so placed that the capping will not press against the underside of the boards. Measurements must also be taken to assure that the boards will cover it centrally, or there will be a danger of floor-brads piercing it. Boards above a run of casing are best screwed down so that they may serve as an indication that wires are underneath. On account of these considerations some contractors prefer to fix their casing after the floors have been laid down, even though this entails the extra labour of relifting them.

In wiring old buildings casing is very adaptable. It is not deemed unsightly on walls or ceilings where installed with taste. It should never end abruptly, but a decorative scheme should be considered, even though it involves erecting casing and capping which is never destined to contain wires. For instance, a ceiling from which it is proposed to suspend four lights spaced at equal distances from each of the corners, should have the casing crossing and recrossing it so that it is divided into panels. This, of course, only applies where it is not possible to put the casing out of sight above the ceiling.

When bringing the casing down a wall to a bracket or a switch, it is frequently possible to make a very neat job by cutting a chase just wide and deep enough to take the casing, and to use a wider capping to hide the jagged edges of the plaster.

It is rarely necessary to plug the wall, as suitable fixing can be obtained by driving floor-brads at different angles.

In taking switch or bracket wires down a lath and plaster partition, they can be placed in their casing and the capping screwed on. This combination can then be lowered from above and secured by screws to a joist. A hole of small dimensions is sufficient to bring the wires through to the fitting and they can easily be fished out with a hooked piece of stiff wire.

Brass screws should be used for fixing the capping, and they should be round-headed for all work. Screws must never be Manchestered into position, as they will probably bend and damage the wire. The use of nails is forbidden by all the rules of insurance companies and other authorities.

Wires should not be "bunched" in casing, but each groove should contain one wire and no more.

To summarise our remarks, casing is not suitable for running under plaster; it is not mechanically as strong as tubing, but it is easier to handle, makes a better electrical job, enables the use of a lower grade of wire, and is much more adaptable for installing wires in old buildings and surface work generally.

(To be continued.)

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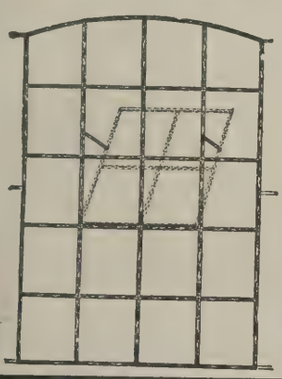
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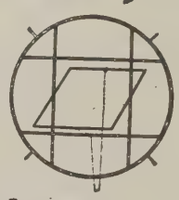
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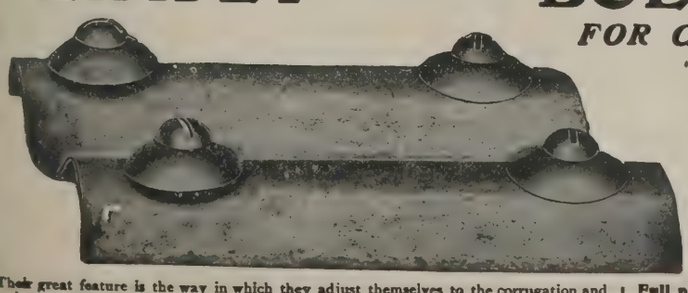
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Offices : Advertisement and Editorial—Caxton House, Westminster. Counting House and Publishing—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address : "Buildable, London."

Telephones : Advertisement and Editorial—364, Westminster. Counting House and Publishing—2200 Holborn (six lines).

Date of Publication:—The Builders' Journal and Architectural Engineer is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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Advertisements for the above can be received up till 12 noon Tuesday at

CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Acton.—For cleaning and summer repairs at Beaumont Park Council Schools and Turnham Green R.C. Schools, for the Education Committee of the Acton U.D.C. Messrs. E. C. P. and H. Monson, architects to the Committee, 182, High Street, Acton, W., and 22, Buckingham Street, Adelphi, W.C.

	Beaumont Park Schools.	Turnham Green R.C. Schools.
J. Christie, Shepherd's Bush	£527 10 0	£51 10 0
Abbot and Charlton, Acton	466 12 0	46 0 0
W. Blackburn, Chiswick	455 0 0	27 0 0
E. A. Hough, Herne Hill	450 0 0	43 0 0
T. Poore, Acton	429 3 0	
F. Kinnaird, Brixton	385 0 0	23 0 0
Ferris Bros.,* Acton	384 0 0	21 5 0
R. Hewitt, Acton Green		23 2 0
Marcus Smith, Acton		19 10 0
G. Thomas,* Acton Green		15 10 6

* Accepted.

Birmingham. — Accepted for the erection of a tramway depot in Miller Street, for the Tramways Committee. Messrs. Ingall and Son, architects, 3, Temple Row West, Birmingham.
E. Crowder, Farm Street, £7,877.

Birmingham.—For the supply and delivery of cast-iron distributing pipes for bacteria beds, for the Birmingham, Tame and Rea District Drainage Board:—

Macfarlane, Strang and Co., Glasgow	£14,184 19 10
Appleby and Co., Chesterfield	5,371 15 6
Newton, Chambers and Co., near Sheffield	4,069 12 5
Jones and Attwood,* Stourbridge	4,054 19 10
Part I. only.	
Meadow Foundry Co., Mansfield	2,122 3 3
King and Son, Glasgow	1,536 14 7

*Accepted.

Brentford.—For extending the beds at their sewage works, for the U.D.C. Mr. J. W. Croxford, engineer and surveyor, Clifden House, Boston Road, Brentford:—

G. Wimpey and Co., Hammersmith	£4,791 0 0
W. and C. French, Buckhurst Hill	4,784 14 4
R. C. Brebner and Co., Edinburgh	4,774 0 0
W. Muirhead and Co., London	4,556 1 4
G. Bell and Sons, Tottenham	4,497 0 0
T. Adams, Wood Green	4,380 0 0
Edwards and Co., London	4,333 5 11
T. Watson, jun., Southall	4,324 0 0
T. Pritchard and Co., London	4,294 5 6
T. W. Pedrett,* Enfield	4,240 0 0

*Accepted.

Ilhard.—Accepted for the erection of a new school, for the Somerset Education Committee.
C. Bryer, jun., Bridgwater, £7,085.

Chichester.—Accepted for the erection of new secondary school for girls at Chichester, for the West Sussex County Council Education Committee.
F. J. Privet, Cottage Grove, Southsea, £9,000.

Croydon.—Accepted for the erection of a secondary school for girls at the Crescent, for the Croydon Education Committee:—
B. E. Nightingale, Albert Works, Albert Embankment, London, S.E., £13,405.

Devonport.—For the erection of new higher elementary schools, at Keppel Place, Albert Road, Devonport, for the Education Committee:—

Paynter	£13,980
Pearce Bros.	13,707
Wakeham Bros.	13,681
Matcham Co.	13,319
Crockrel	12,983
A. Andrews	12,980
Blake	12,975
A. R. Lethbridge	12,898
Pethick Bros.	12,777
Lapthorne and Co.	12,640
S. Roberts and Co.	12,098
Tupin	11,997
Pearn Bros.	11,943
A. N. Coles*	11,180

*Accepted.

March.—Accepted for the erection of a high school at March, for the Isle of Ely Education Committee:—
G. W. Keith, £3,940.

(*Tenders continued on page viii.*)

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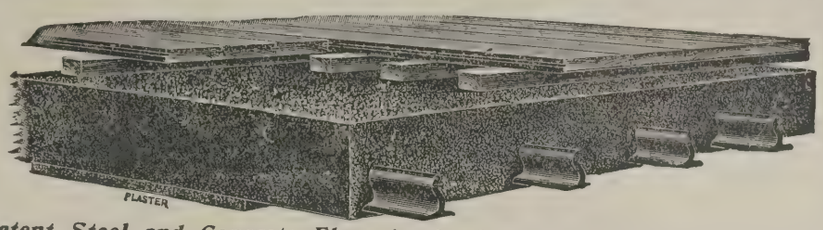
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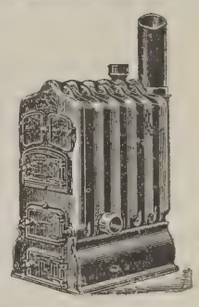
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(Tenders continued from page vi.)

London, W.—For refacing the front of 21, Upper Grosvenor Street, W., for Mrs. Bevan. Messrs. Knott and Collins, architects, Adelphi Terrace House, Adelphi, W.C. Quantities by Mr. Frederick S. Henniker, F.S.I.:—

O. Craske	£1,806
F. G. Minter	1,687
J. Carmichael	1,653
F. and H. F. Higgs	1,640
Sabey and Son	1,519
Dove Bros.*	1,495

*Accepted.

London, S.E.—For the erection on the school premises of classrooms with a central hall, for the managers of the North Surrey District School, Anerley, S.E. Mr. Cecil A. Sharp, architect, 11, Old Queen Street, Queen Anne's Gate, S.W.:—

F. and H. F. Higgs ...	£4,750 0 0
Staines	4,250 0 0
Hall and Jacobs, Beckenham ...	4,180 1 7
Brand, Pettit, and Co.	4,166 0 0
T. and G. Foster, Norwood Junction	4,150 0 0
Watson and Ellwood	4,134 17 0
Green, Beckenham	4,088 0 0
Hough	4,079 0 0
Wright, South Dulwich	4,069 10 0
Johnson and Co.	4,065 0 0
Deacon and Son, Addlestone ...	4,017 0 0
Bowyer, Ltd., Upper Norwood	3,997 0 0
Lonsdale, Swanley Junction ...	3,895 0 0
Johnson and Co.	3,889 0 0
Thompson and Beveridge ...	3,848 0 0
Davis and Babidge	3,830 0 0
Bulled and Co.,* Croydon ...	3,782 0 0
Hyde and Co., Norwood Junction	3,708 0 0

*Accepted.
Rest of London.

Newry (Ireland).—For the erection and completion of new premises at Hill Street, Newry, for Messrs. R. Foster. Mr. S. Wilson Reside, architect, Margaret Square, Newry:—

J. Coulhoun, Londonderry ...	£7,285 19 2
A. Wheelan and Sons, Newry ...	6,802 17 5
D. Neary, Newry	6,631 1 6
Collen Bros., Portadown ...	6,100 0 0
H. Keith, Belfast	5,968 0 0
J. and W. Stewart, Belfast ...	5,890 0 0
W. J. Campbell and Son, Belfast	5,890 0 0
J. Hughes, Newry...	5,830 0 0
I. Copeland, Belfast	5,350 0 0
J. Graham,* Dromore	5,236 15 2

*Accepted.

Northfield (near Birmingham). — Accepted for the erection of business premises in Bristol Road and Bell Lane for Mr. James Huins. Mr. Bernard Perrins, architect, Redditch:—G. Huins and Son, Redditch, £1,637 10s.

Northfield (near Birmingham). — Accepted for the erection of business premises in Bristol Road, for Mr. J. J. Davis. Mr. Bernard Perrins, architect, Redditch:—G. A. James, Saw-yard, £849.

Pontycymmer (Wales). — For the erection of higher elementary school at Pontycymmer. Mr. D. Pugh-Jones, F.S.I., county architect, Cardiff. Lougher and Co., Pontycymmer, £7,746 7s. 6d.

Portsmouth. — For carrying out the drainage scheme for the Hilsea area:—

Perry and Co.	£22,500 0 0
Smith	16,000 4 10
Corke	15,372 0 0
Osenton	14,440 0 0
Playfair	14,415 0 0
Neal	13,390 0 0
Bell and Sons*	12,644 0 0

* Accepted.

West Ham.—For the erection of additional classrooms and teachers' rooms, and converting caretaker's house into classroom, at the Custom House Schools, for the Education Committee of the Town Council:—

I. Noakes	£2,135
J. T. Luton	1,699
J. Baxter	1,690
A. Webb	1,657
W. J. Clemens	1,656
J. J. Quarterman	1,600
Horlock and Son	1,562
W. J. Maddison	1,516
A. E. Symes	1,476
H. C. Horswill*	1,350

* Accepted.

Walthamstow.—For the erection of the Carnegie Central Library at High Street, Walthamstow, for the Urban District Council. Mr. J. Williams Dineford, architect, 100c, Queen Victoria Street, E.C. Quantities by Mr. G. T. G. Wright, 3, Gt. Winchester Street, E.C.:—

R. and E. Evans...	£12,979
F. J. Coxhead	10,350
B. Nightingale	9,999
Fitch and Cox	9,999
J. and W. Drake	9,990
Waring and Gillow	9,962
W. Shurmur and Sons	9,855
Patman and Fotheringham ...	9,783
Johnson and Sons	9,720
Spencer, Santo and Co.	£9,707
A. Parsons	9,671
J. Chessum and Sons	9,646
Sands and Burley	9,580
J. W. Jerram	9,578
W. T. Maddison	9,552
Brand, Pettit and Co., South Tottenham	8,773

Architect's estimate £8,600, subject to a variation of 5 per cent.

Bankruptcies.

During the week ended July 24th sixteen failures in the building and timber trades in England and Wales were gazetted.

T. SMART, painter and decorator, St. Helens R.O., July 20.

A. DUNN builder, Gloucester. Gross liabilities £15,233; assets estimated to give a surplus of £3,768.

H. J. HARDING, builder, Bideford. Gross liabilities £799; £249 expected to rank for dividend deficiency £228.

RINDAL and WINCOTT, builders, Ashby, near Doncaster. First meeting, O.R.'s, Sheffield, Aug. 6 at 11.30. P.E., C.C., Sheffield, same day, at 2.

W. L. GRIFFITHS, architect, London, W.C. R.O., July 24. First meeting, Bankruptcy Court, Aug. 7, at 12. P.E., same, Sept. 15, at 11.

F. BRITTON, builder and contractor, London, W.C. Unsecured liabilities estimated at about £9,000. Adjourned meeting of creditors, Aug. 17.

G. B. ANDREWS, builder, Ivybridge. Gross liabilities £3,288; £1,249 expected to rank for dividend; assets estimated at £481; deficiency £768.

S. WARBURTON, builder and contractor, Manchester. First meeting, O.R.'s, Manchester, Aug. 5, at 3. P.E., C.C., Manchester, Aug. 22, at 10.

E. BURGE and Co., builders, Sydenham. R.O. July 21. First meeting, 13, York Road, London, S.E., Aug. 7, at 2.30. P.E., C.C., Greenwich, Aug. 17, at 1.

H. C. FOULKES, builder, London, E.C. Liabilities estimated at £500,000. According to debtor's statement, he begun business as a builder 3 years ago with a capital of about £100, and during the last six years he had also acted as a director of gold mining and other companies. Three years ago he regarded himself as worth £100,000. He attributed his failure to depreciation in the value of his properties and to the loss of rents due to empty houses.

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Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

August 6. SENGHENYDD.—Erection of a public hall (to seat 1,000), large gymnasium, etc., together with library and institute in Commercial Street, Senghenydd. Plans and specification may be seen at the office of W. Beddoe Rees, architect, 3, Dumfries Place, Cardiff, and bills of quantities obtained on a deposit of £3 3s. Tenders sealed and endorsed are to be delivered to S. G. Worman, secretary, 18, Coronation Terrace, Senghenydd, on or before August 6.

August 6. KINGSBRIDGE. — Erection of stands and fitting-up the showyard for the annual exhibition to be held on September 17, for the Kingsbridge Agricultural Society. Tenders may be submitted either on the basis of: (a) Contractor providing labour and all materials, the materials to remain his property; or (b) Contractor providing labour only, and materials to be provided by the society. Tenders are also invited for:—(c) 250 good larch hurdles, to be delivered on the show field. Particulars and conditions may be obtained on application to H. Vickery, secretary, Torcross, near Kingsbridge, to whom tenders must be delivered not later than August 6.

August 7. KENDAL.—Extensions to Stramongate Hall. Plans and specifications can be seen and bills of quantities obtained on application at the office of S. Shaw, F.R.I.B.A., architect, Kendal, till August 7, upon which day tenders are to be delivered to him.

August 7. BRECON.—Construction of new cells and for various alterations, re-building, etc., at the Defynnock Police Station, for the Standing Joint Committee of the County of Brecon. The plans and specification can be seen at the office of C. W. **Best, M.I.C.E.,** county surveyor for Breconshire, County Hall, Brecon, and bills of quantities obtained on deposit of £2 2s. Tenders must be delivered at the same place not later than 11 a.m., on August 7.

August 8. WARRINGTON.—Retiling a cottage roof at Appleton Reservoir and sundry fencing work, for the Water Committee. Tenders to be sent in not later than August 8. All further particulars may be had from J. Deas, A.M.I.C.E., water engineer, Municipal Offices, Warrington.

August 8. FLOOKBURGH.—Erection of additions to the Village Hall, Flookburgh. Bills of quantities may be obtained on application to H. T. Fowler, architect, 6, Cornwallis Street, Barrow-in-Furness; and the drawings may be seen at C. K. Wright's, Flookburgh. Tenders must be delivered to the architect on or before August 8.

August 8. LEEDSTOWN.—Erection of a new Sunday school, for the Building Committee, according to plans and specifications, which may be seen at T. Trevaskis's, Leedstown. Sealed tenders, and endorsed "Tenders for Leedstown New Sunday School," are to be sent to Rev. P. Gallier Copperhouse, Hayle, on or before August 8.

August 8. NANTYMOEL.—Erection of Congregational chapel, Nantymoel. Plans and specifications to be seen at the Rev. T. Hirwen Jenkins and with David Davies at 178, Habershon Street, Splott, Cardiff. Endorsed tenders to be delivered on or before August 8, to the Rev. T. Hirwen Jenkins, Nantymoel.

August 8. BALTINGLASS. — Contracting for the under-mentioned works, for the R.D.C., from August 8, 1908, namely:—(1) Sinking a well and erecting a pump at Clonmore National School; (2) Repairing cottage at Rathnafishogue, according to specifications. Sealed tenders to be posted so as to reach J. R. Dagg, clerk to the Council, at Baltinglass Workhouse, on or before 11 o'clock on August 8 in order to be considered at a meeting of the Council to be held at the Workhouse on that day, but no tender will be received or considered by the Council unless received on or before the hour above mentioned. Each contractor will be required to give security for double the amount of the contract. Forms of contract and bond may be seen, and all further particulars learned, on application to the clerk.

August 10. SPRINGWELL.—Extensions to the Wesleyan Sunday school at Springwell, near Gateshead. Builders desirous of tendering can inspect the pans and specifications at the office of J. W. Taylor, F.R.I.B.A., St. John Street, Newcastle. Sealed tenders, endorsed "Springwell Sunday Schools," are to be delivered to him not later than 10 o'clock on August 10.

August 11. BRIDGEND.—Erection of Nolton Church Institute, Bridgend. Plans and specification to be seen at the office of P. J. Thomas, architect and surveyor, Bridgend. Endorsed tenders to be sent to the Rev. E. S. Roberts, Rector of Coity, on or before August 11.

August 11. SALFORD.—Alterations to the Salford County Court, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application at the Registrar's office at the County Court, between 10 a.m. and 4 p.m. (Saturday 10 to 1). Bills of quantities and forms of tender may be obtained at the undermentioned address on payment of £1 1s. Tenders must be delivered before 12 o'clock noon on August 11, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Alterations, Salford County Court."

August 12. WORSBORO' BRIDGE.—Erection of a vicarage house, for the parish of St. James', Worsboro Bridge, near Barnsley. Plans may be seen at the offices of T. H. and F. Healey, architects, Tyrrell Street, Bradford, and duplicates at St. James's School, Worsboro' Bridge, until August 12, on which day tenders are to be delivered to the architects. Bills of quantities and other information may be obtained on application to the architects.

August 12. SHERBURN HILL.—Erection of boot and tailoring departments at the Shotton Colliery Branch Stores. Builders desirous of tendering for the whole of the works required can inspect the plans and specifications upon application to the Branch Manager at Shotton Colliery. Sealed tenders, endorsed "Shotton Stores," are to be delivered to T. Robson, secretary, Sherburn Hill Co-operative Society, near Durham, not later than 10 o'clock on August 12.

August 12. COWDENBEATH.—Erection of large new higher grade elementary, supplementary and mining school, Cowdenbeath. Estimates are invited for the various works, excavator, mason, and brick, carpenter and joiner, plumber, slater, plaster, tile, concrete, smith, glazier, asphalte, and painter works. Plans may be seen and specifications and schedules of quantities obtained from W. Birrell, architect, Kirkcaldy, on payment of £3 3s., for each trade. Estimates to be sealed and forwarded to J. Ross, LL.D., clerk to Beath School Board, Royal Bank Buildings, Dunfermline, marked outside "Tender, etc., Cowdenbeath School," not later than August 12, at 10 a.m.

August 13. BRISTOL.—Construction, and maintenance for twelve months after completion, of a timber-framed building, with concrete and brick foundations, for the Watch-House for H.M. Customs at the Royal Edward Dock, Avonmouth. Copies of the specification, schedule, form of tender, form of contract, and copy of the contract drawings can be obtained from W. W. Squire, engineer, Engineer's Office, Cumberland Road, Bristol, on production of a receipt showing that a deposit of £3 has been paid to the secretary of the Docks Committee, 19, Queen Square, Bristol. Tenders must be enclosed in a sealed envelope, endorsed "Tender for Watch-House for H.M. Customs," and addressed to the secretary of the Docks Committee, Docks Office, 19, Queen Square, Bristol, and must be delivered to him, accompanied by all the prescribed documents, before 10 a.m. on August 13.

August 14. TONYPANDY.—Erection of their new central premises, for the Committee of the Mid-Rhondda Co-operative Society, Ltd. Plans and bills of quantities prepared by the architects, the Co-operative Wholesale Society, Manchester, may be seen at the Society's premises in Gilmour Street, Tonypandy. Tenders to reach the Committee not later than August 14.

August 14. SHEFFIELD. — Alterations and additions at the Kiveton Park Provided School, near Sheffield. Plans may be seen and bills of quantities obtained on application to J. Vickers-Edwards, county architect, County Hall, Wakefield. A deposit of £1 is required. Cheques, etc., must be made payable to the West Riding treasurer, and sent to him direct at the County Hall, Wakefield, otherwise applications will not be entertained. Sealed tenders, properly endorsed, to be forwarded to the County Architect not later than 10.30 on the morning of August 14.

August 15. MERTHYR TYDFIL.—Erection of a Free Library at Perrott Street, Treharris. Plans and specification of the proposed building may be inspected, and a copy of the bills of quantities obtained from W. Dowdeswell, architect, Treharris, upon payment of a sum of £1 1s. Tenders, marked "Treharris Library," must reach T. A. Rees, town clerk, Town Hall, Merthyr Tydfil, not later than August 15.

August 15. PADDOCK WOOD.—Erection of a new Council school, to accommodate 200 boys, at Paddock Wood, Kent, for the Education Committee. Plans and specification, prepared by the Committee's architect, W. H. Robinson, M.S.A., and conditions of contract may be inspected at the offices of the Committee, between 10 a.m. and 4 p.m., until the time appointed for delivery of the tenders. Any person desiring to tender, and to receive copy of bills of quantities, must send in his name, accompanied by a deposit of £1, to F. W. Crook, secretary, Caxton House, Westminster, S.W., not later than noon on August 7. Tenders, on the form to be supplied with the bills of quantities, must be enclosed in a sealed envelope, endorsed "Paddock Wood Tender," and delivered to the School Correspondent, W. H. Tompsett, Barham House, Capel, Tonbridge, not later than noon on August 15.

August 17. DUTTON.—Erection of a porter's lodge at the Isolation Hospital, Dutton, for the Runcorn R.D.C. Specification and quantities may be obtained, and plans inspected (on a deposit of 10s. 6d. being made), at the offices of F. J. Jones, architect, Bank Chambers, High Street, Runcorn. Tenders, marked "Hospital Lodge," must be forwarded to G. F. Ashton, clerk to the Council, 71, High Street, Runcorn, on or before August 17.

August 17. NEW MALDEN.—Provision and erection of new iron and timber and brick and slated buildings at Norbiton Common Farm, New Malden, Surrey, for the Guardians of the Kingston Union. The drawings and specifications may be seen, and bill of quantities and form of tender obtained, on application to W. H. Hope, C.E., architect, 12, Clarence Street, Kingston-on-Thames, upon payment of the sum of £2. Tenders to be delivered to J. Edgell, solicitor, clerk to the Guardians, Union Offices, Coombe Road, Kingston-on-Thames, not later than August 17. Fair wages clause.

August 17. RAINHAM.—Erection of an enlargement to provide additional accommodation for 150 scholars to the Council School, at Rainham, Kent. Plans and specification, prepared by G. E. Bond, and conditions of contract, may be inspected at the offices of the architect, High Street, Rochester. Any person desiring to tender and to receive copy of the bills of quantities, must send his name to F. W. Crook, secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on August 8. Tenders on the form to be supplied with the bills of quantities, must be enclosed in a sealed envelope, endorsed "Rainham Tender," and delivered to the School Correspondent, G. Quinnell, Russels, Rainham, Kent, not later than noon on August 17.

August 18. ABERCYNON.—Erection of fourteen or more semi-detached houses in Lock Street, Abercynon, for the Taff Building Club, Abercynon. Plans and specification may be seen at the office of W. Dowdeswell, architect, Treharris. Tenders, endorsed "Cottages," to be sent to J. Sutherland, chairman, Selma House, Abercynon, on or before August 18.

August 19. LONDON (E.).—Erection of verandah outside the children's block at the Poplar Workhouse, for the Borough Board of Guardians, in accordance with drawings and specifications prepared by their architects, J. and W. Clarkson, 136, High Street, Poplar, E. The drawings and conditions of contract may be seen at the offices of the architects, as above, and a copy of the form of tender obtained upon payment to the architects of a deposit of £2 2s. Persons desirous of tendering for the work must send their names to the architects not later than August 19. Tenders sealed and endorsed "Tender for the erection of verandah outside the Children's Block at the Poplar Workhouse," addressed to G. H. Lough, clerk to the Guardians, 45, Upper North Street, Poplar, E., must be delivered to him not later than 6.30 p.m. on September 2. Parties tendering will be required to name two sureties, each of whom must be willing to be bound in half the amount of the contract for the proper fulfilment of the same. Fair wages clause.

August 24. WINDSOR.—Erection of the superstructure of the new barrack block, Victoria

Infantry Barracks, Windsor, in the London district. The plans and specification may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., on August 6, 7, and 8. Applications for bills of quantities and form of tender must be received by the Director of Barrack Construction not later than August 11, and on payment of the sum of 10s. (not returnable) to him a copy of the same will be forwarded. Tenders, in sealed envelopes, marked "Tenders," are to be delivered not later than 12 o'clock noon on August 24, addressed to the Director of Army Contracts, War Office, London, S.W. The bills of quantities are to accompany the tender, in separate sealed envelope, similarly addressed, and marked "Bills of Quantities for Work at the Victoria Infantry Barracks, Windsor," and also with contractor's name and address.

August 27. DERBY.—Erection of a children's ward block at the Derbyshire Royal Infirmary. Tenders are invited from Derbyshire builders. Applications must be made to E. Forster, superintendent and secretary, not later than August 12, and each application must be accompanied by a deposit of £2 2s. Bills of quantities will be forwarded to builders who have complied with the above conditions as soon as ready. Plans and specification may be seen at the Infirmary, between 2 and 4 p.m., from August 18 to 26, both dates inclusive. Tenders must be delivered at the Infirmary not later than 10 a.m. on August 27, addressed to the Weekly Board, Derbyshire Royal Infirmary, Derby, and be endorsed "Tender for Building Children's Ward Block," without which they will not be considered.

No date. FERMOY.—Rebuilding three business premises in Fermoy, plans of which and all particulars can be had on application to A. Hill, B.E., F.R.I.B.A., architect, 22, George Street, Cork.

No date. BELLAGHY.—Erection of a teacher's residence at Bellaghy, Co. Derry, for the Rev. Peter M'Namee, P.P. Plans and specification may be obtained upon application at the Parochial House, Bellaghy, or at the offices of J. V. Brennan, C.E., architect, Belfast Bank Chambers, Belfast.

No date. PUDSEY.—Erection and completion of the Pudsey Secondary and Technical Schools. Persons willing to tender for the various works are requested to forward their names and addresses to Jowett Kendall and Sons, architects, Leeds and Pudsey. Quantities will be forwarded when ready. Plans may be seen and further particulars obtained at the architects' offices, 10, East Parade, Leeds.

No date. DUBLIN.—Rebuilding Nos. 1, Suffolk Street, and 4 and 5, Church Lane, Dublin, for P. Hogan. Applications for bills of quantities to be made to J. G. Clayton, surveyor, 18, Nassau Street, Dublin, accompanied by cheque for £2. Fully priced bills of quantities, in separate sealed envelope, to be forwarded, with sealed tenders, to G. P. Sheridan, F.R.I.A.I., Architect, 25, Suffolk Street, Dublin. The plans and specification can be inspected at the offices of the architect.

No date. CARDIGAN.—Work proposed to be carried out at the following Council schools, for the County Education Committee:—Trefeirig (builder and painter), Commins Coch (carpenter and painter), Talybont (painter), Llandyssul (carpenter), Brongest (painter), Brongest (carpenter), New Quay (paving mason), Penlon (paving mason). Specification can be seen (and plans in certain cases) and full particulars obtained from the respective headmasters, or at the office of G. Dickens-Lewis, M.S.A., county architect, Aberystwyth.

ENGINEERING.

August 6. OLLERTON, NOTTS.—Supplying, excavating for, laying, and jointing of about 2¼ miles of 4in. and 3in. cast-iron mains, valves, hydrants, etc., the erection of small brick service reservoir, and all works in relation thereto at Ollerton, Notts., for the Southwell R.D.C. Plans and specifications may be seen, and copies of quantities and form of tender obtained, from Sands and Walker, engineers, Milton Chambers, Nottingham, on payment of £2 2s. (by cheque). The successful contractor will be required to enter into a bond with approved sureties for the due performance of his contract. Sealed and endorsed tenders to be sent to G. E. Kirkland, clerk to the Council, Southwell, Notts., on or before August 6.

August 7. CHICHESTER.—Repair of Dell Quay, Chichester Harbour. The work is to be done in ferro-concrete, and relates to the head of the quay only. The work consists of, approximately, 18 ferro-concrete piles, 12in. by 12in. by 21ft., and the necessary concrete filling and walling. For further details apply to F. J. Lobley, A.M.Inst.C.E., city surveyor, Lion Street, Chichester, during the usual hours. Tenders, upon forms to be provided, to be delivered at the office of J. L. Cooper, town clerk, Chichester, not later than noon on August 7.

August 8. BEARPARK.—(a) Erection of concrete supports, etc., and (b) providing and erecting thereon steel lattice girders, etc., required in the construction of a foot bridge over the River Browney at Bearpark Colliery. Plans, specifications, and conditions of contract may be seen at the office of the clerk to the Witton Gilbert Parish Council, Sacriston, to whom tenders must be delivered, endorsed "Browney Foot Bridge," by August 8.

August 10. WESTCRAIGS.—Cutting and refilling 5,400yds. of track for 10-in. and 9-in. water pipes at Westcraigs; also carting 410 tons of pipes over track, for the Bathgate District Committee. Sealed offers, marked "Tender for Pipe Track," to be addressed to J. G. B. Henderson, county clerk, Linlithgow, not later than August 10.

August 10.—WESTBURY.—Providing and laying 840yds. of 2in. cast iron water mains, etc., near the village of Chapmanslade, Westbury, Wilts, for the Westbury and Whorwellsdown R.D.C. Persons desirous of tendering can inspect the plans and specifications for the same at the offices of W. H. Stanley, A.M.I.C.E., engineer, Market House Chambers, Trowbridge. Sealed tenders, on forms to be obtained of the engineer, endorsed "Tender for Water Mains, Short Street," to be delivered or sent to J. Callaway, clerk to the said Council, Westbury, Wilts, on or before August 10.

August 10. ACTON.—Erection of two water softeners, in connection with the two Babcock and Wilcox tubular boilers (heating surface, 1,741 sq. ft. each), to be installed at the Dust Destructor, "The Friars," Acton, for the U.D.C. The water to be evaporated every 24 hours by each of the boilers would amount to 4,200 gallons, and the water to be used is that supplied by the Metropolitan Water Board. Firms tendering are invited to give particulars of the apparatus suggested, references where is has been found suitable, and the cost of installation. A block plan of the site of the destructor may be seen at 57, High Street, Acton, where tenders in sealed envelopes, endorsed "Water Softeners," are to be delivered not later than 3 p.m. on August 10. Canvassing the members or officials of the Council will disqualify.

August 12. ABERDOUR.—(1) Excavation, embankment, etc., work to be executed in constructing an embankment across part of thet reservoir at Cullaloe; (2) Providing and laying about 100 tons C.-L. pipes, valves, etc., in connection therewith. Schedules for these works may be had from J. A. Waddell, burgh surveyor, Burntisland, on payment of £1, and copies of the plans may be seen in his office, or at Cullaloe Reservoir, Aberdour. Tenders, marked outside, should be lodged with T. A. Wallace, town clerk, not later than August 12.

August 12. MANCHESTER.—Concrete, etc., steelwork, and cast-ironwork in connection with alterations to No. 2 Boiler House, at the Stuart Street Works, for the Manchester Corporation Electricity Committee. Forms of tender and quantities may be obtained on application to F. E Hughes, secretary, Electricity Department, Town Hall, Manchester, and drawings may be inspected at the offices of C. S. Allot and Son, civil engineers, 46, Brown Street, Manchester. Tenders to be addressed to the Chairman of the Electricity Committee, and delivered at the Town Hall not later than 12 noon on August 12.

August 15. MANCHESTER.—Supply and erection of hydraulic and steam valves, cast-iron, steel, and wrought-iron pipes, fittings, etc., for the Waterworks Committee, required in connection with the new Hydraulic Pumping Station, Water Street, in this city. Conditions of contract, specification, and form of tender may be obtained on application to the Secretary, Waterworks Offices, Town Hall, Manchester, on payment of £1 1s. Sealed tenders, endorsed "Hydraulic Power, Tender for Valves and Pipes," and addressed to the Chairman of the Waterworks Committee at the above offices, must be delivered not later than noon on August 15.

August 15. ABERDARE.—Construction and erection of a refuse destructor, clinker, plant, and mortar mill. Conditions, and particulars, together with a plan of site, may be obtained from the surveyor, Town Hall, Aberdare. Tenders, with plans, etc., endorsed "Destructor," to be delivered to T. Phillips, clerk, Town Hall, Aberdare, on or before August 15.

August 19. MELTON MOWBRAY.—Construction of the following works, for the U.D.C.: — An engine-house and suction tank, together with boilers, engines, centrifugal pumps, and about 900 yds. of 12 in. cast-iron rising main. Purification works, consisting of four settling tanks, first and second series bacteria beds, and other works in accordance with the specification and plans prepared by J. Taylor, Sons and Santo Crimp, civil engineers. Copies of the specification and quantities, with form of tender, may be obtained from, and the drawings inspected at the offices of, the aforesaid firm of engineers, at Caxton House, Westminster, upon payment of £5 (cheque only). The plans may also be inspected at the office of E. Jeeves, surveyor to the Council, Nottingham Street, Melton Mowbray. Tenders, endorsed "Melton Mowbray Drainage," are to be delivered to R. Barker, clerk, U.D.C. Office, Melton Mowbray, at or before noon on August 19.

August 24. BRUMBY AND FRODINGHAM.—Contract No. 1. — Supply and erection of four fifty-gallons sewage ejectors, electrical motor, oil or petrol engine, two air-compressors, switchboard and engine accessories, also for about 390 yds. of cast-iron air mains, 630 yds. of cast-iron rising mains, and 600 yds. of electric cable laid complete, for the U.D.C. Plans and sections of the proposed works may be seen, and specifications and bills of particulars, together with forms of tender, may be obtained on application to Strachan and Weekes, civil engineers, 9, Victoria Street, Westminster, London, on payment of a deposit of £3 3s. by cheque. Sealed tenders, endorsed "Tenders for Sewage Ejectors," are to be delivered at the office of G. S. Sowter, clerk, Brigg, on or before August 24.

August 27. LICHFIELD.—Provision, laying, and jointing of about 1,020 yds. of cast-iron pipes, 3 in. diameter, and other works in connection therewith, for the R.D.C., in accordance with the drawings, specifications, and instructions of their engineer. Drawings may be seen, and copies of the specification, form of tender, and bill of quantities obtained, at the office of W. E. Rogers, Council's engineer, Anson Street, Rugeley, on payment of a deposit of £1 1s. Sealed tenders, endorsed "Tender for Water Supply, T. V. Station, Rugeley," to be delivered at the office of J. Derry, clerk to the Council, R.D.C. Offices, Lichfield, not later than August 27.

No date. VENTNOR (I.W.).—Construction of a sea-wall at Ventnor (I.W.). For particulars apply to Bull and Porter, auctioneers and land agents, or to E. J. Harvey, architect and surveyor, Ventnor (I.W.).

IRON AND STEEL.

August 6. TOTNES.—Supply of new or second-hand cast-iron water pipes of the following sizes, to be delivered at the following places, in the undermentioned quantities:—Two 12in. pipes, six 7in. pipes, eight 9 in. pipes, six 8 in. pipes, six 7 in. pipes, and twenty 6 in. pipes, approximate weight 8 tons, to be delivered at Wrangaton Railway Station. Six 4 in. pipes, twenty-five 6 in. pipes and fifteen 8 in. pipes, approximate weight 6 tons to be delivered at Totnes Railway Station. Pipes to be spigot and socketed. Tenders, stating whether new or second-hand pipes, and stating weights and thicknesses of pipes, to be sent to F. K. Windeatt, clerk to the R.D.C., 19, High Street, Totnes, on or before twelve noon on August 6.

PAINTING AND PLUMBING.

August 8. PAR.—Varnishing, colouring, and painting United Methodist Church, Par.—Apply Rev. W. Butt, St. Blazey Gate, by letter, before August 8.

August 10. ISLE OF WIGHT.—Outside painting for the Committee of the Royal Isle of County Hospital and Convalescent Home. A copy of the specification may be had on application to the secretary at the Hospital. Sealed tenders, marked outside "Tenders for Painting," must be delivered at the Hospital not later than August 10.

August 10. STOURBRIDGE.—Painting the outside wood, stone, and ironwork (including shelters) of the Corbett Hospital, Stourbridge, same colours as before, with three coats of good oil paint, and the woodwork to be varnished with best outdoor varnish. Tenders to be sent to J. D. Harward, secretary, Stourbridge, not later than August 10.

August 14. STOURPORT.—Painting of the ironwork of Stourport Bridge over the River Severn, for the Highways and Bridges Committee of the C.C. Specification and further particulars may be obtained on application to J. H. Garrett, surveyor of county bridges, Shirehall, Worcester. Tenders must be sent in to him not later than August 14.

August 19. NORWICH.—General repairs and painting, cleaning, etc., of offices, in St. Andrew Street, for the Guardians of the Poor of the Incorporation, in accordance with specification prepared by their architect and surveyor. Specifications, with forms of tender, may be obtained of Morgan and Buckingham, architects and surveyors, Upper King Street, Norwich, and must be sent to E. J. W. Huggins, clerk, at the Guardians' Offices, St. Andrew Street, at or before 10 a.m., August 19. Fair wages clause.

No date. SALFORD.—Painting the outside of Broughton Baths, and the outside of Regent Road Baths. Specification and form of contract from Mr. W. J. Ellis, superintendent, Blackfriars Road Baths, Salford.

No date. BURSLEM.—Painting and renovation of the following schools:—1, Longport; 2, Park Road; 3, Jackfield, for the Education Committee. Particulars may be obtained upon application to A. R. Wood and Son, architects, Market Place, Burslem, at once.

ROADS AND CARTAGE.

August 7. BROADWOODWIDGER, DEVON. — Steam rolling the main and district roads, for the R.D.C., commencing September 21, 1908. Contractors must supply two rollers, between 10 and 12 tons, with two water-carts, and hose, with each roller, if required; also living vans, coal delivered to rollers, oil, waste, drivers, and extras. The

rollers will be required for about 50 days each roller, more or less. For further particulars apply to S. Warren, surveyor, Kennacott, Yeolmbridge, near Launceston. Sealed endorsed tenders to be sent to Geo. Graham White, Launceston, clerk to the above Council, on or before August 7.

August 8. CORNWOOD.—Repair of path over Headon Down, leading from Gibhill Gate, Lutton, to Quick Bridge. Plans and specifications can be seen by applying to S. Mudge, clerk to Parish Council, Cornwood, and to whom tenders are to be delivered on or before August 8.

August 8. MANCHESTER.—Works required in making up Parkfield Road, Didsbury (Rock Asphalt); Beaver Road, Didsbury (Tar Macadam); Old Hall Lane, Withington (Sett Paving), for the Withington Committee. Plans, sections, and specifications of the work can be seen and a form of tender with quantities and any further information obtained from the surveyor to the Committee, Town Hall, West Didsbury. Tenders to be endorsed "Tender for Street Works," and to be addressed to the chairman of the Withington Committee, Town Hall, West Didsbury, not later than noon on August 8.

August 8. SOUTHGATE.—Making up of seven private streets for the U.D.C., of a total length of about 2,466 yards. Plans may be seen on application to C. G. Lawson, C.E., Council's surveyor, from whom copies of the specifications, conditions of contract, and form of tender may be obtained on depositing £2 in cash. Tenders, endorsed "Private Streets," must reach W. M. Ellenor, clerk of the Council, Council Office, Palmer's Green, N., not later than noon on August 8.

August 10. LEEDS.—Paving and flagging of the following streets:—Hope Grove, Bankfield Gardens, Woodview Road (part), Tempest Road (part), and Vicarage Terrace (part), for the Highways Committee. Drawings may be seen at the city engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained, and copies of the documents forming the contract inspected, on application at the Highways Office, 155, Kirkstall Road. Sealed tenders, endorsed "Tender for Private Street Works," and addressed to the Highways Committee, must be delivered at the town clerk's office, Town Hall, Leeds, not later than 10 a.m. on August 10.

August 10. LONDON, S.E.—Cartage and removal of the several portions of a corrugated iron and wood building, recently pulled down, from the infirmary, Lower Road, Rotherhithe, S.E., and to deposit the same at the schools, Wickham Road, near Croydon, for the Guardians of the Parish of Bermondsey. The several portions of the building have been marked, so as to assist in the re-erection of the same, and the contractor will be required to deliver and deposit at the schools the various portions of the building in proper order, so as not to cause any inconvenience in the re-construction of the building. The building can be seen on application to the clerk to the works, on the premises. Persons desirous of tendering for the work may obtain printed forms (which only can be received) at the office of E. P. Fenton, clerk, 283, Toole Street, S.E., between the hours of 10 a.m. on 12 noon. Sealed tenders, endorsed "Tender for Cartage of Iron Building to Schools," must reach the clerk at his office not later than 10 a.m. on August 10.

August 11. FRINTON-ON-SEA.—Construction of certain works in Fourth Avenue, for the U.D.C. The principal items are: About 9,000 yds. super slag tar-macadam carriageway; about 7,000 yds. super tar-paved footway; about 2,000 yds. super limestone kerbing, and 18 street gullies. Also for sewering the roadway known as The Crescent, including about 770 ft. of 9 in. pipe sewer; about 130 ft. of 6 in. pipe sewer, and 8 street gullies. Bills of quantities and forms of tender may be obtained and the general conditions, specifications and drawings inspected on application to E. M. Batf, surveyor to the Council, Council Offices, Frinton-on-Sea, Essex, on payment of £2 2s. for both or either set of quantities. Each tender to be delivered to the Council Offices, Frinton-on-Sea, in a sealed cover, and addressed to the Surveyor to the Council, and marked "Fourth Avenue," or "The Crescent." No tender will be received after the morning of August 11.

August 11. CREWE.—Sewering, forming, macadamising, footpath paving, curbing, and channelling of Elizabeth and Fletcher Streets, and for forming, macadamising, footpath paving, curbing, and channelling of Mirion, Manning, Wallis, and Brierley Streets, and for the following back passages, viz.:—Passage from 10 to 36, Bedford Street, passage from Richmond Road to Queen Street, passage between Richmond Road and Queen Street, passage from Hall-o'-Shaw Street to Vincent Street, passage between Hall-o'-Shaw Street and Vincent Street, and passage at rear of 8 to 15, Hall-o'-Shaw Street, within the borough, in accordance with plans, sections, and specifications, which may be seen and all other necessary information obtained upon application to G. Eaton-Shore, borough surveyor, Earle Street, Crewe. The contractor must provide the whole of the materials, viz.:—Sewer pipes, paving bricks, kerbs, setts, macadam, screenings, gullies, gully grids, manhole covers and frames, etc., required in the making, etc., of the above streets and passages. A deposit of £1 will be required. Sealed tenders and schedule of prices, upon printed forms, to be obtained from the borough surveyor, must be delivered at the office of F. Cooke, town clerk, Municipal Offices, Crewe, not later than nine o'clock in the forenoon of August 11, endorsed "Tender for Street and Passage Making." No tender will be accepted unless made out on the printed forms above-named, with all the items in the schedule of prices fully priced.

August 15. THIRSK.—Tar macadamising about 3,300 sq. yds. of a certain portion of the highway in the parish of Sowerby, for the R.D.C. Form of tender and specification may be obtained from R. R. Wright, Council's surveyor, Thirsk, on receipt of a stamped addressed foolscap envelope on and after August 3. Sealed tenders, endorsed "Tender for Tar Macadamising," to be sent to W. Swarbreck, clerk, Council Offices, Finkle Street, Thirsk, not later than 12 o'clock at noon on August 15.

August 22. STOURTON.—Levelling, paving, flagging, kerbing, and making good of 12 streets, at Stourton, comprising in all about 750 yds. in length of streets, for the Rothwell U.D.C. Plans, sections, etc., may be seen, and specifications, conditions, and bills of quantities may be obtained on application to J. Southwart, surveyor, Council Offices, Rothwell, on deposit of cheque made payable to the treasurer, for £2 2s. Sealed tenders, together with fully priced quantities, endorsed "Private Street Works," must be delivered not later than August 22, addressed to W. Dodgson, clerk, Council Offices, Rothwell, Leeds.

August 22. BLAINA.—Supply of road metal, as follows, for the Naneyglo and Blaina U.D.C.: 300 tons of limestone, broken to pass through a 2½ in. ring, and to be rejected by a 1¼ in. ring, 250 tons to be delivered at Blaina Station, G.W.R., and 50 tons at Brynmawr Station, L. and N.W.R.; 60 tons of granite, hand broken, to pass through a 2½ in. ring, and to be rejected by a 1¼ in. ring, 50 tons to be delivered at Blaina Station, G.W.R., and 10 tons at Brynmawr Station, L. and N.W.R. 80 tons of clean limestone chippings, 70 tons to be delivered at Blaina Station, G.W.R., and 10 tons at Brynmawr Station, L. and N.W.R. 10 tons of clean granite chippings, to be delivered at Blaina Station. Deliveries are to be made carriage paid, and according to the order of the Council's surveyor. Tenders to be sent to H. J. Shepard, clerk, Tredegar, and samples to be sent to W. J. Davies, Blaina, the Council's surveyor, not later than August 22. The person whose tender is accepted will be required to execute a formal contract and bond, with sureties.

No date. YORK.—Estimates wanted for tar-paving. For particulars apply F 352, "Herald" Office, York.

No date. GREENFORD.—Supply of about 500 to 1,000 tons of road gravel, picked chalk flints, and granite, to be delivered in or between the months of September, 1908, and January, 1909, for Greenford U.D.C. Tenders must be on the forms to be obtained from W. H. Read, F.S.I., surveyor, The Avenue, West Ealing.

SANITARY.

August 8. RUISLIP.—Construction of 1,148 yds. of pipe sewer, for foul and surface water, raising roadway, together with manholes and other appurtenant work, at Sharps Lane, Ruislip, for the U.D.C. Drawings and specification may be seen and bills of quantities and form of tender obtained from W. L. Carr, surveyor, Council Offices, Northwood, Middlesex, on payment of a deposit of £1. Sealed tenders, endorsed "Sewer Extension," to be delivered at the office of E. R. Abbott, clerk, Council Offices, Northwood R.S.O., Middlesex, not later than 10 a.m. on August 8.

August 8. WISHAW.—Excavating of and lifting present sewers, consisting of 12-in. and 15-in. fire clay pipes for a distance of about 676 lineal yards, deepening trench, providing and laying about 47yds. of 15-in. spigot and faucet fire clay pipes, 176 lineal yards of 18-in. spigot and faucet fire clay pipes, and 453 lineal yards of 21-in. spigot and faucet fire clay pipes from near junction of Carfin Road and Shieldmuir Street, along Craigneuk Street to present manhole at Robberhall Road, for the provost, magistrates, and councillors of the burgh of Wishaw, all in said burgh, and any other work that may be required, including manholes, lampholes, etc., in connection therewith. Drawings may be seen at the office of W. Rodger, C.E., burgh engineer, Wishaw, from whom copies of specification and schedule of quantities may be obtained, on payment of a fee of £2 2s. for each copy. Tenders, which shall remain open for acceptance till August 22, must be lodged with J. L. Jack, town clerk, Burgh Chambers, Wishaw, on or before August 8, by 10 o'clock a.m., in sealed envelopes, marked "Tender for Sewer in Craigneuk."

August 10. WAINGROVES.—Construction of sewage disposal works at Waingroves, for Ripley Urban District Council, comprising subsidence tanks, percolating filters, and other appurtenant works. Particulars on application to the consulting engineers, Messrs. Herbert Walker and Son, King Street, Nottingham, or to Mr. George W. Bird, surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. required. Tenders to be delivered not later than noon on August 10, endorsed "Tender for Waingroves Sewage Disposal Works," to Geo. M. Capon, clerk, Town Hall, Ripley, Derby.

August 11. WOKING.—Construction of about eight miles of stoneware and cast-iron pipe sewers, manholes, and pumping station. Drawings, conditions of contract, specification, and bills of quantities at the offices of Mr. G. J. Wooldridge, the Engineer to the Council, Council Offices Woking. Copy of the specification, bills of quantities, and form of tender may be obtained from the engineer on payment of five pounds. Tenders, enclosed in sealed envelopes, addressed to the Clerk of the Urban District Council of Woking, and endorsed "Tender for Horsell Drainage," to be delivered at the Offices of the Council not later than noon on August 11.

August 15. REIGATE.—Providing and erecting complete one Shone's automatic sewage ejector, 150 gallons' capacity, at the South Park Ejector Station, within the borough of Reigate, in accordance with the plans, sections, and specification prepared by F. T. Clayton, borough engineer and surveyor. Plans and specification may be inspected and forms of tender, with any other information, can be obtained, upon application to the borough engineer, Municipal Buildings, Reigate. The contractor whose tender may be accepted will be required to enter into a contract in writing, the form whereof may be seen at the office of A. Smith, town clerk, and himself and his surety or sureties will be required to enter into a bond for the fulfilment of the contract. Sealed tenders, addressed to the town clerk, endorsed "Tender for Ejector, South Park," are to be delivered at the Municipal Buildings, Reigate, not later than August 15.

August 17. PRENTON.—Construction of a sewer and appurtenant works in Storeton Road, in the township of Prenton, for the Wirral R.D.C. The work will consist of about 355 lineal yds. of stoneware pipes 9 in. in diameter, with manholes, and other works. The drawings and specification may be seen between the hours of 11 a.m. and 4 p.m., and 11 a.m. and noon on Saturdays, at the office of F. E. Priest, M.Inst.C.E., engineer, 13, Harrington Street, Liverpool, from whom copies of the specification, form of tender, and bill of quantities may be obtained on deposit of £1 1s. Tenders must be delivered to J. E. S. Ollive, clerk, 54, Hamilton Street, Birkenhead, before 9 a.m. on August 17.

August 22. GLASGOW.—Construction of the storm-water overflow sewer, extending from the River Clyde, in line of West Street, to the overflow chamber in Saint Andrew's Road, opposite McCulloch Street, a distance of about 1,380 lineal yds. Plans, specifications, and working drawings may be seen, and specifications and schedule of quantities and forms obtained, on application to the city engineer, City Chambers, 64, Cochrane Street, Glasgow, on payment of a fee of £5 5s. Sealed offers, marked outside "Tender for Storm-water Overflow Sewer," must be lodged with A. W. Myles, town clerk, City Chambers, Glasgow, not later than August 22. The resident engineer will meet intending offerers at Clyde Place, at the foot of West Street, at the east end of Kingston Dock, on August 11, at 11 o'clock forenoon.

August 31. CHAPELHALL.—Construction of sewage purification works, and intercepting and outfall sewers, near Souchenbog Bridge, Chapelhall, for the District Committee of the Middle Ward of County of Lanark. Plans may be seen and copies of the specification and schedule of measurement obtained at the office of W. L. Douglas, M.Inst.C.E., district engineer, District Offices, Hamilton, on payment of £1. An assistant engineer will meet intending contractors at Sauchenbog Bridge, at 11.35 a.m on August 6. Sealed tenders, endorsed on outside "Chapelhall Purification Works," must be lodged with W. E. Whyte, district clerk, Hamilton, not later than 10 a.m. on August 31.

No date. LITTLEBOROUGH (Manchester).—Construction of 200 yds. of 15-in. and 260 yds. of 12-in. pipe sewer from Halifax Road to Hollingworth Road, together with manholes, etc. Persons desirous of tendering may obtain quantities and inspect plans and sections on application to the surveyor, Hare Hill.

No date. DUNFERMLINE.—Excavation, tunnelling, etc., in the construction of a new outfall sewer between the Burgh of Dunfermline and Ironmill Bay, Charlestown. (Contract No. 1) Particulars from the Burgh Engineer on deposit of £3 3s.—Providing, laying, and jointing of reinforced concrete sewer tubes between the Burgh and Ironmill Bay, Charlestown. (Contract No. 2). Particulars on deposit of £3 3s. with Andrew W. Bell, Burgh Engineer, Burgh Chambers. Dunfermline.

MISCELLANEOUS.

No date. MANCHESTER.—Supply and delivery of 65 porcelain wash baths for Bradford Baths, for the Baths Committee of Manchester Corporation. Forms of tender and full particulars may be obtained upon application at the City Architect's Office, Town Hall.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

A competent architectural assistant (24) desires appointment, permanent or temporary; good designer, accurate draughtsman; constructional details, specifications, quantities, moderate salary.—Box 4484, BUILDERS' JOURNAL Office.

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECTS' Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4456

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Fred Griffiths, 6, Bath Terrace, Hanwell, London, W. 4421

ARCHITECT'S Junr., 5 years' London experience, neat draughtsman; good colourist, details.—Box 4480, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4462

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4481 BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, public school man, 11 years' experience, London and provinces; all branches included; quantities, R.A. Exhibitor; expert perspectives.—Box 4409, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4470

ARCHITECTURAL Assistant (34), sixteen years' splendid experience, first class designer and colourist, practical, and artistic, working drawings, perspectives, details, excellent references; salary to be arranged. — Box 4430, Builders' Journal Office.

ARCHITECT'S or Surveyor's Assistant, 14 years' experience in details, perspectives, quantities, surveying and levelling; good draughtsman; excellent testimonials; total abstainer; salary 45s.—Box No. 4438, BUILDERS' JOURNAL Office.

ARCHITECT'S Junior Assistant; disengaged; (21); 4½ years' experience; neat draughtsman and colourist; details; specifications; surveying; assist with quantities.—Box No. 4474, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24), passed P.A.S.I. exam.; six years' varied London experience —working drawings, dilapidations, surveying, levelling, measuring and usual office routine; good ref.; salary 30s.—Box 4387, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (21), 4½ years' London and Provincial experience; Student R.I.B.A.; excellent refs.; experience more an object than salary; country preferred.—E. H. H., 68, Newbridge Hill, Bath. 4386

ARCHITECT and Surveyor's Asst. desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 2, Ivy Villas, Cheam, Surrey. 4399

BUILDER'S office, youth (17), just left good school; slight knowledge French, German, and Pitman's shorthand, taking lessons in building construction; anxious to start soon in good office. —Box 4361, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (21), good draughtsman, thorough practical knowledge of construction and details, certificates for geometry, building and carpentry, and joinery. Capable of assisting with estimates, and picking up decorative work.—Box 4,400 BUILDERS' JOURNAL Office.

BUILDER'S and decorator's general clerk and assistant seeks engagement, whole or part time; accounts, plans, estimates, practical supervision, life experience; undeniable reference. — Address, J G. P., 40, Roxborough Road, Harrow. 4357

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, clerk of works, foreman mason, or estate manager, 9 years last situation; experienced in all trades; abstainer.—Allen, 35, Princes Street, Peterboro'. 4334

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 4455

IMPROVER or junior assistant (22), student R.I.B.A., excellent knowledge, practical building construction experience, supervising, neat draughtsman, surveying; assist quantities; small salary, specimens; good references.—Box 4090, BUILDERS' JOURNAL Office.

IMPROVER or junior assistant (21) desires position with architect or surveyor; working drawings, quantities, surveys, qualified P.A.S.I.; nominal salary.—R. R. F., 25, Queen Street, Hemel Hempstead. 4321

JUNIOR Draughtsman (19), desires re-engagement; assist generally; good refs.; town and country; shorthand; probationer; R.I.B.A. — C. Weston, The Laurels, Rotherfield, Tunbridge Wells. 4376

JUNIOR Assistant (20) requires situation in surveyor's or builder's office, 3 years' experience with London surveyor; can assist in abstracting, working up, variations, etc.; willing worker.—W. Cooke, 102, Faraday Road, Wimbledon, S.W. 4333

JOINER-MACHINIST, or general assistant; used to office, bench, or building work, planer, saw, spindle, mortise, or entirely bench; construction certificates; good draughtsman; abstainer; references.—Box 4419, BUILDERS' JOURNAL Office.

MACHINIST, good all-round, wants job, town or country; take charge or otherwise, thorough knowledge of gas-engine; good refs.—T. S., 4, York Terrace, King's Road, Herne Bay. 4450

PRACTICAL Machinist (joiner), requires situation; good spindle hand.—H. Cruse, Boxford, Newbury, Berks. 4467

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

PLUMBER (gas and hot-water fitter) wants job; well up in all branches; would supply all tools; not afraid to turn hand; would suit builder or jobbing man; town or country; wages, 8½d. per hour for constant employment.—S. K., Shanklin, Benhill Road, Sutton, Surrey. 4463

SANITARY Drainer (competent), wants situation; good work; iron or earthenware; take charge; 15 years' experience; good references; age 36.—W. Gent, 42, Westbrook Road, Thornton Heath. 4478

STOREKEEPER and yardman (age 28), seeks re-engagement in builder's yard. Well up in booking materials in and out works. Fifteen years' experience. First-class references. Distance no object.—M. Poole, 12, Jardin Street, Albany Road, Camberwell, S.E. 4477

THOROUGHLY competent builder's book-keeper and general assistant requires engagement, 15 years' experience in London with builders and shopfitters; good reasons for leaving present berth; excellent references. Age 32.—Apply Box 4474, BUILDERS' JOURNAL Office.

THE ESTATES MANAGER AND AGENT to well-known public institutions. London estates (comprising over 1,000 properties), holding appointment, over 11 years, desires similar appointment in town or provinces, with view to improving his position; exclusive knowledge and experience in management of leasehold and troublesome weekly properties; thoroughly qualified architect and surveyor; administrative ability and experience in rent collecting; highest references. — Apply Box 4337, BUILDERS' JOURNAL Office.

WANTED, architect and surveyor's assistant, shortly disengaged; thorough general experience; quick and accurate draughtsman; supervising; entire charge.—Box 4447, BUILDERS' JOURNAL Office.

YOUTH (age 18) requires situation in builder's or surveyor's office. Desirous of learning estimating. Three years' previous experience.—Apply W. B., 8, Medley Road, West Hampstead, N.W. 4447

YOUTH seeks situation with architect or builder; good tracer, well up in p.c. and office work; excellent references.—J., 164, Wellesley Road, Ilford, Essex. 4485

Appointments Vacant.

EXPERIENCED representative wanted by well-known firm of lock manufacturers; must have influential connection amongst leading architects and contractors in London district; state salary required and full particulars of experience. — Box 4427, BUILDERS' JOURNAL Office.

TRAVELLER wanted, with established connection amongst architects, builders, contractors, decorators, etc., to sell our Artificial Marble, on salary and Commission; must have exceptional references as to ability. Apply by letter only, giving full particulars, and stating terms required, The Fassio Marble Company, Ltd., 46, Cannon Street, London, E.C. 4449

WANTED, for a permanency in the office of an old-established firm of surveyors in the city, a youth of good appearance and education, with previous office experience, who can write a good hand, quick and accurate.—Apply, in own handwriting, with copies of testimonials, stating salary asked, to Box 4457, BUILDERS' JOURNAL Office.

August 12, 1908. Volume 28, No. 705.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Exterior Ironwork.

It is but two or three years back that the gates and railings encircling Old Palace Yard, Westminster, were in the hands of the ironworkers for extensive repairs, and the present time finds them once more undergoing a complete overhaul. However much one may admire the wealth of detail that Barry and Pugin lavished on the exterior of the Palace of Westminster, it is a question whether such intricacy of ornament is altogether suitable in a climate like ours, and particularly so in the case of the gates and railings. These are built up of numbers of different members bolted together; the lower part is a trellis of small squares, each square containing a rose or other device of very thin metal, probably an eighth-of-an-inch only in thickness. The same condition of things obtains in the ugly railings that surround the lawns of Parliament Square. With the immense amount of lodgment space for wet the inevitable happens. Water penetrates the crevices between the members, and starts corrosion; the thin flowers are rapidly eaten away, and so a periodical reparation becomes imperative. It need hardly be said that this is an expensive matter. The replacng of defective pieces means the making of new parts to special pattern, and the intricacy of the ironwork itself adds to the amount of work and naturally to the cost.

The moral for the architect is plain. Whether he favours Gothic or Classic the design of his exterior ironwork should be simple and straightforward; the various members as substantial in section as they can be made without appearing clumsy and heavy. When one views the condition of exterior ironwork dating from the 17th and 18th centuries with that of the Houses of Parliament dating from the middle of the 19th century, the moral becomes too plain to be ignored.

Experiments in Street Lighting.

The experiments in street lighting in the City of London that are now being conducted by the Charing Cross and Strand Electricity Supply Co. and by the City of London Electric Lighting Co. respectively should go far towards determining the best form of lamp to use, and the most effective position and support for it. The Charing Cross Co. are lighting Cannon Street with eleven magazine "flame" arcs, five of the Oliver type and six of the Gilbert type. The arcs are centrally hung, being suspended over the roadway by means of wires attached to the buildings on both sides. The City of London Co. have substituted twenty-one Oliver flame arcs for a similar number of the original arcs in the existing columns on Holborn Viaduct, as well as in part of the Old Bailey, whilst in Farringdon Street eighteen enclosed arcs of the "Reason" type have been fitted up on special short columns in substitution for the twelve original arc lamps and columns in that thoroughfare. It is stated that the maintenance cost of flame arcs is £17 10s. each per annum, and of enclosed arcs £12 10s. In all there are 451 public electric lamps in the City of London, 400 of the original type, thirty-three flame arcs, and eighteen enclosed arcs. The cost of the original arcs is £26 each per annum. The results of these experiments are to be made public in a few months, and will no doubt receive the close attention of all who are interested in ascertaining what is really the best type of lamp, and whether the column or the suspension system is to prevail. Presumably both will continue in use; for it strikes us that, unfortunately, the column system must almost inevitably be adopted where the suspension system would be most valuable—that is, in the very widest streets, where the advantage of central illumination is obvious.

Craftsmanship and Drawing.

We are thoroughly in accord with the tenor of Mr. W. H. Berry's remarks in the paper on craftsmanship and the schools of art, which he read at the International Art Congress last week. He pointed out that in many schools draughtsmanship appeared to be the end of the teaching, and therein lay a grave danger, for draughtsmanship could never be of much service in itself, and must rely upon its use as a decorative factor, or fail in large measure to justify the expenditure of time upon teaching it, yet there seemed to be no reason why the teaching of sound draughtsmanship should not be compatible with that of fine craftsmanship; indeed, it had been proved that the latter improved the former by teaching the student the art of selection. It was lamentable that many art schools had no appreciable effect upon the manufactures of the districts in which they were situated. In such cases there must be something wrong, either in the organisation of the schools or the curriculum to which they adhered. This could be remedied only by the decentralisation of the schools and by making their teaching practical. Were the schools of each district developed to fulfil to the utmost the particular work applicable to the industry in which the surrounding community was engaged, they would prove a force which manufacturers could not afford to scorn and would be pleased to help. Under the old and, in many cases, under the present system of instruction, the same education was given to students in all schools. In place of cultivating the actual practice of local industries, which offered many possibilities, it was too often the custom to make impossible designs for objects of a description produced in other parts of the country. By a process of decentralisation, districts or counties might be given a central institution in which their own teachers and students might be initiated into the practical as well as the æsthetic side of their education, and a system of co-operation might be devised by which the student could learn something of practice and theory simultaneously.

Preservation and Prevention.

The thirteenth annual report of the National Trust for Places of Historic Interest or Natural Beauty mentions, among many items of interest to architects and other students of buildings, an endeavour to prevent the addition of a vestry to the church at Stewkeley, in Buckinghamshire. This church is regarded as being one of the best complete examples of a Norman church in this country. It has an unaltered ground-plan, and as the council of the Society seem to have regarded this fact as the chief justification for their protest, it is to be feared that the faculty that has been granted may permit the violation of this interesting survival. Another interesting building that the Society have made a doubtfully successful effort to preserve, is the Court House at Udimore, near Rye, in Sussex, which is a picturesque two-storey half-timbered building dating, probably, from the fifteenth century. It is said to have been visited by Edward I. and Edward III., but as it was in a dilapidated condition, the owner, it was reported, had stated his intention of destroying it in order to erect modern cottages on the site. With the permission of the owner, the Society sent an architect to examine the building, and



NEW BUILDING FOR THE "WESTERN GANETTE," YEOVIL.
OATLEY AND LAWRENCE, ARCHITECTS.

he reported that it was capable of effective repair at a cost of £250, and of being fitted as three cottages at a further cost of £100 each, without destroying the original character of the building. The owner had not communicated his decision when the Society's report was prepared. There are fairly typical samples of the work that the Society is doing. It also concerns itself with the preservation of beauty spots from the hands of the builder. It must therefore often find itself in the curious position of saving the old from destruction, while preventing the erection of the new. It must be admitted, nevertheless, that, judging from the tone of the report and the record of its transactions, this Society's report was prepared. These are fanaticism that sometimes mars the efforts of similar institutions.

India's Architectural Remains.

In the first of what gives promise of being rather an important series of articles on "Archæology in India," a "Times" correspondent, in the issue of Monday last, presents some interesting particulars of the remains of early buildings in India. The ancient remains, he observes, are comprised in the three indigenous groups of Buddhist, Jain, and Hindu monuments, and to these may be added the foreign group of buildings erected by the Mahomedans from about 1200 A.D. onwards, the product of Saracenic art, which are preserved chiefly in northern India, and some of which, the correspondent declares, are among the finest architectural creations in the world. The Buddhists having been India's first builders in stone, theirs are the earliest remaining antiquities, and such monuments were begun about the middle of the third century B.C. under the Buddhist King Asoka, and extend over a period of about a thousand years. They consist of pillars, topes (structural relic or memorial mounds), churches, and monasteries. The Jain specimens are of much later date, none being assignable to a time prior to the first century A.D.; but in the best examples the interior carving and decorations are richer and more beautiful than any other in India, although the images are artistically inferior.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Extension of the British Museum.

Mr. Harcourt has informed Sir William Bull that the delay in the building operations for the extension of the British Museum in Montagu Place has arisen in connection with the settlement of internal details, and the preparation of the drawings for the superstructure. It is anticipated that the work will be recommenced early in October.

Mosaics in the House of Commons.

In the House of Commons recently Mr. Essex asked the First Commissioner of Works whether the four panels in the Strangers' Lobby, two of which were now filled with mosaics, were originally intended to be all filled in with mosaic decoration; whether there were any cartoons or working drawings in existence intended to provide for the two vacant panels; whether it was intended in the near future to complete the four; and whether the patron saints of Ireland and Scotland are to form the motifs for the remaining designs.

Mr. Harcourt, in reply, said: "I think it most desirable that the two remaining panels should be finished in mosaic, as was always intended; but I fear that the



Photos: W. H. Watts.

DETAIL OF MAIN ENTRANCE.

This new building has been erected by Messrs. Bird and Pippard, of Yeovil, from designs by Messrs. Oatley and Lawrence, architects, of Bristol.

condition of the public finances will not warrant the Government at present in spending money in works of supererogation, however decorative. I may, however, suggest that these panels are very suitable for private generosity on the part of those who are addicted to the missing saints, and I shall be glad to receive any communications in this direction."

Duke of York's School.

Mr. Horniman asked the First Commissioner of Works whether, in case of the sale of the site of the Duke of York's School at Chelsea, means would be taken to reserve at least some portion thereof as an open space, and to retain as many of the large trees as might be possible in the thoroughfares that would be laid out; and whether any plan or scheme had yet been prepared.

Mr. Harcourt replied that no plan or scheme had yet been prepared, and he was not able to make any further statement.

Correspondence.

The Crushing Strength of Concrete.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The article by Mr. T. E. Coleman in your issue for July 22nd is, I think, somewhat misleading as regards the crushing strength of concrete. The crushing strength of good concrete (one cement, two sand, four broken stone) at 28 days will be at least 2,000lbs. per sq. in., whereas Mr. Coleman gives only 350lbs. per sq. in. Again, the increase in strength from 350lbs. at one month to 930lbs. at six months is abnormal, and I can only assume that the tests from which his figures were taken were very unskilfully made, and are therefore of no value for purposes of comparison.

WILLIAM A. T. FLITTON.

Irthlingborough.

To the Editor of THE BUILDERS' JOURNAL

SIR,—The crushing strengths of concrete one month old are based on actual results obtained from personal experience in connection with concrete foundations which were carried to a depth of 40ft. The aggregates available for the purpose consisted of a local limestone, or, as an alternative, broken bricks. Experimental concrete blocks (12in. cubes) were therefore made and tested (after 28 days in air) by actual crushing between pine boards. A series of 20 blocks were made and tested. The crushing strength of concrete consisting of one part Portland cement, one sand, and six broken brick, was found to be about 350lbs. per sq. in., and 320lbs. for concrete with one Portland cement, one sand, and six parts broken local stone. The concrete was made in the usual way, with the ordinary materials available, and under such conditions as would obtain in ordinary contractors' work. No attempt was made to obtain a high and fictitious crushing strength by the adoption of special care in making the test blocks, such as I have frequently seen adopted in making cement briquettes.

With the use of a superior description of aggregate, mixed in the proportions of one cement, two sand, and four parts broken stone, as specified by your correspondent, a much higher laboratory crushing strength could readily be obtained, more especially if the materials are carefully placed in the moulds, and thoroughly well rammed and consolidated in small portions. So far as my own experience goes, however, I am not prepared to accept the figure of 2,000lbs. per sq. in. mentioned by your correspondent as approximately representing the true average crushing strength of ordinary contractors' concrete made with common brick or soft limestone in the proportions which I describe, and tested after 28 days in air.

T. E. COLEMAN.

The Sculptor's Art in England.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—There are some points in regard to the above article in your issue for July 15th about which I am not at all clear.

In "The Beginnings" the writer refers to memorial crosses, "chiefly in Cornwall and in the northern parts of the Kingdom," from which I gather he did not intend to confine his survey only to England, as the heading states. If this is so, surely Ireland has the first claim to "memorial crosses." Then I think it hardly fair to say that the 13th century saw "the culminating point of English sculpture, this being the only period in its history at which a high degree of excellence was obtained by purely natural means . . ." if the writer includes the Renaissance with the Gothic, as it must be borne in mind that both styles originally came from the Continent.

Again, under the heading of "The Decline," I note that the writer includes the





Ground-floor Plan. First-floor Plan.

BAKERY, KING STREET, STANRAER. SALMON AND SON AND GILLESPIE, FF.R.I.B.A., ARCHITECTS.

The plan of this bakery is arranged for speedy packing of the vans in the covered yard with bread for country delivery. The lower internal walls, to a height of 6 ft., are faced with white enamelled bricks and tiles, and the floors are formed of concrete covered with Granolithic. The open-timber roofs are of pine, dressed and stained. The cost of the additions was £1,700. Messrs. Salmon & Son & Gillespie, FF.R.I.B.A., of 53, Bothwell Street, Glasgow, were the architects.

name of Nicholas Stone. The monument referred to in the north transept of Westminster Abbey to George Villiers appears to be confused with that to Sir George Villiers in St. Nicholas Chapel. Nicholas Stone says: "In 1631 I mad a tombe for the Right Honourable Lady the Countes of Bukingham, and sett it up in Westminster Aby, and was payed for it £560." This is the monument to Sir George Villiers in St. Nicholas Chapel. He died in 1605, and the Countess, his second wife, died a year after ordering the monument, namely, in 1632. The Duke of Buckingham, however, was killed in August, 1628, buried in the vault in the September following, and his wife did not die until 1613, after which time, I take it, the monument in Henry VII.'s chapel was erected, but I do not think Nicholas Stone was the sculptor, and the effigies, if they are "bronze statues," as the writer says, would go to prove my theory, for there is no statue in bronze known to be by him.

I think the monument was erected much later—after the death of Stone in 1647.

ALBERT E. BULLOCK, A.R.I.B.A.,
London.

[We agree with Mr. Bullock that in an account of national sculpture (with any pretence to be considered an exhaustive one) the claims of Ireland as represented by numerous finely designed memorial crosses could not well be overlooked, but we adhere to our opinion that the sculptor's art in England was seen at its best towards the end of the 13th century. We are aware that Nicholas Stone was employed for the monument to Sir George Villiers, but, although the available evidence is by no means conclusive, we think it is fair to assume that this sculptor was also responsible for at least the modelling of the bronze statues of the Duke of Buckingham and his wife in the north transept of Westminster Abbey.—Ed. B.J.]

Law Cases.

A MISTAKE IN A CONTRACT. — In the Chancery Division on July 30th judgment was given by Mr. Justice Ross in an action brought by Messrs. Collen Bros. against the County Council of Dublin and others to rectify a deed of the 29th August, 1896, dealing with the contract for the erection of the Portrane Asylum buildings. Mutual mistake was relied on by the plaintiffs. It appeared that the works specified in the bills of quantities were divided into sections and sub-sections. The male and female wards for each separate class of inmate constituted a separate sub-section. The plaintiffs priced the bills of quantities at a total sum of £199,000. The Commissioners being of opinion that the amounts appearing were more than it was advisable to spend on the asylum, directed their quantity surveyor to prepare a bill of reduction. The pricing of the reduced bill brought the aggregate sum down to £169,556. On this basis the tender was made out, with a discount of 1½ per cent., bringing the net sum out at £167,000, and this tender was accepted. It was not until 1900, when the plaintiffs were making up their accounts, that they discovered an error. The price of the male section in the original priced bill of quantities was less than that of the female section. A reference letter in the summary had been misplaced, the effect of which was that there was a difference of £357, which the contractors lost. It had been said that if the plaintiffs made a mistake they must bear the consequences. That was not his Lordship's view of the matter. The intention of the parties, when analysed, was that the tender for the original amount of the priced bill of reduction should be accepted. The sum of £167,000 was erroneously taken to be the total and erroneously embodied in the contract, The primary duty of a court of equity was to enforce fair dealing between man and man, if it could be done without violating some matter of principle. But his lordship was brought face to face in this matter with a technical difficulty which he regretted to say he could not see how the plaintiffs could get over, and that was that they were bound by their tender. Another point was that the plaintiffs' claim was a debt payable out of the poor rate, and must be paid within the half-year within which it was incurred, or within three months after the expiration of such half-year, and not afterwards. The plaintiffs' contended that the meaning of the words "became due" referred to such debts and demands as were recoverable at law, and did not require a declaration in a court of equity. His lordship feared the proposition could not be maintained. The debt was due in equity before the declaration was made. The word "due," he held, implied a debt recoverable by any legal process. It was right to say the section did not seem intended to deal with the case of permanent works continued under the borrowing powers, but he did not see how to escape from the express words used. He knew the plaintiffs were misled by the expectation that their claim could be dealt with by the arbitrator, or that something could be done by the Local Government Board. As his lordship could see no way at present of getting over the difficulty raised by the section, he must with great regret dismiss the action, but under the circumstances without costs. There might be some way of getting over the difficulty. The money was honestly due to the plaintiffs. He suggested to the parties and to the Local Government Board that as soon as notice of appeal had been served they should compromise the matter and give the plaintiffs one half the amount of their claim, thus avoiding the expenditure of more money in litigation. He thougnt that would meet the real justice of the case.

DISPUTE OVER A STRIP OF GROUND 4½INS. WIDE.—At the Gateshead County Court on August 4th his Honour Judge Greenwell heard a case in which the main issue was the ownership of a strip of ground 4½ins. wide and 10ft. 6ins. long, running by a boundary wall between 52 and 54, Cromwell Road, Mount Pleasant, Gateshead. The plaintiff was Mr. H. N. Wood, and the defendant Mr. Isaac Hall, and both parties claimed £10 damages for encroachment, and an injunction ordering the opposite party to remove such part of his outbuilding as was encroaching, being claim and counter-claim respectively. Plaintiff's story was that about ten years ago the existing boundary wall was continued to the west to replace a wooden fence which had up to then formed the boundary line. The builder of the wall received instructions to erect the wall in line with the existing wall, but by some mistake the wall was built 4½ins. within the boundary line on plaintiff's side. Plaintiff knew of that at the time, but did not take any action because he did not anticipate any trouble arising. In May last, however, he decided to replace the wall, and had it built in line with the foundation of the original wall, so counteracting the 4½ins. of ground which he lost ten years ago. Soon afterwards he received a letter from defendant's solicitor, which said he had encroached upon defendant's premises to the extent of 4½ins., which he promptly denied. Defendant in evidence said he had owned the house 52, Cromwell Place since 1895. To his knowledge, no alteration had been made in the boundary line as it then was, and, assuming that the wall was rebuilt about ten years ago, it was not built out of the boundary line. He had never heard of any complaint to the effect that an encroachment had been made on plaintiff's land. On May 9th last he noticed that the wall had been rebuilt, and that it was four and a half inches on his side of the boundary line. His Honour said the parties in the case through bringing it into court would have to spend probably a hundred times as much as the value of the strip of ground in question. Plaintiff had built a wall which disturbed defendant, who had, therefore, threatened him with the law. In consequence, plaintiff himself took action over a piece of land which he had voluntarily given up ten years ago, and probably was never going to mention again if the defendant had let him alone. Was the plaintiff entitled to the land? He was not satisfied that he was. The fact that plaintiff built the wall in the first place, and the fact that he did not protest against the wall having been built so as to encroach upon his land was a great deal stronger evidence than any given as to where the actual boundary line ought to be. In regard to that, it seemed to his Honour that plaintiff's claim failed. On the other hand, defendant's case seemed to fail with equal or even greater completeness. Judgment would be entered for the defendant on the claim, and for the plaintiff on the counter-claim, and each party would pay his own costs.

ROYAL COMMISSION ON WELSH MONUMENTS.

The King has appointed a Royal Commission to make an inventory of the ancient and historical monuments and constructions connected with, or illustrative of, the contemporary culture, civilization, and conditions of life of the people in Wales from the earliest times, and to specify those which seem most worthy of preservation. The Commissioners are:—

Sir John Rhys, Principal of Jesus College, Oxford, Professor of Celtic in the University of Oxford (chairman).

Professor Anwyl, M.A., Professor of Celtic in the University College of Wales, Aberystwyth.

Professor R. C. Bosanquet, Professor of Classical Archæology in the University of Liverpool.

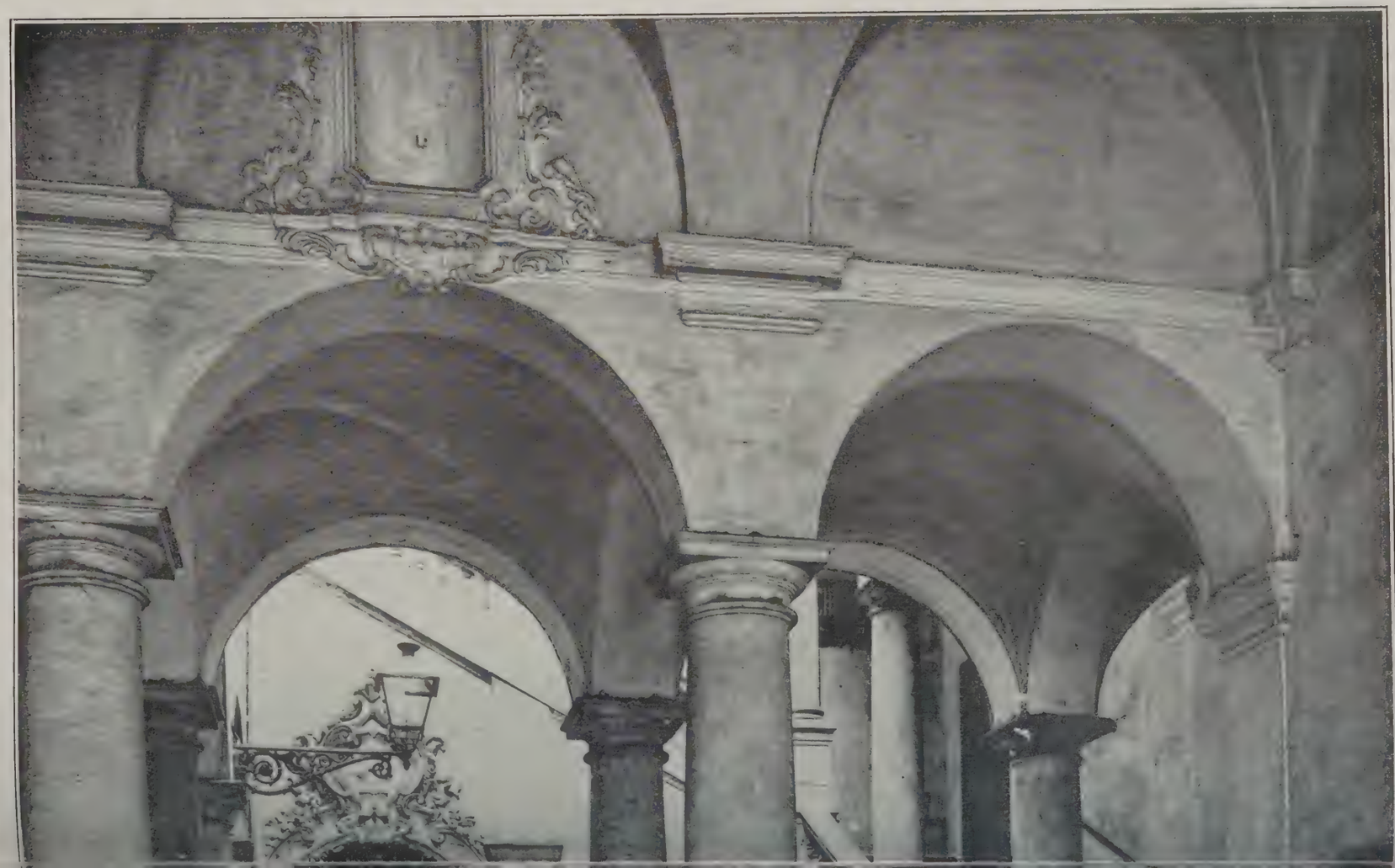
Mr. E. Vincent Evans, secretary of the Cymrodorion Society.

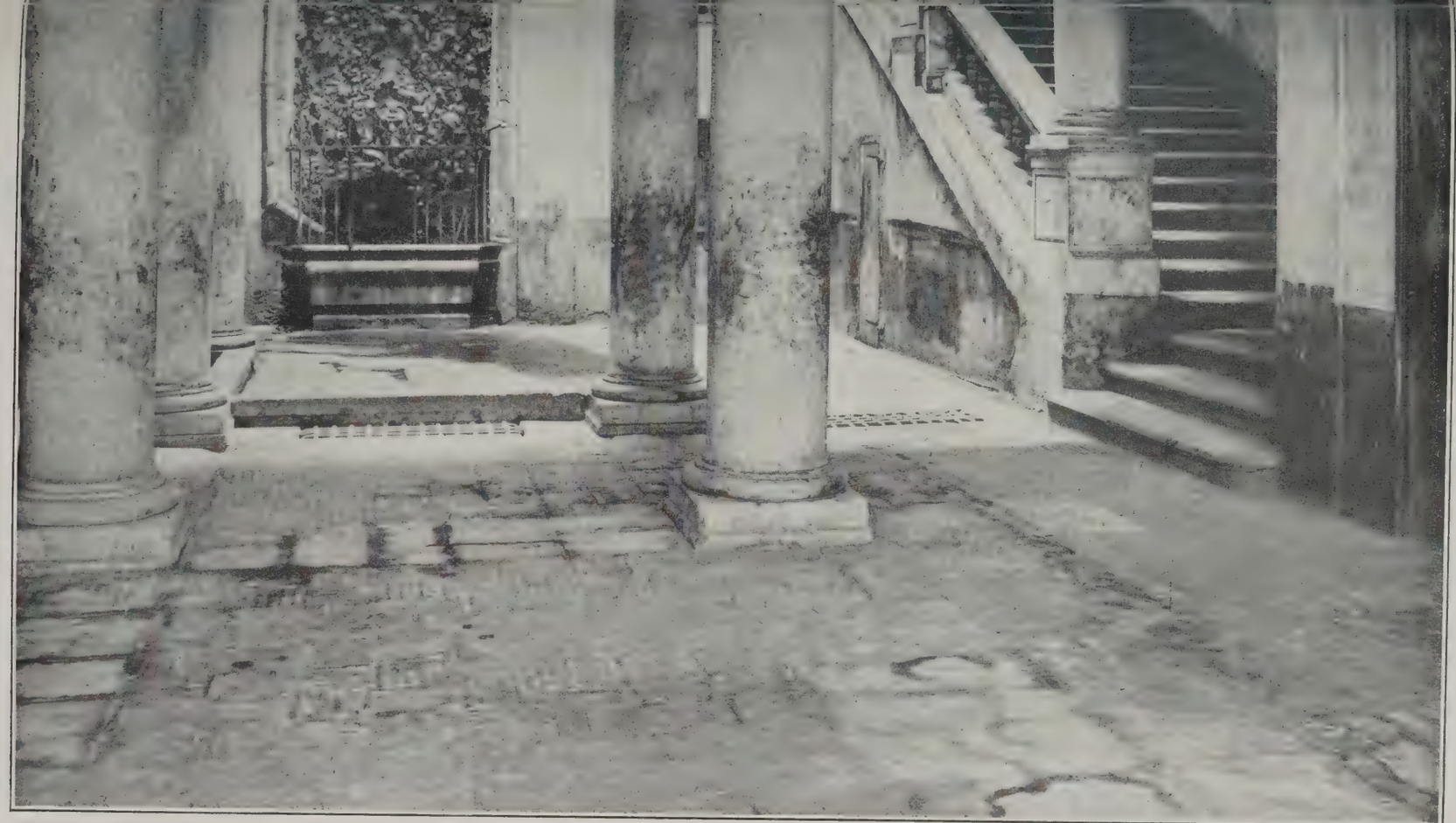
Alderman Robert Hughes, J.P., president of the Cymrodorion Society.

Rev. Griffith Hartwell Jones, Rector of Nutfield, member of the Cambrian Archæological Association.

Lieutenant-Col. William Llewellyn Morgan, R.E., late of the Ordnance Survey, Treasurer of the Cambrian Archæological Association.

The secretary is Mr. Edward Owen, of the India Office, and the assistant secretary, Mr. Phillip Edward Thomas.





VESTIBULE AND ENTRANCE STAIRS, PIAZZA GIUSTINIANI NO. 7, GENOA.

Notes and News.

AN ESSAY ON BACTON ABBEY, NORFOLK, y Mr. Ernest Radford, LL.M., Cantab., s to be published shortly, price 6d.

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THE DUKE OF YORK'S COLUMN, Pall Mall, is being repaired by Mr. W. arkins, who restored the Nelson olumn.

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SPEED INDICATORS ON TRAMS.—The oard of Trade are at present considering ie question of requiring the adoption of peed indicators on tramcars.

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THE NEW CASTLE THEATRE AT STOCK-ON has just been completed in Bridge oad. Messrs. Hope and Tasker, of New-stle, were the architects.

* * *

A TORPEDO FACTORY is to be built at reenock, at a cost of £60,000. Messrs. obert Neill and Sons, of Manchester, ave secured the contract.

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CROSBY HALL.—The London County ouncil have now accepted the offer of e Chartered Bank of India that they ould take over the fabric of Crosby all in the public interest, and the bank as accordingly made it over to them.

* * *

HUGE NEW LOCK FOR PORTSMOUTH.—essrs. Morrison and Mason, of Polma-e, Glasgow, are the contractors selected the Admiralty for the construction of e new lock at Portsmouth Dockyard, hich is estimated to cost £1,000,000. he lock will be 800ft. long and 120ft. ide.

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"HOUSE MOTTOES AND INSCRIPTIONS: D AND NEW."—A new and revised ition of this book, by Miss S. F. A. ulfield, is to be published imme-ately by Mr. Elliot Stock. It contains collection of mottoes taken from houses many lands and ages, with informa-n on the use of such inscriptions, and eir characteristics among different oples. The volume is illustrated from otographs.

* * *

NEW PUBLIC WASHHOUSES AT EDIN-RGH have just been completed. The ildings are situate in Simon Square. ovision is made for 40 washing stalls, gether with hydro-extractors, drying mbers, etc., and a special feature has en made of a large and well-ventilated om where the children can be amused hile their mothers are washing. The rk has been carried out at a cost of out £5,000, from designs by the city chitect, Mr. J. A. Williamson, R.I.B.A.

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THE NEW TOWN HALL AT LANCASTER nearing completion. It is in the cen-of the town, having a frontage to lton Square. The architect was the e Mr. Mountford, whose design is be-g carried out by his partner, Mr. F. Dare pham. The building is constructed of ngridge stone with Darley Dale for the ge columns supporting the pediment e tympanum of which contains sculp-e by Mr. Pomeroy, A.R.A.), and for main cornice. The general stone ving on the building has been exe-ed by Mr. Gilbert Seale, of London, l the wood carving by Messrs. Waring l Gillow, of Lancaster, who are also general contractors. The clerk of works is Mr. Michael Hague, who acted in a similar capacity on the new Sessions House at Preston.

* * *

GALVANISED IRON ROOFING FOR CUBA.—An American consular report says there has been a marked demand during the past year in the Santiago district of Cuba for galvanised corrugated iron roofing. This was due to the activity which has been taking place in building operations, and the fact that this class of roofing is supplanting to a considerable extent the native tile roofing. England supplies practically all the corrugated iron roofing that is sold in this market. The merchants claim that they can purchase a better grade of corrugated iron for less money from British manufacturers than they can from American.

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THE NEW BRIDGE AT SUNDERLAND is expected to be completed by the end of this year. It is being constructed jointly by the North-Eastern Railway Co. and the Sunderland Corporation. The bridge is of double-deck construction, accommodating the railway traffic on the upper deck and vehicular and pedestrian traffic on the lower platform. With its approaches it will have a total length of one and three-quarter miles, and it involves the use of 9,000 tons of steelwork. The contract, put at about £400,000, is being carried out by Sir William Arrol and Company, Ltd., of Glasgow, to the designs and under the inspection of Mr. Charles A. Harrison, of Newcastle-upon-Tyne, the chief engineer of the Northern Division of the North-Eastern Railway.

* * *

MESSRS. EDMOND COIGNET, LTD., of 20, Victoria Street, S.W., have a stand in the French Section of the Machinery Hall at the Franco-British Exhibition. It takes the form of a table—a model of a floor slab, supported by beams and columns, the latter with footings in reinforced concrete. The whole is rendered and finished in Portland cement and sand. The cement used for the concrete and rendering is "Ferrocrete," manufactured by the A.P.C.M., Ltd. On the table are a model Coignet pile (part of which is stripped of concrete, thus showing the method of reinforcement); a sectional model of pipe with spigot joint, part of this model being also stripped showing armouring, and models of the steel framework of the two types of reinforcement or armouring used in beams constructed on the Coignet system. At the back of the table, on a panel, are photographs of various works executed on the Coignet system, among which will be noticed a very extensive tobacco warehouse at Bristol, showing the fine interior effects of reinforced concrete for this class of work.

Our Plate.

Entrance Hall and Stairs to a Genoese Building.

The vestibule and entrance stairs to No. 7, Piazza Giustiniani, Genoa, which we publish as a centre plate this week, is one example out of many of a similar kind to be found in Genoa. In former issues we have given illustrations of work in Genoese palaces — such as the Palazzo Balbi—and here again we see the scholarly character of design which is adopted. The work is well proportioned and well executed, and there is a sturdiness about it which comes as a great relief to much Italian design where columns are used as supports.

Notes on Competitions.

Glamorgan County Offices, Cardiff.

At the suggestion of a large number of intending competitors for this building, the time for sending in designs has been extended to November 1st next. Replies to questions arising out of the conditions have just been isued. From thee we extract the following:—"No perspective drawing is wanted, and if any are sent they will be detached from the plans or pasted over before they are shown to members. . . . It is fully intended by the Council that the adjudicating architect shall be in every respect independent, but as they are not prepared to agree to the terms of competition issued by the Institute, they have not bound themelves to the selection of the adjudicator by the President of the Institute."

A Warrington Improvement Scheme.

On the report of the assessor (Professor C. H. Reilly, of Liverpool), the first premium (£50) for a scheme for the widening of Market Gate, Warrington, has been awarded to Messrs. Wright, Garnett and Wright, an alternative scheme by whom was also placed third. The second place was awarded to Messrs. William and Segar Owen, and the fourth to Mr. Beesley. The competition was a local one, twelve designs being submitted.

New Schools at Sale.

Messrs. Magnall and Littlewoods, of Manchester, are the successful architects in the competition for new Council Schools to be built at Northenden, Sale.

Emergency Hospital, Ilford.

Fifty-four designs were submitted in this competition. The assessor, Mr. H. Percy Adams, F.R.I.B.A. (who took the place of Dr. Green, originally proposed for the position), has made the following award:—1st, Messrs. Armstrong and Wright, of Newcastle-on-Tyne; 2nd, Messrs. Ewen Harper and Brother, of Birmingham; 3rd, Messrs. Chatterton and Couch, of London.

Restoration of St. George's Church, Bolton.

The first premium in this competition has been awarded to Mr. J. L. Simpson, and the second to Mr. F. Freeman—both of Bolton. Mr. Simpson has been appointed architect for the work, which is estimated to cost £7,000. Messrs. Austin and Paley, of Lancaster, assessed the designs submitted.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Aug. 31	PARISH CHURCH AT BISHOPS-WEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.
No date.	COUNCIL CHAMBERS AT BELLSHILL, BOTHWELL. To cost £2,000. Site plan and conditions from Robert Anderson, Parish Council Offices Bellshill. Deposit one guinea.

Trade and Craft.

Messrs. Peters' Specialities.

There is no better evidence of increasing progress in the history of a firm than the necessity for taking larger premises, and Messrs. C. A. Peters, Ltd., of Derby, whose London office was housed in somewhat cramped quarters at 68, Queen Street, Cheapside, have now moved to commodious premises at 116, Newgate Street, E.C. Their new telephone number is 1105 Holborn; but the telegraphic address remains the same: "Carbotron, London." The word "Carbotron" brings us at once to one of the most interesting of Messrs. Peters' specialities "Carbotron" portable stoves. These are not new—they have enjoyed a steady sale for the past 20 years—but recently the demand has very greatly increased, the stove being proclaimed an ideal one for motor houses and garages, and for this purpose it is approved and recommended by all the fire insurance offices. The reason for this is that these stoves burn without smoke, flame, or fumes. It need hardly be added that "Carbotron" is a proprietary fuel, being, in fact, a special chemical compound, and as there is no flame there is no danger of igniting petrol vapour and causing explosions. "Carbotron" developes great heat, burns without smell, and is economical in use, the stoves only requiring attention once every 12 hours or so. For entrance halls, corridors, offices, shops, greenhouses, coach-houses, and lavatories, they are invaluable; and requiring no flue pipes or chimney flue, they are handy for use anywhere. The prices range from 18s. upward. Another speciality, "Carbolineum Avenarius," the wood preservative, hardly requires any mention from us, being known and used the world over. But it may be interesting to mention that this reservative gives a very fine brown stain to the timber, which when sized and varnished, gives a good interior finish. Carbolineum is also used for damp walls, ropes, and boots and shoes. A more powerful preservative, "Sotor," is employed on timber subject to the action of sea water, and for resisting the attacks of the Teredo Navalis. Prism Antioxide is another speciality for preserving metal-work from rust and for preserving paint, and can be applied as a waterproof solution over advertisement bills, wood treated with Carbolineum, as well as iron-work. Messrs. Peters also make indestructible combination washers for the flange joints of steam and water pipes. They consist of rings of soft metal, grooved outside, and holding in the groove packing material, such as asbestos, rubber, hemp, etc. The soft metal in conjunction with the packing readily adapts itself to any unevenness in unplaned flanges. One of the most recent things Messrs. Peters have placed on the market is their "Okin-Vash" paint cleaner. This is a colourless liquid which is applied with a sponge to the painted surface. The paint-work is then washed and rubbed down with another sponge and cold water. From personal experience of this cleaner we can say that it is most effectual, and the proprietors guarantee it to be quite harmless to the paint itself. Messrs. Peters have a number of other ingenious things in household and culinary labour-saving appliances, which will certainly appeal to householders who can visit the showroom at 116, Newgate Street, where Mr. Rycroft Spence, the courteous London manager, will be pleased to see them.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Secondary Schools.

WHITBY.—STREONSALT writes: "Please recommend a good cheap work on secondary schools. Have you published any plans of such schools?"

There is no "good cheap work" on secondary schools; in fact, there is no book at all dealing exclusively with such schools. The best book in which reference is made to them is Mr. Felix Clay's "Modern School Buildings," price 25s. nett. In January last the Board of Education published a series of building regulations for secondary schools, which can be obtained, price 2d. (by post 2½d.) from Messrs. Wyman and Sons, Ltd., 109, Fetter Lane, London, E.C. The regulations for classrooms were given in our issue for February 5th last. On p. 75 of our issue for January 22nd you will find a list of secondary schools recently published in our columns, and on p. 343 of the issue for April 15th is a useful reply in regard to the cost of secondary schools.

Pipes for Heating.

GLOUCESTER.—AJAX writes: "Are there any pipes about 9in diameter that will stand excessive heat? They are wanted for the drying of wheat and other grain. The furnace will be built with firebrick, and we may have to get enforced draught with a fan."

The best pipes for your purpose will be of wrought iron plate, ½in. thick, riveted together, and made by a boiler-smith or bridge builder. You may find it necessary to line the pipe with fireclay tubes, which should be at least ¾in. thick, and it will be better to make the tubes thicker near the furnace, to equalise the heat of the outside of the iron pipe along its length. If the pipes be laid to rise towards the chimney, and the chimney be made the same area as the pipes, and plumb inside all the way to the top, you should not need enforced draught. If you can rely on the fireclay lining being repaired and renewed, you may be able to use lighter pipes—say, ordinary lap-welded, as made by any good boiler-tube works; or special half-rounds, pressed together, which can be obtained through an iron merchant. But if you cannot rely on this daily inspection and regular expense, you will need best boiler plate, riveted with a butt strap, and made in a boiler shop, bridge shed, or shipyard.

INGENIOR.

Roof Queries.

ASHTON.—F. J. A. writes: (1) "When referring to text-books in order to calculate sizes of padstones, the length and breadth are always given, but not the thickness. Is this assumed to be 12ins. thick? (2) I have found it useful to carry wood joists on the lower flange of a girder instead of on the top, but cannot trace any given example showing whether the girder ought to be increased in size or not. What difference does it make if the joists are carried in this way instead of on the top of the girder? (3) What weight should be allowed for an ordinary roof, including wind-pressure, etc.? (4) I have had trouble with tile roofs. I find the tiles are nailed at only every fifth course. The tiler says this is usual, and that nailing every course is unnecessary. What is your opinion?"

(1) The thickness of padstones is fixed by judgment only; there is no general rule, but one-third of the length would in general be a fair proportion for the thickness. (2) Floor joists may usually be carried on the bottom flange of a girder without any increase in the size of the girder being necessary. (3) A gross load of 50lbs. per ft. super. on the sloping surfaces of a roof is usually sufficient, but there are many cases where it is desirable to take the dead load and wind separately—say, 27lbs. per ft. super. over the whole roof for dead load, and 28lbs. per ft. super. on the side only normal to the roof surface for the wind. (4) Tiles are usually hung by pegs, or nibs, every fourth course being nailed in addition.

HENRY ADAMS.

A Building Line Question.

LONG EATON.—F.S. writes: "I have deposited plans, etc. of four cottages and a shop with the Council for their approval, but they are holding the matter back on account of the building line. I intend to build up to the front, but the Council say they require me to set it back 6ft. I should be glad to have your opinion." Sketch sent (not reproduced).

As all the adjoining property appears, from your sketch plan, to be built up to the front, I fail to see on what grounds the council ask for your particular property to be set back. If, however, there are any buildings in the road to the north-west or to the south-west of your building plot, and these buildings are so set back, the council have powers to require you to set back to the same lines (Public Health Act, 1888, section 3). I am of opinion that if this is not the case, the council cannot compel you to set back.

F.S.I.

Work Done by Official in Leisure Time.

LEGITIMUS JUSTUS writes: "Is it legal for a person employed in a public office such as a district or urban council office as a surveyor's assistant to survey and to prepare drawings for proposed new buildings, drainage, or any other work in his leisure time, and to put them before his own council for approval?"

Every such case must stand upon its own merits. As a rule, it is well to avoid any such complications as may arise in the circumstances which you detail. There is, however, nothing in law or custom to hinder a surveyor or his assistant from preparing plans for submission to his own council.

F.S.I.

Obituary.

MR. JAMES SHEPPARD.—We regret to announce the death of Mr. James Sheppard, aged 68. By profession he was an insurance surveyor, acting for the North British and Mercantile Insurance Co. but, both professionally and privately, he extended the scope of his work far beyond the limits of that vocation, and was recognised as an authority on all constructional questions where fire protection was concerned. For ten years he was a member of the Executive of the British Fire Prevention Committee, and was most actively associated with the testing operations of the committee, having been the directing member of no fewer than 40 tests in respect of which reports have been issued. He was a member of the Council of the London Insurance Institute, and personally enjoyed quite exceptional popularity.

CONCRETE AND STEEL SECTION.

(MONTHLY).

Free Lime in Cement.

During recent years there has been a very great advance in the manufacture of Portland Cement. This is attributable to many causes, the chief of which are probably the gradual extension of the system of having tests made in regard to the quality of the cement by independent specialists; the greater appreciation by engineers of the requirements for making good concrete, and the influence of fine grinding; and, finally, the coming of reinforced concrete. These have resulted in a gradual increase in the stringency of specifications. Engineers have not rested satisfied, but have asked for a continual improvement in the strength and quality of cement. The placing of the testing in the hands of specialists who have standardised methods, has required the manufacturer to discard his old rule-of-thumb ways and to employ competent chemists to supervise the manufacture of Portland cement in every stage. In the early days of Portland cement manufacture there was risk of considerable quantities of free lime being present in the materials, due to the irregularity of proportioning and mixing and of the burning in the early type of chamber kiln, the effect of the latter being often to permit underburnt clinker to be ground up into the cement. This free lime and the presence of underburnt clinker caused the material to undergo considerable expansion in setting as well as frequently causing the work to be unsound. The special tests designed to ensure constancy of volume, *i.e.*, to eliminate expansion, were therefore gradually increased in severity, and the manufacturer was pressed to effect improvements in this direction. At the same time the influence of fine grinding set off in part the deleterious results due to the presence of free lime, especially when the cement was stored in thin layers so as to allow air slaking to take place—a general requirement in the early days that was the outcome of the presence of free lime due to underburnt clinker. The proportions of the materials entering into cement are ruled by chemical reactions, and therefore they are fairly settled, but, to produce a good cement, the materials require to be thoroughly vitrified at a high temperature in order to eliminate the presence of free lime. In the early days of manufacture, although the proportions of the lime might be chemically accurate enough to secure a proper cement, yet the silicates and aluminates if lime had not been formed by the reactions that required high temperatures, and consequently the lime present was quick, of the nature known as "free."

A good deal of cement continues to be manufactured in chamber kilns, and these have been improved, as also the methods of manufacture, so that a much better quality of cement is produced with them than was formerly the case; indeed, it is only necessary to exercise great care in the rejection of underburnt clinker to obtain good-quality cement from the earliest kilns. However, the last few years have seen a considerable change in the process of manufacture, for the rotary kiln, which had been experimented with for many years, has at last been brought to a state of perfection, and many cement manufacturers have adopted it because it economises in manufacture as well as secures a better quality of cement. Underburnt clinker can of course be produced in the rotary kiln, but with ordinary care an almost perfect product results—that is to say, the vitrification of the materials is such as to combine the whole of the ingredients and leave no free lime present. The clinker obtained from such rotary kilns is very different from that from chamber kilns, being in small nodules, not in lumps. The quality of the cement to-day is measurably superior therefore to the early cement; yet we hear complaints, and it is the purpose of this note to draw attention to certain characteristics which we think require careful investigation.

The Chatelier test for constancy of volume was of considerable value at one time, but too much importance has been attached to it. With the idea of practically eliminating expansion altogether, manufacturers have decreased the quantity of lime and have increased the quantity of alumina in the cement. A small proportion of free lime in cement may be present without material disadvantage, for many classes of work, particularly in building construction, for the adoption of reinforced concrete work has made it a more general custom to employ mechanical mixers and to use the concrete fairly wet, which are safeguards additional to that of fine grinding, because in this way the cement is more thoroughly incorporated throughout the mass, and the water penetrates into every part. Furthermore, the fineness of grinding means that any free lime particles are more intimately mixed throughout the cement. It has been the custom for a long time to depend upon tensile tests to ascertain the strength of cement, but these are practically of no value. We do not require Portland cement to develop great tensile strength; in almost all cases it is called upon to develop compressive resistance. Manufacturers have been making their cement to conform to tensile tests, which are entirely opposed to practice. They should have discarded tensile tests altogether, rather than take the opposite view, as they have done. If they had watched closely the results of tests upon the compressive strength of their cements, they would have been able to greatly improve the quality of the cement for practical purposes far better than they have been able to do by elaborate work in other directions. A cement that has a proportion of alumina which is so great as to cause us to call it overclayed, may develop a high tensile resistance, but it will be deficient in regard to compressive resistance. Therefore, briquettes in a tensile testing machine may show good results, and tests as regards expansion by the Chatelier method may be excellent, but the cement may after all be very inferior. Even if a certain amount of expansion in the setting of Portland cement is residual, the means which go to counteract it, such as fine grinding, thorough mixing, and well wetting, will be taken up by the voids present in the concrete, but if the cement errs on the side of entire elimination of expansion, or indeed contraction, certain effects result which may be very harmful in practice.

Architects and engineers were at one time much frightened at the possibility of concrete floors expanding and pushing the walls out, and we sometimes find in old specifications a requirement for a space to be left between the edges of a concrete floor and the walls to allow this expansion to take place. Though such expansion may have occurred in a few instances with very bad cement, and so may have led to these requirements being stipulated, as a general rule nothing of the sort ever took place, and enormous areas of floors have been constructed without any provision in this respect, and no expansion has been noticeable. Thus manufacturers have been engaged in pursuing a shadow in trying to eliminate expansion, for the results in practice are not so harmful as they have been supposed. They have now gone too far, and we have lately heard of instances where overclayed cement was used for the construction of concrete floors, of contraction taking place in the setting, which drew the floor slabs away from the supports and caused cracks; obviously this is very detrimental. We think, too, that many minor troubles that have occurred in connection with the cracking of concrete floors might be traced to this overclaying, if we may so call it, of the cement, and the elimination of expansion. There are other aspects, also, of the results of contraction in concrete which may here be set forth, to be borne in mind by manufacturers.

In reinforced concrete work, steel is, as a rule, introduced for the purpose of taking tension, but it is also often introduced to reinforce the concrete in the resisting of compressive stresses—as, for instance, in columns, posts or pillars. The vertical rods in such structural members are embedded sufficiently far within the concrete to feel the full effects of any contraction that may occur. This will put an internal compressive stress in the steel that may be considerable, so that in building a column under such conditions on ordinary theory, we may have the steel over-stressed, to counteract which we ought in designing it to resist any specific load to increase its amount, which, of course, is not in the direction of economy. The same thing applies to the construction of reinforced concrete arches. In some few tests that have been conducted upon reinforced concrete beams it has been surprising to note that practically no deflection has taken place in the first stages of loading. An explanation of this, it has been suggested, may be found in the contraction of the concrete, which would introduce compression into the steel that would have to be neutralised by the application of loads before deflection under the tensile stresses thereby induced would become evident.

We have before referred in these columns to the very great importance of temperature stresses in concrete, but of almost equal importance is many cases

are the stresses induced by the contraction of the concrete dependent upon the setting qualities of the cement. Cracks that become evident, and result in material loss in the construction of tanks, reservoirs, etc., are no doubt often partly or wholly attributable to contraction in the setting, but few authorities have recognised the importance of such influences We urge the importance of thorough investigation into the chemistry of Portland cement manufacture in regard to the practical aspects which we have touched on above.

MODERN PRACTICE IN TALL CHIMNEY CONSTRUCTION. III.

By Hector St. G. Robinson.

Steel Chimneys.

In many places, notably in steelworks, steel plate chimneys are preferred to brick. The advantages claimed are greater strength and safety, smaller space required, immunity against lightning, smaller initial cost, and avoidance of infiltration of air, and consequent checking of the draught—a defect common in brick chimneys. On the other hand, steel chimneys have a shorter life, and are expensive to maintain, inasmuch as they require painting at least every three years. As a rule they are anything but pleasing structures, and architects will no doubt agree with the writer that, as chimneys must of necessity constantly meet the public gaze, it is little short of a crime to make them standing embodiments of innate ugliness. This type of chimney is usually cylindrical in shape, the bottom courses of plates being splayed out to increase the stability. The steel shell is generally secured to a heavy cast-iron ring, which in turn is carried by a brick or concrete foundation by means of long bolts and anchor plates, no guys being used.

In small stacks four or more steel guys are sometimes employed attached to the shell at about two-thirds of the height, and anchored to blocks of concrete, or other suitable objects. This method of support is, however, unsuitable for large or even moderate-sized chimneys.

Steel chimneys are usually provided with a thin lining of firebrick carried to the full height, and independent of the shell. In some modern examples, however, this form of construction has been departed from, the upper portion of the lining being carried by the shell. This method was employed in the four large steel chimneys erected last year at the Long Island City Power Station of the Pennsylvania Railway Company. These chimneys are 275ft. high, and 16ft. in diameter at the top. The lining is self-supporting for a height of 96ft. above the base, above which point it is only 4½in. thick, and supported by Zed bars rivetted to the shell, a space being allowed between each section of the firebrick and the underside of the Zed bars to allow for expansion.

The determination of the thickness of the plates forming the shell is simple. It is usually assumed that the steel will resist the wind moment PL.

Initial compression will exist, due to the weight of the shell and any material supported thereon.

Calling W the weight of shell.

„ A the area of section $= \frac{\pi}{4}(D^2-d^2)$.

„ Z the section modulus of an annular section, having D and d for outside and inside diameter respectively—

$$= \frac{\pi}{32}\left(\frac{D^4-d^4}{D}\right) = .0982\left(\frac{D^4-d^4}{D}\right)$$

A number of values are given in Table B.

The unit stress in the steel shell

$$= \frac{W}{A} \mp \frac{PL}{Z}$$

TABLE B.

Values of section modulus of thin annular sections by the formula $Z = .0982\left(\frac{D^4-d^4}{D}\right)$ in inch units.

Inside dia. inches.	THICKNESS OF PLATE. ¼in.	5/16in.	⅜in.	7/16in.	½in.
48	454·8	568·8	682·8	798·0	913·2
60	711·6	888·0	1068·0	1248·0	1428·0
72	1020·0	1284·0	1536·0	1788·0	2052·0
84	1392·0	1740·0	2088·0	2436.0	2784·0
96	1812·0	2268·0	2724·0	3180·0	3636·0
108	2291·0	2868·0	3444·0	4020·0	4496·0
120	2832·0	3540·0	4248·0	4968·0	5676·0
132	3432·0	4284·0	5148·0	6012·0	6864·0

This formula would give accurate results if the shell were in one plate without joints, but as the strength of riveted joints is much less than the solid plate, it follows that the efficiency of the horizontal circumferential joints will regulate the strength of the structure. The efficiency of single riveted lap joints of the usual proportions in plates up to ½in thick, with punched holes, is about 50 per cent. of the solid plate, double riveted lap joints being about 60 per cent. If in calculating a chimney shell by the foregoing formula a factor of safety of 8 is obtained, it will be readily seen that with single riveted joints the actual factor of safety will be but 4.

The material of which the plates are made should be mild steel, having an ultimate strength of 55,000 to 64,000lbs. per sq. in. This quality of steel is what is known as "flange steel," or "boiler steel." There is a cheaper grade of steel plates on the market known as "tank steel." This latter material, however, is most unreliable, and is apt to be hard and brittle, therefore it should never be allowed in any part of the structure.

In constructing steel chimneys it is usual to arrange the rings telescopically, tapering, of course, towards the top. It is very desirable to caulk the upper edge of all plates, otherwise moisture will readily find its way between the plates, and violent corrosion would result. This corrosion, once commenced, is exceedingly difficult to arrest, owing to the impossibility of reaching the seat of the trouble with paint. All caulking edges should be bevelled in a plate edge planing machine, and the caulking should always be done with a round-nosed tool. If a square-nosed tool is used it creases the inner plate, and if this should prove to be of brittle steel it might cause a failure along this line. Lap joints are almost universal in steel chimneys, but joints with cover straps have been used in very high-class work. The increase in efficiency owing to this joint is very little, probably not more than 10 per cent., and as the cost of the work is increased at least 25 per cent., they are seldom used.

The lower shell plates are usually double riveted in the circumferential joints, with single riveting in the upper rings: the vertical joints are of ample strength if single riveted. The proportions of diameters and pitch of rivets to thickness of plate are given on the following table:—

TABLE C.

RIVETED JOINTS OF CHIMNEYS.

	Thickness of Plate.	Diameter of Rivets.	Pitch of Rivets. Centre to Centre.	Distance between Pitch Lines.	Distance of Pitch Line from edge of Plate.	Percentage of total Strength of plate developed punched holes.
Single Riveted Lap Joint	¼"	⅝"	1⅝"		1"	50
	5/16"	⅝"	1¾"		1⅛"	
Double Riveted Lap Joint	5/16"	⅝"	2⅝"	2⅛"	1⅛"	60
	⅜"	¾"	2⅝"	2⅛"	1¼"	
	⅜"	¾"	2¾"	2¼"	1⅜"	
	7/16"	⅞"	2⅞"	2⅜"	1½"	
	½"					

Fig. 7 represents a typical design for a steel chimney. A large number of such chimneys have been constructed, and are in satisfactory operation in America. Table D gives the principal dimensions of 24 sizes of this type, varying from 2ft. 6ins. to 11ft. inside diameter, and from 70 to 300ft. in height. In all cases the steel shell is in four thicknesses, each thickness being carried about one-quarter of the height, or as near as a standard width of plate will allow, the basis of calculation being a uniform wind-pressure of 50lbs. per sq. ft. Each stack has three openings in the shell, one boiler flue on each side and one soot door, this latter being 3ft. by 4ft. in each case. These openings should be reinforced with compensating rings of heavy angle bar. In many cases, however, the flues are

D. TABLE OF DIMENSIONS.*

A	B	C	D	E	F	G	H	J	K	L	Found Bolts, No. of.	Diam..
in.	ft.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	in.	in.	in.	in.		in..
30	70	12 0	5 0	7 0	4 6	3 4	5/16	5/16	3/32	¼	6	1½
30	90	13 0	6 0	8 0	4 8	3 4	3/32	5/16	3/32	¼	6	1½
30	110	14 0	7 0	9 0	4 9	3 4	3/8	3/32	5/16	3/32	6	1⅜
36	70	13 0	6 0	7 7	5 0	3 10	3/32	5/16	3/32	¼	6	1¾
36	90	14 0	7 0	8 6	5 2	3 10	3/32	5/16	3/32	¼	6	1¾
36	110	15 0	8 0	9 6	5 4	3 10	3/8	3/32	5/16	3/32	6	1¾
48	90	14 0	7 0	9 2	6 0	4 10	3/32	5/16	3/32	¼	6	2
48	110	15 6	8 0	9 9	6 2	4 10	3/8	3/32	5/16	3/32	8	2
48	130	17 0	9 0	11 4	6 8	4 10	3/8	3/32	5/16	3/32	8	2
60	100	17 0	8 0	10 6	7 0	5 10	3/8	3/32	5/16	3/32	8	2¼
60	125	18 6	9 0	12 0	7 8	5 10	3/8	3/32	5/16	3/32	8	2¼
60	150	20 0	10 0	13 2	7 9	5 10	3/8	3/8	5/16	3/32	10	2¼
72	125	19 0	8 6	13 0	8 8	6 10	3/8	3/32	5/16	3/32	10	2⅜
72	150	20 6	9 6	14 2	8 9	6 10	3/32	3/8	3/32	3/32	10	2⅜
72	175	22 6	10 6	15 3	9 0	6 10	3/32	3/8	3/32	3/32	10	2⅜
84	130	21 0	9 0	14 0	9 8	7 10	3/8	3/32	5/16	3/32	11	2½
84	165	23 6	10 0	15 4	9 9	7 10	3/32	3/8	3/32	3/32	10	2½
84	200	26 6	11 0	16 9	10 0	7 10	3/32	3/8	3/32	3/32	12	2½
108	150	24 6	10 0	16 9	11 9	9 10	3/32	3/8	3/32	3/32	12	2½
108	190	27 6	11 0	18 6	12 0	9 10	3/32	3/8	3/32	3/32	12	2½
108	240	30 6	12 0	20 6	12 2	9 10	7/16	3/32	3/32	3/32	14	2½
132	200	30 0	12 0	20 9	14 0	11 10	3/32	3/8	3/32	3/32	14	2½
132	250	33 0	13 0	23 4	14 4	11 10	7/16	3/32	3/32	3/32	14	2½
132	300	36 0	14 0	25 0	14 8	11 10	½	7/16	3/32	5/16	16	2½

* *The dimensions indicated by letters are shown on Fig. 7.*

introduced through the foundation. Around the top is placed an angle bar ring, to which is bolted a cast-iron cap, this cap, together with the heavy cast-iron base plate, being cast in segments and bolted together. Ornamental caps, as on the chimney illustrated, are best made of copper, as they are then lighter, and do not rust away as quickly as steel caps would, but, owing to expense, copper is seldom used. A ladder is usually placed outside this class of lined chimney in all cases when the height exceeds about 80ft., these ladders being carried to the full height of the chimney, and out over the ornamental cap, the sides being either of flat bar or steam barrel, placed 18ins. apart, the rungs being of round bars, generally at 12in. centres.

As these chimneys are usually painted from a swinging cradle, it is necessary to provide some means of attaching this near the top. A Zed bar ring with one flange rivetted to the shell immediately under the top ornament is usually all the provision that is required; a trolley can readily be run round on this Zed.

The number and diameter of the foundation bolts, together with size of foundation, are given in the table. These bolts are carried through the foundation to within a few inches of the underside. The foundations have been calculated on the assumption that the ground is fairly firm. Steel or iron chimneys are never protected against lightning by rods or otherwise, as the metal in the chimney and the bolts running down deep in the foundation are generally considered sufficient protection.

Reinforced Concrete Chimneys.

Concrete chimneys have received considerable attention of late owing to the introduction of reinforced concrete. Plain concrete has, however, been used for chimney construction for a number of years. As long ago as 1873 the River Wear Commissioners erected such a chimney at their chain-testing works at the South Dock, Sunderland, the concrete being mixed in the proportion of 1 part Portland cement to 5 of gravel, and the method of construction adopted being similar to the present method of constructing reinforced concrete chimneys.

The advocates of reinforced concrete claim that this material is the best yet introduced for chimney construction, as it embodies most of the advantages of both brick and steel plate construction without their disadvantages. Despite these facts, however, numerous failures of a more or less serious nature have occurred, principally in America, where a large number of chimneys of this class have been built. These failures can in most cases be directly traced to faulty materials or workmanship, and do not therefore constitute an argument against the adoption of reinforced concrete; at the same time they call attention to the necessity for expert supervision in construction.

To architects who are accustomed to the thick walls of brick chimneys the slender proportions of the reinforced concrete type must appear startling. The relative factor of safety, however, is generally higher in the latter. The usual form of construction in this class of chimney is as follows:—

The shell is usually made of two thicknesses only, the lower, or first thickness, extending up to about one-third the height. This bottom portion is protected from the hot gases by a concrete lining with a ventilated air-space behind. The inside shell is usually reinforced with vertical steel to resist the tensile stresses, and to assist in resisting the compressive stresses due to wind-pressure, steel hoops being introduced to stiffen the vertical steel, and prevent thermal cracks induced by the difference in temperature inside and outside the shell.

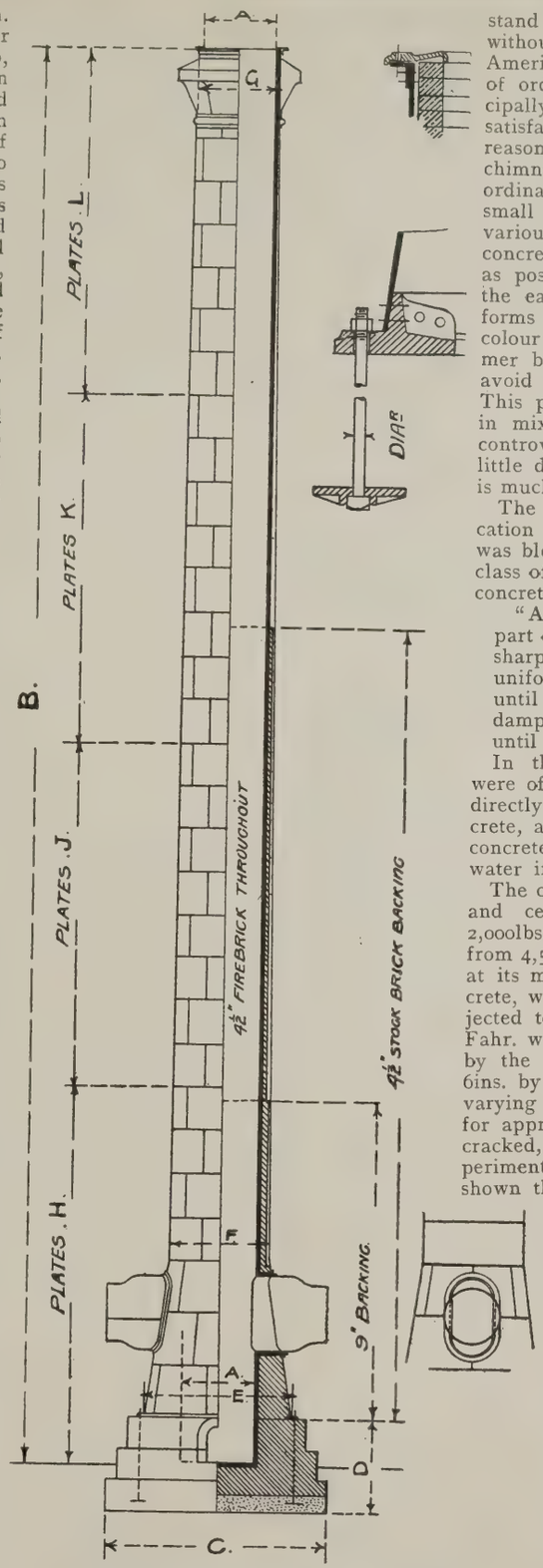


FIG. 7.—TYPICAL DESIGN FOR STEEL CHIMNEY.

The concrete is usually a sand mortar—not a true concrete—3 parts of sand to 1 of Portland cement being the most common mixture, the principal reason for using such a concrete being that it will stand a comparatively high temperature without injury. Quite a number of American chimneys have been constructed of ordinary mixtures of concrete—principally on the Ransome system—with satisfactory results, and the writer sees no reason why the outside shell of a concrete chimney should not be constructed of ordinary concrete if the aggregate be small and sufficient care is exercised. For various reasons it is the custom to mix concrete for chimneys with as little water as possible, the two chief reasons being the ease and rapidity with which the forms can be raised, and the uniform colour of the resulting surface, the former being important in attempting to avoid horizontal planes of separation. This practice of using insufficient water in mixing is a point over which much controversy has taken place, but there is little doubt that a "dry." mixed concrete is much inferior to a "wet" mixture.

The following extract from the specification of an American chimney, which was blown down in a gale, will show the class of concrete often used for reinforced concrete chimneys:—

> "All concrete to be composed of 1 part of Portland cement to 3 parts clean sharp river sand, mixed dry until of a uniform colour, and then moistened until the mixture has a consistency of damp clay; this mixture to be rammed until the water appears at the top."

In this case, although the materials were of excellent quality, the failure was directly traced to the weak porous concrete, and to the lack of adhesion of the concrete to the steel due to insufficient water in mixing.

The crushing strength of a 3 to 1 sand and cement concrete should be about 2,000lbs. per sq. in. in seven days, and from 4,500 to 5,000lbs. when it has arrived at its maximum strength. Such a concrete, when one month old, has been subjected to a temperature up to 600 degs. Fahr. without injury, but a test conducted by the writer on a specimen 6ins. by 6ins. by 4ins., subjected to a temperature varying between 800 and 850 degs. Fahr. for approximately 90 hours, was slightly cracked, but otherwise uninjured. Experiments at Watertown Arsenal have shown that a temperature of about 1,500 degs. Fahr. continued for a few hours is sufficient to draw out the water of crystallisation and destroy the strength of the concrete for a depth of from ½in. to 1in. While much remains to be learned as to the effect of high temperatures on concrete, the writer is of opinion that for temperatures of over 800 degs. Fahr. a lining of refractory material should be used in place of the usual concrete one. As has already been pointed out, however, the temperature of the gases from boilers seldom exceeds 600 degs. Fahr.

Plain rods and bars are often used for reinforcement, sometimes in the form of T bars, but it occurs to the writer that the slight saving in cost effected by the use of plain bars or round rods over the use of bars giving an effective mechanical bond is a very high price to pay for the risk dependent on their use.

The method of determining the resistance moment of an annular section of concrete reinforced with steel is rather complex, the process being lengthy and cumbersome, and more of academic than

general interest, therefore nothing further than the final deductions of the various authorities will be given.

Most attempts that have been made to analyse the stresses in a reinforced concrete chimney shell involve the tacit assumption that a vertical chimney resists horizontal forces in exactly the same way that a cantilever beam resists vertical loading. As is well known, tensile stress will not exist in a circular chimney until the resultant of the forces falls beyond a point one-quarter of the diameter from the outside of the section. This is perfectly general, and applies to any class of chimney. An assumption that allows tension to exist on the windward side from the very commencement of wind-pressure is obviously inaccurate.

Taking the case in which the weight of the shell is such that the resultant is inside of the point mentioned above, it will be seen that the concrete and steel share in the stress proportionately to their compressive moduli of elasticities. The section is therefore a symmetrical one as regards resistance to the bending moment imposed by the wind-pressure.

Call M the bending moment due to wind-pressure in in.-lbs.
R the mean radius of the concrete shell.
fc the compressive stress in the concrete.
C the thickness of the concrete ring.
S the thickness of a steel shell of the area and to the same diameter as the mean diameter of the reinforcing bars.

and M the $\frac{\text{E for steel}}{\text{E for concrete}}$ = say 15.

then $M = fc\,\pi\,R^2c\left(1 + m\frac{S}{C}\right)$

Reinforced concrete chimneys are generally of such a small size at their base that the resultant of the forces will pass outside the section altogether. The foregoing formula will, therefore, have a limited application. If, however, it is assumed that the concrete is capable of resisting tension, the section would still be a symmetrical one, and the scope of the formula would be further extended. It has been pointed out in an interesting article by Messrs. Taylor, Glenday, and Faber, in "Engineering," that in a reinforced concrete chimney the method of calculating the stresses due to bending moment, and those due to weight separately will give incorrect results. After a lengthy theoretical discussion on the matter, these writers evolved the accompanying convenient formulæ for ascertaining the thickness of concrete, and the area of steel required for a large variety of conditions —

In which M is the moment in in. = lbs. due to the wind-pressure above the section.
W is the weight in lbs. of the chimney shell above the section.
R is the mean radius of the shell.
$\frac{Es}{Ec}$ is taken as 15.

These simple formulæ are based on sound theoretical reasoning, which is probably the most successful attempt yet made to rationally analyse the stresses in an annular reinforced concrete section subjected to direct compression combined with bending.

Another method of arriving at the dimensions of a reinforced concrete chimney was devised by Carl Weber, and is still used by the Weber Companies. Apart from its scientific value, this formula has in its favour the fact that it has been used for finding the dimensions of numerous very successful chimneys.

If M = bending moment due to wind *foot* pounds.
D = external diameter and d = internal diameter in feet.
W = weight of chimney in lbs.
A = area of section of chimney in sq. ft., which section resists.
S = area of steel required.
fs = maximum tensile stress in steel due to bending, etc., lbs. per sq. ft.
fc = maximum compression in concrete lbs. per sq. ft.
B = bending moment which section resists.

then

$$B = M - W\frac{D}{8}\left\{1 - \left(\frac{d}{D}\right)^2\right\}$$

$$fs = B\frac{32D}{D^4 - d^4} - \frac{W}{A}$$

$$S = \frac{A\,fs}{\text{Stress allowed in steel}}$$

$$fc = \frac{\frac{W}{A}}{\frac{2}{} + 125} + fs$$

The Weber Company allow a compressive stress in the concrete of 600lbs. per sq. in., and a tensile stress in the steel reinforcement of 16,000lbs. per sq. in.

The weakening effect of the flue openings in the shell of the chimney must be considerable, despite the many ingenious attempts to overcome this, and it is a point in the design that requires careful consideration.

The inside lining has, in addition to supporting its own weight, to resist the thermal stresses induced by the great difference of temperature on the two sides. As the expansion and contraction is not restricted, a few vertical rods are all that are required. The load per sq. in. on the foot of a concrete column of uniform cross-section is about one lb. per ft. of height. For a lining 80 ft. high the stress at the base induced by its own weight would therefore be only 80lbs. per sq. in. Four inches is a very usual thickness for a concrete lining, and for constructional reasons it should not be less. Reinforced concrete chimneys are usually built in lifts of 3ft., two sets of forms being used. If a very good finish is required, they are metal lined. In the single shell the rate of progress is often two 3ft. lifts per day when a "dry" mixture of concrete is used. The scaffolding is built up inside in a similar manner to that employed in the construction of brick chimneys.

It is a well-known fact that any constructions made entirely of iron are practically immune against the effects of lightning, as the amount of electricity accumulated in the case of a lightning stroke is allowed to distribute itself over the structure and flow off to the earth at many places with greatly reduced intensity. Conditions are quite similar in connection with buildings made entirely of reinforced concrete, as the discharging current will find the iron and distribution rods of a reinforced concrete structure struck by lightning a good conductor of electricity; therefore neither artificial lightning arresters nor parts of such will be required in any construction consisting entirely of reinforced concrete. Despite this fact, however, reinforced concrete chimneys are usually fitted with some form of additional protection, a conductor of the form of a thin copper tape often being seen running down the side, but as quite a number of reinforcing rods are carried to the full height of the chimney all that seems necessary is to provide a number of discharge points projecting above the chimney and connected to the vertical rods.

Table of concrete and steel required in chimneys for various unit stresses. (Taylor, Glenday, Faber.)

Stresses per sq. in.		Total thickness of Concrete Shell.		Total area vertical Steel required.	
Concrete.	Steel.				
600	12,000	$\frac{M}{4,582R^2} + \frac{W}{1,372R}$		$\frac{M}{6,408R} - \frac{W}{7,776}$	
600	14,000	$\frac{M}{3,409R^2} + \frac{W}{1,410R}$		$\frac{M}{7,551R} - \frac{W}{8,990}$	
600	16,000	$\frac{M}{2,866{\cdot}5R^2} + \frac{W}{1,419R}$		$\frac{M}{8,685R} - \frac{W}{10,230}$	
400	16,000	$\frac{M}{1,376R^2} + \frac{W}{911R}$		$\frac{M}{8,600R} - \frac{W}{9,698}$	

THE NEW MARINE DRIVE AT SCARBOROUGH.

The new marine drive, linking up the north and south bays at Scarborough, which was formally opened on Wednesday last by the Duke and Duchess of Connaught, has been one of the most costly works of its kind constructed during recent years by any municipal authority in Great Britain: the total cost up to date being £120,000. The following particulars of the work are taken from the "Times":—The sea wall of the drive is 4,200ft. in length and varies in height from 22ft. to 40ft. It is built upon Oxford clay or blue shale, and the foundations are 4ft. below low-water mark. The wall has a concave front to the sea and is constructed entirely of cement concrete, whilst the face and a portion of the back, in the more exposed portions of the work, are built up of blocks varying from 1.5 to 9 tons each, made of concrete 6 to 1 and backed with mass concrete 8 to 1. The space behind the wall has been filled with material scarped from the face of the cliffs, and upon this has been constructed the promenade and carriage drive. The promenade is 20ft. in width and is paved with 6½ins. of concrete paving, laid *in situ* on an underbed of 12ins. of 8 to 1 concrete. The roadway is 40ft. in width, and in the more exposed portions of the work it is paved with concrete blocks 2ft. by 1ft. by 7ins. These blocks are laid on an underbed of 12ins. of 8 to 1 concrete and are bedded with lime mortar and grouted up with cement, so that in the event of any settlement of the filling behind the walls upon which they are laid the blocks may be easily taken up and relaid.

RICHMOND BRIDGE.—At the last meeting of the Surrey County Council the Highways Committee, upon consideration of a communication from the Richmond Town Council, decided that they could not advise the County Council to entertain now or in the near future a proposal either for the rebuilding of Richmond Bridge or the building of a new bridge on another site.

HOLLOW REINFORCED CONCRETE POLES & PIPES.

A new process for manufacturing hollow poles and pipes of reinforced concrete has just been introduced into this country by Messrs. Siegwart, Ltd., of 1, Great Chapel Street, Westminster. It is the invention of Mr. Hans Siegwart, of Lucerne, Switzerland, who is well known as the inventor of a system of reinforced concrete fire-resisting floor construction made up of hollow tubular beams laid side by side. Mr. Siegwart is noted for his originality in dealing with concrete, for in making his beams he builds them in slab form and cuts them up into separate beams by means of a saw while the concrete is still soft, *i.e.*, just as it has begun to set. In this latest invention he has again treated the material in a novel fashion. The principle that he has worked upon is entirely different from the customary method of manufacturing concrete, namely, by casting it in a mould and allowing it to harden therein. Mr. Siegwart uses the material in a plastic way very much like clay, paper pulp, or metal, for by his process of wrapping the concrete around a core no moulds are required to give it shape and form.

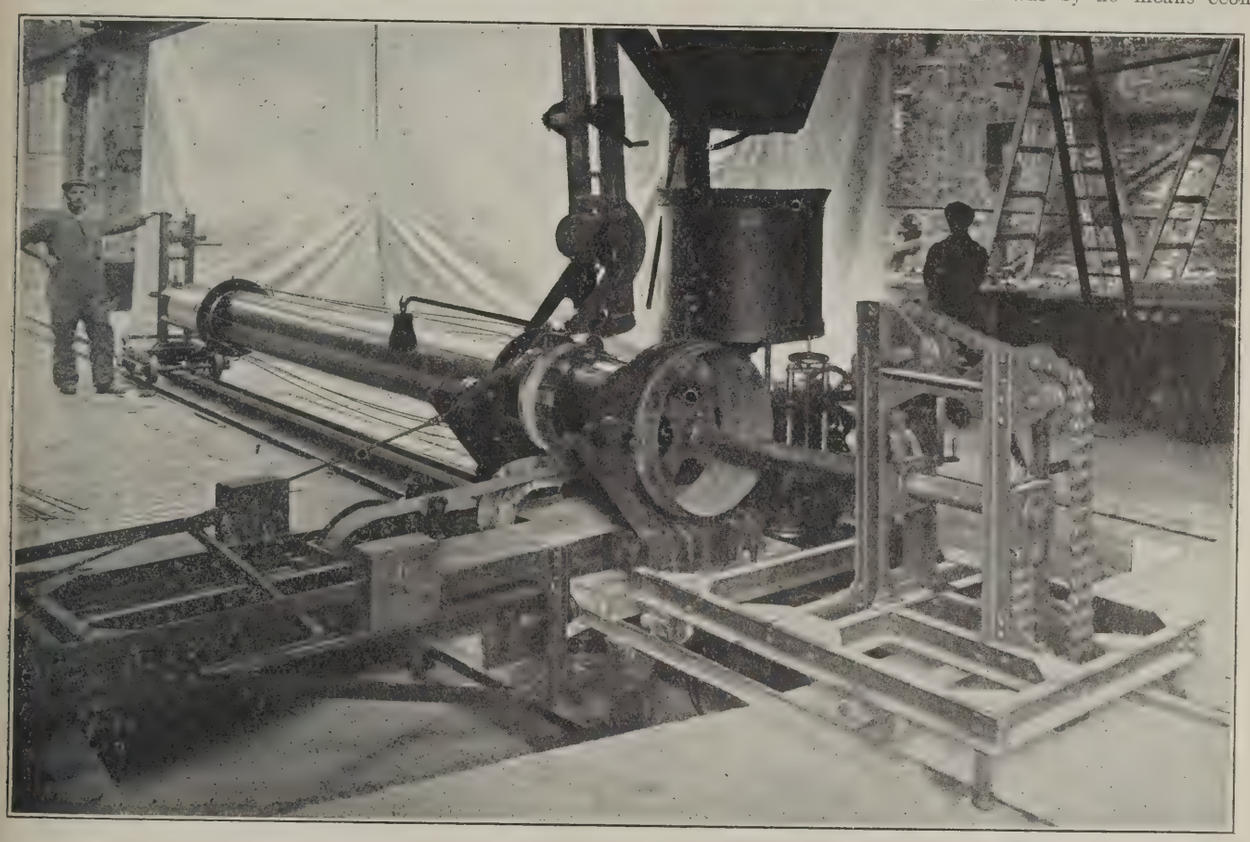


FIG. 1. THE SIEGWART MACHINE FOR THE MANUFACTURE OF HOLLOW REINFORCED CONCRETE POLES AND PIPES.

Poles and pipes, which it is the purpose of this invention to manufacture, are made in a really wonderful machine by a most interesting process. The machine has been installed at the works of The Cubitt Concrete Construction Co. at 260, Gray's Inn Road, London, W.C. Before dealing with it in detail, and the method of manufacture, we may refer to the general subject of the use of reinforced concrete for such articles as poles and pipes.

Reinforced Concrete Poles.

First, as regards reinforced concrete poles in connection with the transmission of electricity for power and other purposes. At first timber poles were adopted, and they are still extensively used, their initial cost being much less than iron poles, though their life is comparatively short. Various means have been tried with the object of increasing the life of timber poles, such as impregnation with preservatives like creosote, and by these means the life can be extended from about 6 to 10 years. The chief difficulty occurs at the point where the pole enters the earth. In view of this difficulty a trial was early made to protect the end of the pole by either covering it with bandages or embedding it in concrete. The best attempt in this direction was, however, to fix a pole on an iron base-plate upon a block of concrete, with a hollow insulating space between the wood and the concrete. This method renders the bottom of the pole practically as durable as the top, but the life is not increased beyond 16 years. Still, a steel or iron pole, though expensive in first cost, proves economical by reason of its much longer life, as compared with timber, and it has been extensively adopted. If of tubular form it is constructed of cast-iron, but the latest type for high poles is built of steel in lattice form. To keep an iron pole efficient, however, it must be periodically painted, and the cost of upkeep is considerable.

Another attempt to render the timber pole equal in economy to the iron pole was made by Bougeat, who surrounded the ordinary wooden pole with a casing of concrete. The manufacture was expensive, and the results were not satisfactory, for in course of time the embedded wood swelled and decayed, and sometimes cracked the pole, and the strength, of course, disappeared as soon as the wood decayed. As the outcome of this, reinforced concrete was tried. The difficulty, however, in constructing a reinforced concrete pole was to render it light in weight, which it must be, and also to manufacture it cheaply. There is no particular trouble in casting a reinforced concrete pole if it is solid, but when the endeavour is made to manufacture a hollow pole, difficulties immediately arise. Short lengths of poles or pipes have been cast between an inner core and an outer casing of metal, but the work is awkward to carry out even then, especially if reinforcements are introduced into the narrow space between these two sheetings. The difficulty became overwhelming when a long hollow pole had to be cast. Consequently, the inner core was left within, and the weight had also to be considerably increased beyond what was necessary. The embedded wooden core was liable to swell and injure the concrete, and such a process of manufacture was by no means economical. The first cost of such poles was greater than that of iron poles, so that their use was only experimental, except for high power transmission lines, for which solid reinforced concrete poles have been found of practical service.

Reinforced concrete, though it has the great advantage of enabling poles of great height to be constructed that are very durable and require no expense in upkeep, has not been possible of adoption for ordinary work. The Siegwart process, however, overcomes all difficulties and enables reinforced concrete poles to be constructed at a price which not only is very much less than the first cost of iron poles, but affords no excuse for continuing to use the ordinary timber poles that are customarily adopted for light telegraph and telephone posts.

Poles for carrying wires have to sustain stresses induced by the suspended

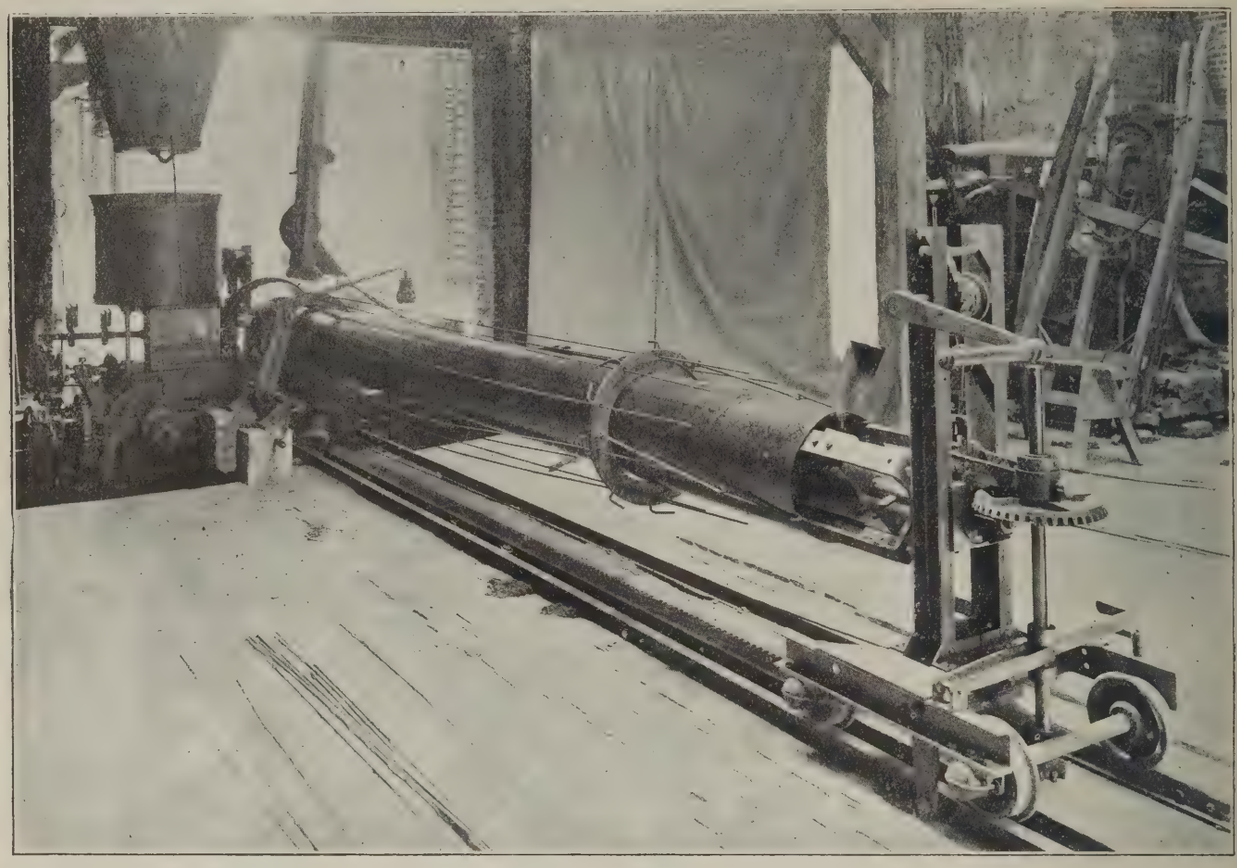


FIG. 2. ANOTHER VIEW OF THE SIEGWART MACHINE.

wires and by wind pressure. Where poles are required for long distance transmission the importance of adequate security is very great, for the execution of repairs over a wide area is troublesome and costly. For such purposes the reinforced concrete pole offers advantages which place it far ahead of any other means of conveying power. The Siegwart poles have been constructed on a proper theoretical basis of calculation with any desired factor of safety, and tests have been conducted upon poles of standard construction which have established a safety factor of 5.5.

The following are comparative estimates of the cost of Siegwart poles, compared with other poles over a period of 50 years :—

Tramway Poles, Height 29ft. (ordinary type).

	Siegwart.	Iron.	Wood. (Impregnated).
	£ s. d.	£ s. d.	£ s. d.
Cost of Pole	3 0 0	6 10 0	14 5
Erection	1 0 0	1 0 0	9 7
Painting or Renewal...		2 11 0	9 8 4
Total cost in 50 years	4 0 0	10 1 0	10 12 4

Poles for power distribution, Height 36ft. 6in. (ordinary type).

	Siegwart.	Iron.	Wood. (Impregnated).
	£ s. d.	£ s. d.	£ s. d.
Cost of Pole	4 0 0	9 0 0	19 3
Erection	1 4 0	2 0 0	9 7
Painting or Renewal...		2 11 6	12 5 0
Total cost in 50 years	5 4 0	13 11 6	13 13 10

Reinforced Concrete Pipes.

These have been constructed for many years on a large scale. Reinforced concrete can be applied to the construction *in situ* of water mains, aqueducts and sewers, but difficulties are encountered in moulding a pipe, especially when of small diameter. We have referred above to the difficulty of concreting within a narrow space left between an inner core and an outer sheeting, especially when hampered by the reinforcements placed therein. To tamp the concrete from one end is difficult, and though a very wet mixture of sand and cement is used and poured into the moulds, the manufacture entails difficulties which render the cost of such pipes considerable, though the fact that such pipes have been extensively used abroad, and have even been employed in this country, proves that the ordinary method of manufacture will compete with iron and large earthenware pipes. The advantages of reinforced concrete as regards durability (for the concrete thoroughly protects the embedded metal against corrosion) are obvious, but the Siegwart process of manufacture affords additional arguments in favour of reinforced concrete pipes, apart from the economy which is claimed to be effected over the other methods of manufacture. There is, for instance, a saving in the cost of jointing by reason of the greater length of the pipes, these being as long as 20 ft., or twice the length of iron pipes, and four times the length of plain concrete or earthenware pipes, and also a saving in the other expenses of laying in regard to the cutting of the trenches, for the width of the latter can be reduced to a minimum, except at the point where the joint has to be made. Also, the comparatively small number of joints reduces troubles likely to be caused by expansion and contraction due to temperature changes, and so increases the reliability of a pipe line constructed with Siegwart pipes.

These can be constructed to withstand very great pressures. In the case of the larger pipes, which are made up to 2 ft. in diameter, the strength is, if necessary, as much as six atmospheres, while the smaller pipes are made to withstand an interior pressure of 12 atmospheres. A reinforced concrete pipe is naturally strong against external pressure, and, if required, it can be specially reinforced for this purpose. It has considerable resistance against fracture during transport or by shocks caused by street traffic, being of small weight, owing to the thinness of the walls, which varies from $\frac{3}{4}$in. to 2in. A Siegwart pipe is only about half the weight of an iron pipe of equal strength; the cost of transport is low; and, furthermore, Siegwart pipes can be manufactured at the place where required for use, so that the cost of transport, such as would be entailed in bringing either earthenware or iron pipes from a distance, is completely eliminated. That the utility of the machine for the manufacture of pipes is very great is shown by the fact that large contracts have been given to the Siegwart licensees on the Continent, and while in the experimental stage an order was placed for pressure pipes of a total length of 22 miles for the construction of waterworks in Roumania in substitution for the originally planned construction with cast-iron pipes. This is a testimonial of real value.

The Siegwart process can also be applied to the construction for hollow reinforced concrete piles, for which there is considerable demand.

The Manufacture.

We may now describe the process of manufacture. Figs. 1 and 2 show the general arrangement of the machine for manufacturing Siegwart poles and pipes, as erected at the works of the Cubitt Concrete Construction Co. These views show how the machine is placed, resting in an



FIG. 3. SHOWING DEVICE FOR FEEDING SPIRAL BINDING WIRES INTO POLE.

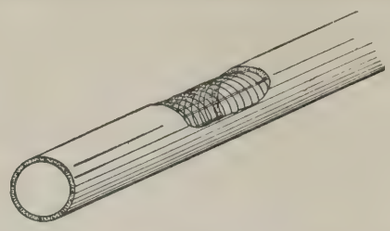


FIG. 4. GENERAL ARRANGEMENT OF REINFORCEMENT, ETC., IN SIEGWART POLES AND PIPES.

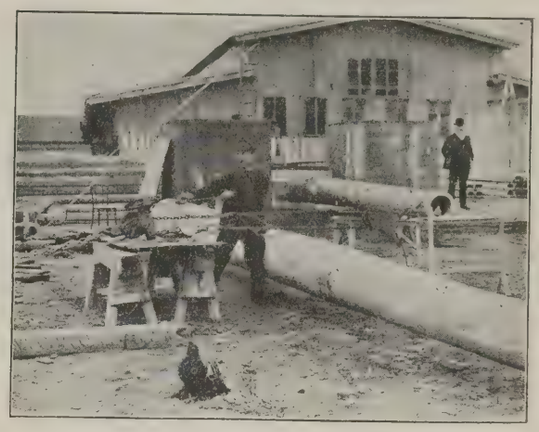


FIG. 5. TEST ON A SIEGWART POLE.

open concrete pit sunk in the ground, with a track on either side, upon which trestles can be run, and a stage over the machine carrying a concrete mixer which discharges into a receptacle below on the machine itself.

The first machines that were built by Mr. Siegwart travelled along a track while the pole remained stationary as regards longitudinal movement. This machine, however, the first to be erected in this country, is also the first to be built to remain stationary while the core is moved longitudinally (as well as rotating on the trestles before referred to). By moving the core instead of the machine, difficulties of feeding the latter with concrete are overcome, and many minor advantages are secured. The hollow space in the interior of the poles or pipes is formed by means of a core of sheet iron, which is removed after the concrete has been applied, the process of removal being made possible by an arrangement whereby the diameter and circumference of the core are reduced by an internal mechanism. Gauge rings are arranged on the core at suitable distances from one another, and steel rods or wires of small section are passed through holes in these gauge rings, and arranged to lie longitudinally upon it. In the pipes these wires or rods are not stretched, for the operation of applying the concrete thereto draws them taut, but in the poles the wires are stretched tightly by means of hooks that are screwed up at the ends of the core.

Upon the track two trestles are placed, as shown in Fig. 1, and the core is mounted between them so as to be capable of rotation therein. The trestles have toothed pinion wheels, which engage with a rack on the track, and are drawn gradually along in the direction of the machine, by means of a wire rope that is wound up by being geared so that the core passes through it at the right rate of progression.

The concrete used in the manufacture of poles and pipes is made of clean screened Thames grit, which consists mostly of sand, with occasionally small stones not larger than ½in. maximum diameter, proportioned 3 to 1 of Portland cement, the brand favoured being "Ferrocrete," which is a cement made by the rotary process by the Associated Portland Cement Manufacturers, Ltd. The concrete is mixed very dry, so that it only feels moist to the hand, and does not even stick together when pressed in the hand. It coheres in the manufacture by reason of the great pressure which is applied.

The mixer on the stage above has paddles which rotate and thoroughly churn up the ingredients in an open box that can be tipped over to discharge its contents into the hopper below. The concrete falls from the hopper into a sheet metal drum (which is clearly seen standing at the back of the machine in Fig. 1). This drum holds a considerable quantity of concrete, namely, about 8 cub. ft., which is sufficient as a rule to make one pole or pipe. It is important in the manufacture that the concrete should be fed regularly and continuously, and the drum is arranged to do this, for it slides up and down a sort of oblong box or chute, so that the surface of the concrete within the drum is always level with the top of this chute. Four paddles rotate within the drum and scrape the surface of the concrete into the chute, and the drum is geared so as to rise gradually as the concrete is used, thus always keeping the concrete level with the top of the chute, and enabling the paddles to scrape the concrete regularly and continuously down the chute. The rate at which this drum rises can be regulated so that the quantity of concrete discharged is greater or less according to the thickness of the layer of concrete which is to be applied to the core.

Applying the Concrete to the Core.

The concrete is applied to the core by means of rotation, which is quite a novel principle. The concrete from the drum falls down the chute upon a conveyer band or belt made of strong steel wire tightly plaited, that takes one wrap around the core, and is given its motion by passing over two wheels. One of these wheels (that at the front of the machine) is mounted in a sliding carriage that receives preliminary adjustment by means of a long screw turned by a spoked handwheel at the back of the machine. By means of the two heavily weighted levers, the sliding carriage applies a pressure of about 5,000 lbs. to the conveyer-belt, so that the concrete is wrapped upon the core under this pressure. Upon the conveyer band is a chain-like device, which affords a grip for a band of strong cloth webbing about 4ins. in width, laid on top of all. The concrete falls upon this webbing, and the webbing and the concrete are wrapped around the core in a continuous spiral, so that the pipe or pole issues with a bandage round it, as shown in Fig. 3. The edges of the webbing just overlap, so that the concrete layer thereunder and the webbing are continuous, the latter so preventing the concrete dropping from the core. The pressure on the conveyer belt draws the longitudinal wire or rod reinforcements closer together. The guide rings holding the longitudinals in position are engaged by a wheel attachment, and thus slide along the rods as the core gradually passes through the machine. Sometimes there is only one guide ring, when only one grooved wheel to engage it is brought into service; but at other times, such as when making long poles, two guide rings are employed, and then a second grooved wheel is brought over to engage with the edge of the guide ring and stop it from travelling with the core.

Immediately the webbing and concrete issues beyond the conveyer belt, wire or wires (as close together as may be desired) are fed by a spool on the attachment shown in Fig. 3, somewhat resembling an elevator. The webbing is drawn up over a bar above this spool of wire, so that the wires for the spiral binding may be fed upon and into the concrete. A rod

fastened to this elevator attachment keeps it rigid, and the rotation of the core draws the wire or wires from the spool so hard against the layer of concrete that they penetrate into it for some distance. If these spiral wires are of large section, the power developed is insufficient to draw them into the layer of compressed concrete; therefore another device is brought into action, consisting of a wheel with spikes thereon that cut grooves in the concrete as the core rotates, into which the wires may penetrate so as to become embedded in the concrete. The rotating core draws the band of webbing upon the surface of the concrete again, and a pressure roller on the end of a long spindle (which is screwed forward by hand) presses this webbing and the concrete hard against the core, in order to give it a maximum hardness. The thickness of the layer is, by the great pressure given by this roller, slightly reduced, and the reduction in diameter and circumference thereby means that the quantity of webbing that was originally fed into the machine is now too long, but the slack is taken up by the elevator attachment above referred to, which is suspended by means of a wire rope running over a pulley on the platform above, having a weight hung from the end thereof, this arrangement enabling the elevator to gradually rise as the amount of slack in the webbing increases. A final finish is given by the sheet-iron ring shown in Fig. 3, smoothing the layers of webbing and concrete.

The electric motor that works the machine is mounted on the bottom frame, and the driving is by means of a worm wheel and several chain wheels. The machine can be adjusted at the necessary angle to the core if tapered, as in the case of a post.

As soon as the core has been drawn through the machine completely wrapped with the spiral binding, it is picked up by a travelling crane overhead and slung on one side to enable the concrete to harden and mature. To ensure its gaining maximum hardness it is constantly wetted.

The interior sheet metal core can be removed by being reduced in diameter by the screw attachment within after about 12 hours, and the bandage of webbing may be removed after three to four days' hardening. This webbing leaves a few small markings, which are no detriment to a pipe or pile, nor for a pole erected in a place where appearances are not of great importance, as in the country.

Completing the Poles.

To complete a pole, all that requires to be done after it comes from the machine is merely to fix a stopper in the top and make a square necking or blocking for fixing the cross-arms that carry the insulators and the electric wires. The former is cast in a mould and dropped into the top of the post; the latter is moulded by hand. Where a more finished appearance is desired, the poles are given a wash of cement grout or a rendering of cement and sand, the latter giving a stone-like appearance, and, if desired, neckings or mouldings may be run around the pole, and any other ornamentation done by hand; indeed, the Siegwart pole can be made very decorative, and although it is a little greater in diameter than an iron pole, this really gives it a better appearance, as the proportion is better. The pipes, as mentioned, require no external finish, but a cement grout wash may be given to the interior if desired, which sometimes also receives a coat of Dr. Angus Smith's solution, or a special cement glaze. The concrete for pipes, too, can be made impermeable by the addition of special waterproofing material. Messrs. Siegwart, Ltd., advocate the "Medusa" waterproofing material for this purpose.

The Reinforcement.

Fig. 4 is a diagram of the arrangement of the reinforcement and details of the construction of a typical Siegwart pole. It will be seen that the reinforcing skeleton consists of longitudinal rods tied together by a wire or wires wound spirally thereon. It is important in such tubular construction to have the reinforcements correctly disposed, and the Siegwart process ensures every control over their position and accurate placing, whereas in the ordinary process of moulding concrete in tubular form, grave defects in this respect are of common occurrence, it being extremely difficult to ensure regularity in the disposition of the reinforcements. The process has the ordinary advantages of additional reliability given by factory labour, specialisation, and organisation.

The longitudinal reinforcements in the Siegwart poles are made each in one length continuous from top to bottom but in the pipes several rods, shorter than the total length of pipe, are often used.

The thickness of the concrete varies from one to two inches in the poles, but the pipes vary from ¾in. to 2ins. in thickness. A Siegwart pipe that has been tested successfully resisted an internal hydraulic pressure of 285lbs. per sq. in. The joint for resisting pressure may be made by caulking with lead, or by filling bitumen in hollow spaces in a special-shaped joint, and passing a short piece of pipe over the joint and connecting it to the pipe with bitumen. It was a joint of the latter form that withstood the pressure of 285lbs. per sq. in. For ordinary pipes not called upon to sustain pressure, the jointing is by means of collars of concrete or sockets on the pipes.

Calculations.

As regard the calculations for the size of reinforcements, thickness of shell and general proportions of the poles, the theory which is adopted is similar to that employed for the strength of chimneys, and the stresses that have to be sustained are tension on the one side, and compression on the other. In chimney designing, however, it is customary to ignore the compressive resistance afforded by the reinforcement, but with a thin shell, such as is possessed by the Siegwart pole, this has to be taken into account. The problem may also be treated from the point of view of a hollow tubular beam, or, rather, a cantilever. The stresses that come upon the pole are not only the tension of the electric wires, but the wind pressure also.

Fig. 5 shows the manner of conducting a test upon the strength of a Siegwart pole. The end of the pole was fixed rigidly between two blocks of concrete, and the top pulled on one side by means of a chain and pulley block, the tension being read upon a gauge, clearly shown in the view. The deflection of the head of the pole was read on a scale placed upon the trestle stationed in front (also shown in the view). This particular pole, which was 31ft. 2in. long, with a tensile stress of 15,400lbs. gave a deflection of only 2.736 ins. When the load was relieved the top end of the pole returned to its initial position, no permanent deflection being noticeable.

The size and disposition of the reinforcements in pipes is determined by a theory of calculations that has been thoroughly worked out. The bursting pressure from the inside is required to be resisted solely by the hoop tension of the spiral reinforcements, while the longitudinal wires resist the bending moment induced in the concrete shell between the spirals, at the same time serving to strengthen the pipe as a beam to resist the forces to which it is subjected in transport, in lifting and placing in the trenches, and in lying on an irregular bed. If the pipes have to withstand pressure from without, the calculations are based on the assumption that each section of a pipe is an eccentrically loaded pillar or post. The thickness of the concrete bears a direct relation to the pressure in this latter case, but with pipes to withstand internal pressure the thickness of the shell is determined not so much by its strength as by its permeability. The thickness of the concrete layer is therefore standardised for various sizes of pipes and pressures solely from practical considerations as regards the impermeability of the concrete, shocks in transport, putting in place, etc. The predetermined thickness of the

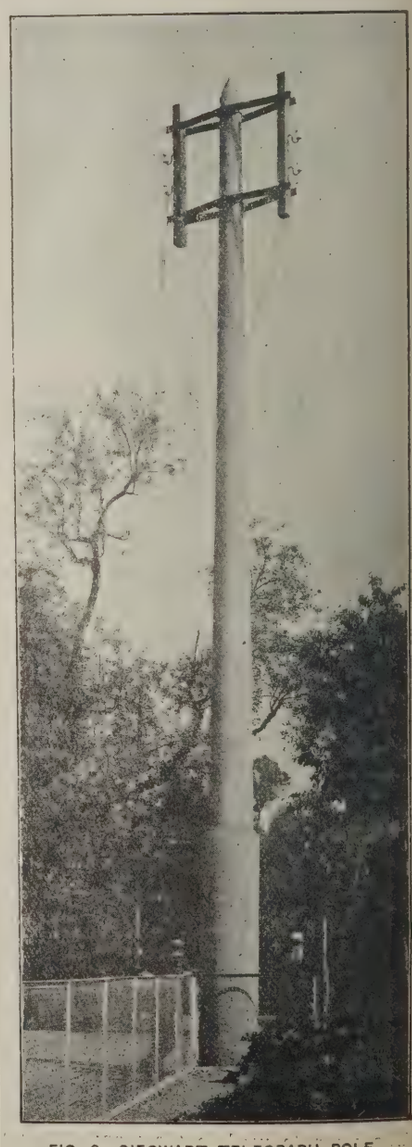


FIG. 6. SIEGWART TELEGRAPH POLE.

concrete shell enters into the calculation for the sizes of the longitudinal reinforcements, though it does not affect the determination of the size and disposition of the spiral reinforcements.

Hollow Piles.

Hollow piles constructed by a similar process can be made up to the standard length of 39ft., which is adopted for the longest poles, though a greater length could be made if desired. The piles usually have their sides parallel, *i.e.*, they are of the same diameter throughout, but sometimes they are tapered. The system of reinforcing a pile with spiral wires is now generally regarded as the most efficient form of reinforcement, but it is difficult to manufacture such a pile to secure thorough homogeneity, and a solid pile spirally reinforced is not only expensive in manufacture, but costly also in handling and driving, by reason of its great weight. A pile is subjected to stresses induced by the shattering effects of the blows in the driving, while it has to sustain the ultimate load as a column, and where driven in situations such as piers or jetties may be subjected to the buffeting of a ship riding against it, when it has to act as a beam built in at both ends, the one end being fixed by the ground in which it is driven, and the other end by the decking.

Columns for ordinary building work can be made advantageously by the Siegwart process.

Fig. 6 shows a Siegwart reinforced concrete pole finished with a smooth surface. This is erected at Miggern, Switzerland. It has a total height of 54ft., and as this is greater than the standard length of poles manufactured, it has been obtained by fixing an ordinary pole in a base which stands 16ft. 5ins. above the ground, and embedded 6ft. 6ins. in the ground, resting upon a foundation of rough stones and filled with stones to form a bearing for the pole proper. The pole in this case is quite plain, but the harmony of the appearance due to the tapering shape shows how well the Siegwart pole is proportioned. The peculiar arrangement for carrying the wires is not at all unsightly, and the whole design seems exactly fitted for its purpose. It may be doubted if any elaborate treatment would make the pole more pleasing under the particular conditions to which this pole is subjected.

The pole was erected by being simply slung from the middle. In this connection it is interesting to note that a pole, having hardened only for four days after manufacture was lifted by one end and put into a vertical position at the works in Gray's Inn Road, and withstood this severe test without showing any ill-effects.

Labour Entailed, and Capacity of Machine.

Eight hands have been employed to work the machine in question, in the experimental stages, but eventually only seven will be required. One labourer is engaged feeding the mixer for the concrete; two labourers and a foreman are engaged working the machine; two lads are engaged in placing the reinforcements on the core; and one man is required to remove the poles. Only one skilled man is thus required. The capacity of the machine is, roughly, about one pole an hour, though with smaller poles and pipes the time required is slightly less. The concrete, of course, is not a big item, and the metal is also of small amount, and costs very little. It will be seen, therefore, that the cost of constructing a Siegwart pole or pipe is small, and the prices at which they can be produced are very low. The market for poles, pipes and piles is an extensive one, and there should be a great future for the invention in this country. Although it is only about two years since the process was introduced on the market, it has already been taken up extensively abroad, several factories being erected for the manufacture of articles with the aid of the Siegwart machines, and many large contracts obtained in competition at remunerative prices.

FORMS FOR REINFORCED CONCRETE.

We may perhaps first explain the use of the word "forms" in the title of this article. The word is of American origin, but is now being adopted in this country, as the earlier terms employed by English contractors, namely, "centering" and "shuttering," are somewhat too restricted for general use in connection with reinforced concrete work, so that a word is necessary that will include the false-work for forming members, such as beams, columns, etc., as well as walls. The terms "centering" and "shuttering" apply only to plain horizontal or vertical work, such as the construction of arches, floors, and walls. Another term, "mould," is again restricted in sense, referring more particularly to forms which are used for moulding separate pieces of concrete, such as artificial stone.

The design and construction of forms is a very important branch of reinforced concrete work, and insufficient care and attention has been directed to the matter. Much of the cost of a reinforced concrete structure is incurred in constructing the forms, and economy may perhaps be effected in this particular more readily than in any other.

At one time it was customary to leave the centering to the contractors, but the importance of this work being placed in the hands of competent engineers is becoming increasingly recognised. Very often the details for the centering are provided by the engineer responsible for the design of the reinforced concrete work.

Economical methods in regard to centering should be impressed upon the designer of reinforced concrete in preparing the plans. Standardisation is the thing to be striven for in all parts where the forms have to be elaborately built up, and they should be capable of being used again and again, or of being easily altered to suit different requirements. Where there is not special reason for doing so, the dimensions of columns should not be varied; thus, the forms will work in again. Recesses, too, should be made the thickness of a board or plank. The width of beams may also often be designed to use standard widths of timber. The framing should be so done that the forms may be not only easily erected, but easily taken to pieces, and removed with the minimum of labour.

As a rule, forms are constructed of timber, although occasionally metal or metal-faced moulds are employed where they are required to stand considerable wear and tear. But if sheet metal is employed, placed upon a wooden backing or upon a metal stiffening frame, there is the great danger of it becoming dented, bent, or otherwise defaced, so as to give an imperfect surface to the concrete; while, if the metal cover is sufficiently thick and strong to resist damage, it often becomes too heavy and expensive for general use. Further, such forms are not sufficiently flexible. Heavy cast-iron moulds can only be used for small moulded work, and the proposal, put forward by Mr. Edison some time ago, to cast houses in situ was impracticable in this respect.

The Timbering for Centering.

As regards the kind of timber to be used for centering, its selection must, of course, be governed by the character of the work, and by the market price of the timber. The best timber for forms is white pine, because it is easily worked and retains its shape if exposed to the weather, but, as it is somewhat expensive, spruce, fir, or, for very rough work, hemlock, is used.

The timber used for the forms may be of any cheap kind, and need not be of good quality. If the timber is well seasoned and dry, it is likely to swell and warp when wetted by the application of the wet concrete, or by a preliminary spraying with water. On the other hand, the timber should not be too wet, as joints may open by exposure on the works. The timber should, therefore, be neither wet nor dry; it is best green or partially dried.

As regards the thinness of boarding, some contractors use 1in., others 1½in., and a few 2in. stuff, even for panels. For ordinary walls 1½in. boards are sufficient, though for heavy construction, where derricks are employed, 2in. stuff is preferred. For small panels 1in. boards are lighter and easier to handle. For floor panels 1in. boards are most commonly favoured, although, if the building is eight storeys or more in height, 1in. boards of soft wood are likely to be worn out before the top of the building is reached, and the under surface of the concrete will show the wear badly. For the sides of girders, either 1in. or 1½in. is sufficient, while 2in. is preferable for the bottom of girders. Forms for columns are generally made of 2in. plank.

The timber work consists of boarding and of battens or timber of larger scantling. It depends upon the thickness of the boarding, as well upon the loading, as to the distance which the battens or larger timbers for strutting are placed apart. We give some rules below for determining the approximate size of timber to be used for the strutting, but we may here note that the customary distance to be placed apart for 1in. boards is 2ft. at the most, and for 2in. boards a maximum distance of 5ft. Not only should the strutting or battens be of sufficient size to resist the weight and the ramming and tamping, but they require to be very securely braced. The plan often adopted is to employ entirely new timber for the first floor to be constructed. This is used up again for subsequent floors, centering sufficient for one floor and a half or two floors being as a rule required, so that one floor is hardening while the other is being constructed. In a building of eight or ten storeys the timber is about worn out by the time the top floor is finished.

Joints.

It is, of course, important that the boarding should butt closely, so that the concrete may not run out of the joints, and there are several points to be noted in regard to this matter.

There should be no bulging or vibration in the forms. To ensure this they have to be stiffly constructed, for not only has the weight of the concrete and the ramming to be sustained, but the additional weight of men and materials. Vibration particularly must be eliminated, for it has a serious effect upon the setting of the concrete, and may easily cause failure in a structure upon the removal of the centering.

If the boards are placed tightly against each other, and are made of dry wood (or if of green wood and they are subjected to a hot sun), when the concrete is applied, the moisture swells the wood, and has a tendency to spring one board above the other. If the boarding is thick, this will make the surface very irregular, but by bevelling the edges of the boards, as shown in Fig. 1, the edges



FIG. 1. CHAMFERED EDGE BOARDING.

slide over each other to a slight extent in the process of swelling without producing any damage.

Tongued and grooved boarding, although it gives a better result than ordinary square-edged or bevelled-edged boards, is expensive, by reason of the waste in dressing and the wear at the joints; and the first cost is more than with plain boards. When the boarding consists of rough boards, it is very important to prevent the concrete dripping through cracks. Some contractors fill up any crevices with clay, and others use rags or tow for the same purpose. Another method is to line the forms with coarse canvas or jute, while oil-paper is also favoured; to give a fine surface finish it requires little or no treatment afterwards.

Rough boarding is sometimes covered with a layer of plaster or Paris or lime concrete; sheet iron or zinc are also sometimes fixed to the boards. For constructing some large arches clay has been puddled over the rough boarding, and covered with thick oil-paper. In the United States, Ransome has applied V-shaped strips to the centering for forming walls, which leave the surface lined as dressed masonry, and the surface of the imitation stone blocks may be left smooth as ashlar, or roughly scabbled with a pick or chisel to give a rock-face.

The insistence upon stopping holes in the centering is required, because of the importance of avoiding holes in the finished surface that will require stopping afterwards, as much as by the loss of strength that may be occasioned by the cement mortar running out.

As regards the preparation of the boards, this depends upon the surface which it is desired to give to the concrete. Where the work is required to show a good finish, the boards are often planed, and sometimes, in order that the timber may come away from the concrete readily, the forms are painted with a mixture of soft soap or crude petroleum oil; or sheets of paper are placed thereon. As a general rule, however, where surfaces are intended to be plastered, it is sufficient to wet the forms with a hose before putting the concrete in place. In rough work the boards are often not planed.

Linseed oil is sometimes used for coating the centering. In applying crude oil to forms, the object is not to cover it with a film of grease, but merely to fill the pores of the wood. The oil or grease should be full enough to do this. Where the timber is used again and again, each time it should be greased with oil before the concrete is applied. If the concrete has set and hardened for several weeks before the forms are removed, it will have a greater cohesion in itself than adhesion, so that no oil or grease will be necessary, though, as before remarked, it is as well to thoroughly wet the boarding before putting the concrete in the forms.

In detailing it is best to keep in mind the wrecking more than the erection, as economy in forms depends greatly on how many times a form can be used with the least amount of repairing. The hammer, saw, and nails should be done away with as much as possible in the erection, recourse being had to bolts, wire, or hoop-iron. The experience of some designers has been that 2in. timber should be avoided as much as possible, except in beam and girder bottoms, as it is claimed that money is in this way saved in the first cost of the timber, while the forms are more easily handled and hoisted. Experience goes to show that forms of lighter timber are better than heavy timber in an equal amount of heavy usage. One inch by 6in. tongued and grooved or bevelled-edged pine or spruce makes ideal timber forms. Boards wider than 6ins. have a tendency to warp.

Nails for holding portions of the centering together should be as few as possible, and if boards must be nailed, the nails should be only partially driven, so that they may be withdrawn by means of a hammer without injury to the timber. It must be impressed upon the carpenters that the pressure of the concrete will, in many cases, hold temporary panel boards, etc., in place with scarcely any nailing. Unless their attention is drawn particularly to this, and they have had some experience in the matter, it will be difficult to get them to conform to the best and most economical practice, while it is important not to have forms irregularly placed and out of alignment. Too correct an exactitude in this direction, however, should not be insisted upon, or it will increase the cost of the work unduly. A good rule that has been suggested is an allowance of $\frac{3}{8}$in. departure upon established lines on finished work, and 2in. on unfinished work.

The timbers, of course, have to resist the weight or pressure of the material deposited thereon or therein. Where a considerable height of wet concrete is put in at one time—for instance, in columns or walls—the pressure must be calculated as a liquid, and an assumption that has been found to work well in practice is to consider the concrete as a liquid of half its own weight, or 75lbs. per cub. ft. In ordinary walls, where the concrete is placed in layers, exact calculation is usually unnecessary, since experience has shown that the maximum bracing for 1in. boards is 2ft., for $1\frac{1}{2}$in. boards 4ft., and for 2in. boards 5ft., while the studding usually varies from 3ins. by 4ins. to 4ins. by 6ins., according to the character of the work and the distance of the horizontal braces or walling—4in. by 4in. is the most useful size.

As regards forms for floors, it is not so much the strength that has to be considered, but the deflection under the load, for they must possess sufficient stiffness to prevent sagging and consequent rupture of the concrete. Therefore, in calculating, in addition to the dead load, a consideration for a live load coming upon the concrete while setting should be added. Mr. Sanford E. Thompson, M.Am.Soc.C.E., suggests the following basis for calculations:—

1. Weight of concrete, including reinforcements, 154lbs. per cub. ft.
2. Live load, 75lbs. per sq. ft. upon slab, or 50lbs. per sq. ft. in figuring beam and girder forms.
3. For allowable compression in struts use 600 to 1,200lbs. per sq. in., varying with a ratio of the size of the strut to its length (see Table). If timber beams are calculated for strength, use 750lbs. per sq. in. extreme transverse fibre stress.
4. In calculating planks, joists, and timber beams, use the following formula, allowing a maximum deflection of $\frac{1}{8}$in.:—

$$d = \frac{3}{384}\frac{WC}{EI} \cdots 1)$$

$$I = \frac{bh^3}{12} \ldots\ldots\ldots (2)$$

d = greatest deflection in inches,
W = total load on plank or timber,
C = distance between supports in inches,
E = modulus of elasticity of lumber used,
I = moment of inertia of cross-section of plank or joist,
b = breadth of lumber,
h = depth of lumber.

This formula is the ordinary one for calculating deflection, but the coefficient is assumed as a means between $\frac{1}{384}$ over a beam with fixed ends, and $\frac{5}{384}$ simply supported. For spruce and other woods commonly used in form construction, E may be taken as 1,300,000lbs. per sq. in. The weight of concrete per cub. ft. is somewhat higher than is frequently used, but is not too large where a dense mixture and an ordinary percentage of steel are employed. For rough calculation it is frequently convenient to remember that 144lbs. per cub. ft. is equivalent to the product of the dimensions of the beam in inches by the length in feet. The live load suggested is assumed to include the weight of men and barrows filled with concrete and structural materials that may be piled upon the floor, but not including the weight of piles of cement or sand or stone, which should not be allowed upon a floor unless supported by concrete sufficiently strong to bear the weight, or by struts under all the floors below. The allowance for stressing struts are somewhat higher than in timber construction, because the load is a temporary one. When a column or strut is longer than 16 times the smallest width, there is a tendency to buckle, which must be prevented by bracing both ways, or by allowing a smaller load per sq. in.

The following table contains Mr. Thompson's assumptions for struts at different heights ordinarily used. (Bracing both ways, will, of course, reduce the length of a long strut):—

SAFE STRENGTH OF WOOD STRUTS IN FORMS FOR FLOOR CONSTRUCTION.
(Lbs. per sq. in. of cross-section.

Length of Strut.	3" × 4"	4" × 4"	6" × 6"	8" × 8"
14 ft.	500	700	900	1100
12 ,,	600	800	1000	1200
10 ,,	700	900	1100	1200
8 ,,	850	1050	1200	1200
6 ,,	1000	1200	1200	1200

When struts are placed upon a concrete floor that is comparatively green,

the load must be distributed by blocking, preferably of hard wood. At the top of the struts provision must be made against crushing of the wooden planks or cross-piece. Ordinary soft wood will stand, without crushing, only 700lbs. across the grain, so that if the compression approaches this figure, brackets must be inserted, or hardwood cleats used.

Supervision.

Those in charge should be particularly strict in their supervision of the form work. An inspector should be on the work during the setting and the wrecking of the forms, as well as during the placing of the reinforcements and the mixing and placing of the concrete. He should take great care that the form are properly set up and braced, that the concrete face of the forms is given a coat of oil applied with a brush, and that an excess is not used; also that the forms are cleaned every time they are used, that they are correctly placed, allowing the depth and width called for by the plans, and that the inside is free from shavings, sawdust, blocks of wood, etc., just before putting the concrete in; also that the joints in the boarding are tight, so that the mortar in the concrete will not run out, and necessitate such defects being remedied by the use of plaster of Paris coating, strips of wood, paper, or other means. Centering for arches, beams, etc., are lowered slightly at first—just sufficient to allow the member to take its permanent deflection, and to see that there is no fear of collapse. With arches the lowering of the centering is required to allow the arch ring to assume its permanent set before the spandrel walls are constructed. This avoids the possibility of cracks occurring in these walls by reason of excessive settling in the arch.

In removing forms the green concrete should never be disturbed by prying the timber away from it, for such a method is bound to injure the concrete.

As regards the length of time which should be allowed to elapse before the removal of the forms, generally it may be said that the closer the load to be sustained approaches the load for which the member is designed, the longer the form should remain in position. Thus, the forms for a overhanging cornice should remain in place longer than for forms for almost any other member, because the dead load of the cornice forms a very large percentage of the total weight which it is designed to carry. By similar reasoning, roof forms should remain longer than floor forms; floor forms longer than column forms; column forms in the top storey of a building longer than column forms in a lower storey; and column forms in general longer than footing forms. It is important that forms should be so designed that the column forms may be removed without in any way disturbing the supports of the beams and girders. In removing beam and girder forms, the posts should be removed from only one beam or girder at a time, and as soon as the form for this beam or girder is removed, the post should be replaced immediately. By this method danger of failure of concrete through poor workmanship is much diminished, as a defective member is supported by the members on either side of it. The practice of removing all the posts under a floor at the end of any given period without removing them one by one, and carefully examining the work and replacing the posts, must be strongly condemned. There is less danger in taking down column forms when the concrete is 36 hours old, and floor forms when the concrete is five days old, if the posts of each member are removed separately and are replaced as soon as possible, than there is in knocking out all the posts in a large piece of flooring after three weeks.

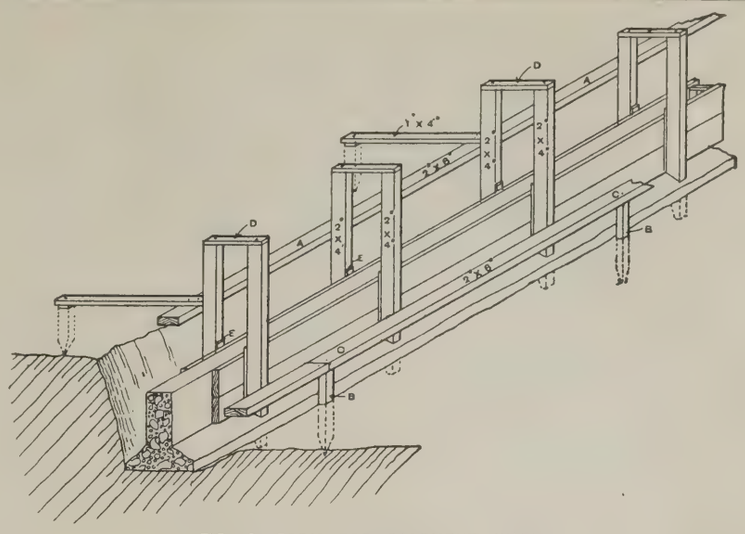


FIG. 2.—FORM FOR BASEMENT WALL.

In ordinary warm weather, if forms sufficient for only one storey are used, the rate of progress may be about one storey every two weeks. By having one complete set of column forms and a set and a half of floor forms, a speed of one storey a week may be attained.

It is very important to get rid of all dirt, shavings, and sawdust before the concrete is applied. The method that has been adopted in a few cases is to leave a hole in the centre of each floor panel, and also to provide a hole at the bottom of each column form, so that the dirt may be cleared out. With columns it is a good plan to wash out any débris with a hose.

Forms for Walls and Partitions.

Forms for walls and partitions consist of two timber sides propped up from the outside to resist bulging, or held together through the thickness of the wall by bolts or ties. If constructed the whole height of the wall, there is very much the same difficulty as with columns in pouring concrete therein, especially when reinforcements are required, as they are likely to be displaced by such a method of concreting. The walls should be brought up bit by bit, having the concrete spread in layers. Vertical boarding in this case is often termed shuttering. One side may be built to the whole height, and the other brought up gradually, though it is more convenient as a rule to bring both sides up bit by bit.

In constructing partitions, these are sometimes made by using only boarding on one side, the concrete being brought up with a quick-setting cement by an operation similar to plastering. This is economical for thin partitions.

Hollow walls are occasionally built *in situ* by using a timber core, which is either drawn up as the work proceeds, or collapsed and withdrawn afterwards.

The size of studding for the construction of a wall depends upon the height and the amount of bracing which can conveniently be used. For a light form with 1in. boards, 2in. by 4in. studs may be satisfactory. If, however, this size is used for a high wall, horizontal timbers must be placed up the wall and carefully braced about every 5ft. apart to prevent the studs from springing. If 2in. boards are used, the studding can be placed further apart, but it must then be heavier, the common size for it being 4ins. by 6ins., 2ins. by 10ins., and 4ins. by 10ins., depending upon the character of the work and the material at hand.

The diagonal braces that run down from the studding to the ground should be securely lodged against stout posts of immovable supports, but as a rule it is better to avoid the use of such diagonal props by connecting the studding through the wall to the studding on the opposite side by means of bolts or wires. An easy, cheap, and satisfactory method of connecting the studs on opposite sides of the walls is by the use of wires wound round the uprights on each side, and twisted by means of a stick or nail. To remove the forms the wires are simply cut, and afterwards they can be trimmed off close to the surface of the concrete. If the forms should buckle in the construction of a wall, it is usual to try to true up the timbering, but it must either be left to sag or to warp, and the concrete dressed afterwards, left with its irregular form, or else the work must be demolished and re-done, for to straighten a concrete wall would only crack it, and a cracked wall is not only dangerous, but entirely inefficient.

Fig. 2 shows a simple form for a soil or foundation wall, in which bearers A A and C C are spiked to occasional studs, whose pointed ends are driven into the ground, and kept in line by strips of wood running from them to stakes in the ground alongside, or by similar stakes directly underneath the boarding—in this case, 2ins. by 6ins., this applying to the inside row of studs. The tops of the studs are held together by clips D D running across the wall. Vertical strips E E, about ¾in. square, are placed inside each stud for the boarding of the form to rest against, and after a section of the concrete has been applied are easily knocked out, and the boards raised again to another level. The first layer of concrete is permitted to flow out under the lower boards to form a footing, above which the soil floor is laid.

Another simple form for constructing a basement wall or rough walling is shown in Fig. 3. The concrete is laid

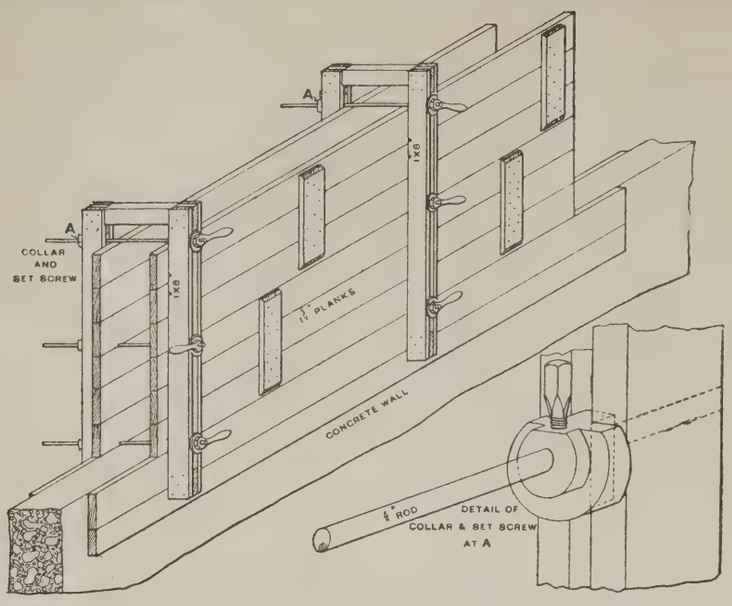


FIG. 3.—FORM FOR WALL.

FIG. 4.

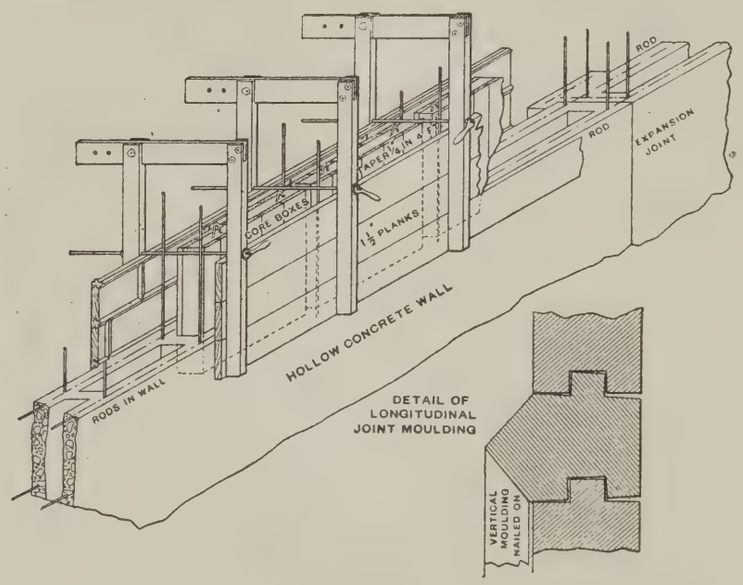


FIG. 5.—FORM FOR HOLLOW WALL.

to the full height of the planking, by which time the lower section will have hardened sufficiently for the bolts to be loosened, and the slotted strutting raised one-half the length. The board is now taken away from below and placed at the top, and a fresh layer of concrete applied. Thus, one-half of the form always overlaps the concrete below, and keeps the wall true and straight. The bolts must be greased each time they are used, as this allows them to be withdrawn easily, the holes left by their removal being afterwards filled with mortar. The collar and set-screw shown in Fig. 4 is a convenient means of tightening the rods when the walls are of various thicknesses, although in the majority of cases an ordinary threaded bolt with nut and washer may be used, as shown in the illustration.

Fig. 5 shows a form for constructing a hollow wall, the studs and bolts so arranged that the latter do not pass through the concrete, the form being raised when the concrete reaches their level. The core-boxes have a taper of ¼in. in 4ft., being pulled up as the wall is built in sections. This form has V mouldings upon the boarding to give the appearance of chamfered stone blocks. The illustration shows a detail of the manner of making these moulds, which are tongued and grooved with edges slightly bevelled. This is preferable to nailing triangular strips upon the planks.

Some years ago there was a considerable interest taken in the construction of concrete walls. Mr. Thomas Potter was an early pioneer in concrete construction, and long ago took out patents in connections with forms for walls. Fig. 6 shows his patented method.

(To be continued.)

THE TESTING OF MATERIALS.

The fifth congress of the International Association for Testing Materials will be held in Copenhagen early in September 1909. The proceedings of the congress will consist largely in official reports of standing committees and individual references on scientific subjects relating to the testing of materials. By action of the council, non-official papers by members of the association to be presented at the congress will be restricted to the following subjects:—

Metals: (a) Metallography; (b) hardness testing; (c) impact tests; (d) testing metals by alternating stresses, thermal treatment, etc.; (e) testing of cast iron; (f) influence of increased temperature on the quality of metal.

Hydraulic Cements: (g) Reinforced concrete; (h) progress in the methods of testing; (i) cement in sea water; (j) constancy of volume; (k) tests by means of prisms and standard sand; (l) weathering resistance of building stones.

Miscellaneous: (m) Oils; (n) caoutchouc; (o) wood; (p) paints on metallic structures.

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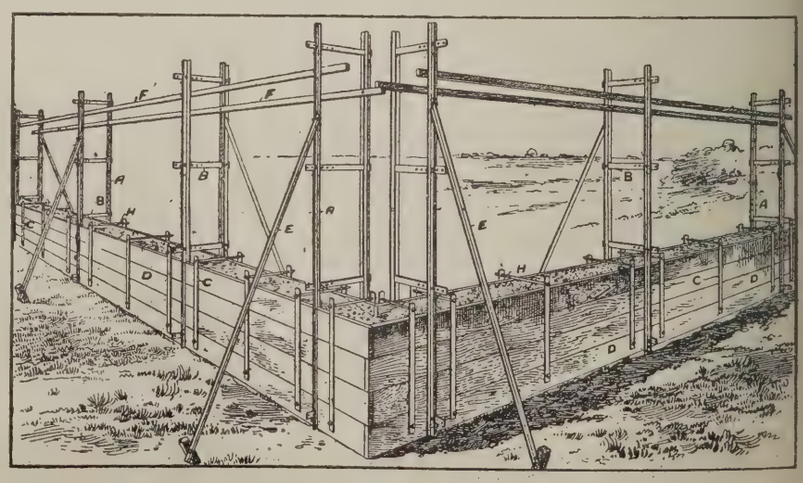


FIG. 6. POTTER'S FORM FOR CONSTRUCTING CONCRETE WALLS.

A A, Standards; B B, Wall-gauges; C C, Cramps; D D, Rough Boards; E E, Stays, F F, Temporary Wood Strips.

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Fitch and Cox, Enfield	£5,999 0 0
J. and F. Patrick, London	5,790 0 0
Jennings and Grenfell, Waltham Cross	5,550 0 0
Sabey and Son, Islington	5,514 0 0
A. N. Coles, Chelsea	5,506 0 0
A. Fairhead and Son, Enfield	5,498 0 0
J. Chessum and Son, London	5,467 0 0
General Building Co., London	5,425 0 0
Henson and Son, Wellingborough	5,314 13 6
A. Monk, Edmonton	5,245 0 0
B. E. Nightingale, Albert Embankment	5,234 0 0
Knight and Son, Tottenham	5,216 0 0
P. R. Paul, Waltham Abbey	5,212 0 0
Hacksley Bros., Wellingborough	5,177 0 0
W. Lawrence and Son, Waltham Cross	5,172 0 0
Clark and Sons, Cambridge	4,542 5 0

Colchester.—For the erection of the new Essex county lunatic asylum at Mile End, Colchester. Mr. F. Whitmore, county architect, and Mr. W. H. Town, A.R.I.B.A., architects:—

Pethick	£237,777
Foster and Dicksee	233,332
Parnell and Son	222,334
McCormick and Son	222,222
Minter	220,000
Young and Son, Norwich	214,995
C. Wall	214,000
F. Bennett, Ipswich	212,600
H. Lovatt	207,789
Lowe and Son	206,925
A. G. Bateman	204,307
H. Willcox	202,500
Pattinson and Son	202,426
Perry and Co.	199,350
Wallis and Son	198,840
Leslie and Co.	197,000
W. E. Blake	195,000
Allen and Sons	194,000
Arnold and Son	191,866
King and Son	191,700
Waring and White	191,545
Kirk and Randall	189,777

Colne.—For excavator, mason, and bricklayer's work in connection with the erection of public baths in Swan Croft, for the Corporation. Mr. T. H. Hartley, borough surveyor, Town Hall, Colne:—

J. R. Atkinson, Colne	£2,610 13 6
J. Crossley, Colne	2,469 9 4
Ward and Tetley, Bradford	2,409 15 4
W. Townson, Colne	2,379 [illegible]
T. E. Sugden, Keighley	2,336 3 7
P. Robinson,* Foulridge, near Colne	2,329 0 0
Smith Bros., Burnley	2,240 0 0

*Accepted.

Dunston.—Accepted for the construction of a new power station at Dunston, for the Newcastle Electric Supply Co.
R. McAlpine and Sons.

Dublin.—For the erection of technical schools in Bolton Street, for the Corporation. Plans by city architect:—

Beckett	£40,000 0 0
G. and T. Crampton	38,860 0 0
Pemberton and Son	38,250 0 0
Mackey	37,770 0 0
McLoughlin and Harvey	37,267 0 0
Collen Bros.	36,762 19 0
J. and P. Good	36,600 0 0
Hull and Co.	36,498 0 0
Donovan and Sons	36,421 0 0
J. and W. Stewart	35,293 0 0
Langley	34,995 0 0
H. and J. Martin,* Belfast and Dublin	34,000 0 0

*Accepted.

Holme Cultram (Cumberland).—Accepted for protection sea wall, for the Urban District Council.
Dawson, Whitehaven, £4,695.

Horncastle (Lincs.).—For the erection of new grammar school at Horncastle, for the Lindsey County Council Education Committee. Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln:—

Moss and Son, Loughborough	£3,920
Maxey and Son, Sleaford	3,920
Hockley and Co., Grantham	3,800
Thompson and Son, Louth	3,818
F. Scarborough, Lincoln	3,782
Pattinson and Son, Ruskington, Sleaford	3,595
Parker and Son, Boston	3,578
Wright and Son, Lincoln	3,556
Mawer Bros., Louth	3,549
Sutton and Horton, Horncastle	3,502
Hensman and Son,* Horncastle	3,487

*Accepted.

Kendal.—For widening Nether Bridge, for the Westmorland County Council. Mr. J. Bintley, architect and county surveyor, 7, Lowther Street, Kendal:—

S. Johnson and Son	£2,517 4 0
J. Howe	2,077 11 0
J. Howie	1,879 2 6
R. T. Pennington, Kendal	1,652 0 0

Kettering.—For alterations and additions to police station, for the Northamptonshire County Council. Mr. C. S. Morris, county surveyor, County Hall, Northampton:—

R. Cosford	£4,479 0 0
F. Henson	4,350 0 0
W. M. Freeman	4,335 0 0
E. Archer	4,275 0 0
E. Green	4,264 0 0
H. Martin	4,250 0 0
Brown and Sons	4,147 10 0
Berrill and Green	4,145 0 0
R. Marriott	4,087 0 0
W. J. Payne	3,972 10 0
Goodman and Murkett	3,939 0 0
Hacksley Bros.	3,875 0 0
A. Lewin and Sons	3,835 0 0
O. P. Drever,* Kettering	3,531 11 0

*Accepted.

(*Tenders continued on page viii.*)

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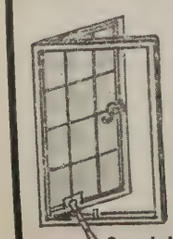
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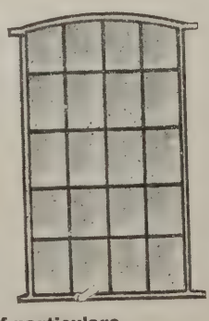
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BIRMINGHAM: 1, Edmund Street. NEWCASTLE: 4, Northumberland Street.

(*Tenders concluded from page viii.*)

Kewstoke (Weston-super-Mare).—Accepted for the erection of new school buildings, for the Somerset County Education Committee.
H. J. Fear and Sons, Milton, £1,609 1s.

London.—For works of adaptation at the Day Training College, Moorfields, Finsbury, E.C., for the London County Council:—

W. Downs	£1,390
Galbraith Bros.	1,345
J. Garrett and Son	1,289
G. Munday and Sons	1,167
J. Appleby and Sons	1,142
Parrot and Isom	1,116
E. Lawrance and Sons	1,092
J. Grover and Sons,* New North Road	1,067

* Accepted.

London, E.C.—For alterations to factory, 31, Fore Street, E.C., for Mr. Reynolds. Messrs. Gordon, Wilson and Co., architects, 667, Fulham Road, S.W.:—

Marks and Bland	£1,550 0 0
J. Pritchard and Son	1,395 0 0
J. W. Acock	1,229 17 0
A. V. Paddison	985 0 0
A. J. Hicks,* Clapton	873 0 0

*Accepted.

London, S.W.—For the construction of an underground sanitary convenience in Christchurch Road, Streatham, for the Wandsworth Borough Council:—

W. Furniss	£2,192 16 0
G. Jennings, Limited	1,724 10 0
Jarman, Daws and Co.	1,429 0 0
B. E. Nightingale	1,377 0 0
Mellowes and Co.	1,357 0 0
Doulton and Co.	1,335 0 0
H. Bentham	1,245 0 0
E. Wall	1,229 0 0
W. H. Hyde and Co.	1,203 0 0
Spencer, Santo and Co.	1,187 0 0
A. A. Sedcole	1,180 0 0

Newport.—For alterations and additions to intermediate schools, for the Borough Education Authority. Mr. C. F. Ward, A.R.I.B.A., architect. Quantities by architect:—

G. Edwards	£4,338
G. F. Leadbeter	4,146
A. S. Morgan and Co.	3,999
J. Charles	3,996
H. Williams and Co.	3,900
C. H. Reed	3,831
E. C. Jordan and Son	3,697
R. W. Moon, Park Square, Newport	3,497

Pontcymmer.—Accepted for the erection of a higher elementary school, for the Glamorgan County Council (Education Committee). Mr. D. Pugh-Jones, F.S.I., county architect (eastern division), Cardiff:—Longton and Co., Pontcymmer, £7,745 7s. 6d.

Stickford (Lincs.).—For the erection of an elementary school and a master's house at Stickford, for the Lindsey County Council Education Committee. Messrs. Scorer and Gamble, architects, Bank Street Chambers, Lincoln:—

J. G. Rattenbury, Spilsby, Lincs.	£2,456 0 0
T. R. Catchpole, Stickford, Boston	2,307 18 2
T. H. Cade, Boston	2,200 0 0
W. H. Maxey and Son, Sleaford	1,995 0 0
J. Kime, Candlesby Burgh, Lincs.	1,980 0 0
A. Wood, Alford, Lincs.	1,955 0 0
T. Barlow and Co., Nottingham	1,915 0 0
J. T. Turner and Sons, Wainfleet, Lincs.	1,865 0 0
J. G. Holmes and Sons, Skegness	1,830 10 0
A. J. Elmes, Gainsborough	1,800 0 0
S. Sherwin and Son, Boston	1,795 0 0
H. J. Thompson, Scunthorpe, Doncaster	1,790 0 0
F. Scarborough,* Upper Moor Street, Lincoln	1,744 18 6

*Accepted.

Wealdstone.—For the erection of premises for Messrs. Freeman, Hardy and Willis:—

C. Wrycroft and Son	£1,447 0 0
Harlington and Elliott	1,450 0 0
Warburton and Trotter	1,460 0 0
J. Bailey, Wealdstone	1,475 0 0
J. Batchelor, Harrow	1,520 0 0
J. Freer	1,559 0 0
Stevens and Gilbert	1,570 0 0
Dymock and Sons, Wealdstone	1,656 18 0

Wrexham. — For the erection of two semi-detached houses at the corner of Spring Street and Cunliffe Street, Wrexham. Mr. J. E. Tate, architect, 9, High Street, Wrexham:—

H. A. Jones	£1,083 0 0
J. B. Woolley	1,075 0 0
Davies Bros.	1,050 0 0
T. Jones and Son, Johnstown, near Ruabon	1,040 0 0
Lewis Bros.	965 15 0
W. H. Thomas,* Sawmills, Oswestry	955 15 2

*Accepted. Rest of Wrexham.

Stoke.—For the erection of new schools at Stoke, for the Devonport Education Committee. Messrs. Thornely and Rooke, architects, Plymouth:—

J. Paynter	£13,980
Pearce Bros.	13,787
Wakeham Bros.	13,681
Matcham and Co., Ltd.	13,319
J. Crockerell	12,983
A. Andrews	12,980
W. E. Blake	12,975
A. R. Lethbridge and Son	12,898
Pethick Bros., Ltd.	12,777
Lapthorne and Co.	12,640
S. Roberts, Ltd.	12,098
G. B. Turpin	11,997
Pearn Bros.	11,943
A. N. Coles*	11,180

* Accepted.

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MAYFAIR CONSTRUCTORS, Ltd., to carry on the business of builders, contractors, furnishers, decorators, engineers, etc. The first directors are: R. L. Spicer, H. Weldon, E. G. Verity and F. Deverell. Registered office: 3, and 4, Great Winchester Street, E.C. Capital: £1,600.

ROAD PAVING AND CEMENT CO., LTD., to acquire from T. D. Kelly and turn to account two inventions (1) for road and path construction, and (2) for the manufacture of cement and burning of chalk and carbon. The first directors are: Sir Kenneth Kemp, Bart., S. Saunderson, and T. D. Kelly. Registered office: 1 and 2, Queen Street, Cheapside. Capital: £6,000.

NEW PARKIA BRICK CO., LTD., to take over the business of a maker of bricks, tile and pipe ridges, terra-cotta drainage pipes, and chimney pots, carried on by A. Hill at Parkia Brick Works, near Carnarvon. Capital: £5,000. Registered office, Parkia Brickworks, Llanfairisgaer, near Carnarvon.

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With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

August 13. ASHFORD.—Structural repairs at the Ashford Grammar School. Persons desirous of tendering are requested to send in their names to the architect, A. E. Lacey, A.R.I.B.A., Ashford, on or before August 13.

August 13. FENCE HOUSES. — Erection of a workmen's club at Bank Head, Fence Houses. Plans and specifications can be seen at the office of the architect, Mr. Palliser, Philadelphia, Fence Houses. Tenders, endorsed "Tender for Club," to be sent to J. W. Baker, secretary, 30, Cement Street, Dubmire, Fence Houses, by August 13.

August 13. ROCHDALE.—Erection of a boundary wall on the workhouse estate, for the Rochdale Union Guardians. The wall will be about 240 yards in length, and is to be according to plan, specification, etc., at the offices of Mr. Shuttleworth, architect and surveyor, Littleborough. Sealed tenders, endorsed "Erection of Boundary Wall," to be delivered to R. A. Leach, Union clerk, Union Offices, Townhead, Rochdale, not later than noon on Aug. 13.

August 13. BRADFORD.—Erection of a villa residence in Park Road, Eccleshill, Bradford. Persons desirous of tendering are requested to forward their applications to J. Harper Bakes, M.S.A., architect and surveyor, Calverley Chambers, Victoria Square, Leeds, in writing, before August 13, when bills of quantities will be forwarded.

Aug. 13. HAVERFORDWEST.—Alterations and additions to the laundry and mortuary at the Haverfordwest Workhouse, for the Board of Guardians. Drawings and specification may be seen at the office of the architects, Messrs. D. Edward Thomas and Son, 17, Victoria Place, Haverfordwest. Sealed tenders, endorsed "Tenders for Laundry and Mortuary," to be delivered to John E. H. Rogers, clerk. 7, Dew Street, Haverfordwest, not later than August 13.

August 13. SWANNINGTON (Leicester).—Erection of new premises at Swannington, consisting of grocery, drapery, and butchery departments, together with stores, weighing-room, stable and usual out-offices, for the Coalville Working Men's Co-operative Society, Ltd. Plans may be seen and bills of quantities obtained from Messrs. Goddard and Wain, architects, Station Chambers, Coalville, upon payment of one guinea, which will be returned upon receipt of a bona fide tender. Sealed tenders to be delivered to the Committee, Co-operative Society, Ltd., Coalville, on or before August 13.

August 14. CORK.—Alterations at hospital, for the Board of Management. Plans and specifications to be seen at the office of James F. M'Mullen, architect, 30, South Mall, Cork. Sealed tenders to be lodged with the house surgeon at the hospital before noon on August 14.

August 14. WOODEND.—Mason and slater works of alterations and additions to (1) Steading, Woodend; (2) Steading, Ladymill, for the Craigievar Estate. Plans and specifications will be shown by the respective tenants, and by Charles Murray, Burnside, Leochel-Cushnie, and offers will be received by Alexr. Stronach, junr. and Son, advocates, 20, Belmont Street, Aberdeen, up to August 14.

August 14. RICHMOND (Yorks.).—Building a bridge over the Cotton Mill Beck in the Parishes of Dalton and Newsham for the Richmond (Yorks) Rural District Council. Plans and specifications can be seen at the District Surveyor's Office (Mr. John Hodgson) at North Cowton, from whom all further particulars can be obtained.

Tenders to be sent in to Wensley Hunton, clerk to Rural District Council, Richmond, Yorks., endorsed "Tender for Bridge," on or before August 14.

August 14. LOCHGELLY.—Mason, brick, carpenter and joiner, slater, cement and plaster, and plumber works to be executed in erecting houses at New Street, next Bowling Green, Lochgelly, for Mrs. Dick. Schedules of quantities may be had on application to Muirhead and Rutherford, architects and surveyors, Dunfermline, with whom sealed and endorsed tenders are to be lodged not later than August 14.

August 14. BRIDGEND.—Erection of Proposed Hall for the "Christ Mission" Church. Plans and specifications may be obtained upon application to Albert H. Jenkins, architect, Blackmill, to whom sealed tenders endorsed "Christ Misson Hall, Bridgend," are to be sent not later than August 14.

August 14. FINTRAY.—Mason, carpenter, slater, and plaster works of dwelling-house to be erected at Forresterseat, Fintray. Plans and specifications may be seen either at Forresterseat, in the hands of the tenant there, or at the office of Alex. Stronach, junr., and Son, advocates, 20, Belmont Street, Aberdeen, who will receive offers up to August 14.

August 14. NEATH.—(1) Alterations and additions to the Skewen council school near Neath. (2) Alterations and additions to the Cadle council school, Forestfach, near Swansea, for the Glamorgan County Council. Contractors must produce evidence of being insured against liability for accidents to workmen. Plans and specifications of work No. 1 may be seen, and copies of the bill of quantities obtained at the Neath police-station, and of work No. 2 at the office of J. Jones Lewis, solicitor, 7, Rutland Street, Swansea. Plans and documents for both the works may be seen or obtained at the offices of the County Council clerk. Tenders made out on the forms supplied, including the names of two substantial sureties, are to be delivered to T. Mansel Franklen, clerk to the County Council, Glamorgan County Offices, Westgate Street, Cardiff, in the envelopes supplied for the purpose, not later than August 14, marked outside, "Tender for Additions to Skewen Council School," or "Tender for Additions to Cadle Council School," as the case may be.

August 15. ELLON.—Mason, carpenter, slater, plaster, plumber, painter, and heating works in connection with proposed alterations and additions at Ellon Public Schools. Plans and specifications may be seen with and schedules of quantities obtained from W. Davidson, architect, Ellon. Offers to be lodged with A. J. Raeburn, clerk to the school board, Ellon, by August 15.

August 17. NEW BRANCEPETH, DURHAM.—Erection of ten cottages, for the New Brancepeth Co-operative Society. Plans and specifications may be seen at the society's office between August 10 and 15. Tenders, endorsed "Tender for Cottages," to be delivered to T. T. Shevels, secretary, not later than August 17.

August 17. TANTOBIE.—Erection and completion of twenty-two houses and street-making at Tantobie, R.S.O., Co. Durham, for the Co-operative Society, Ltd.; separate tenders required for houses and street-making. Drawings, specifications, etc., may be seen, and forms of tender and quantities obtained, at the office of the architect, G. T. Wilson, 22, Durham Road, Blackhill. Tenders to be sent in to Mr. Wm. Hall, secretary, Co-operative Stores, Tantobie, R.S.O., Co. Durham, not later than 4 p.m. on August 17.

August 17. SALFORD.—Pointing buildings and pulling down and re-building a short length of wall at the Frederick Road electric mains depot, for the County Borough of Salford. Specifications and forms of tender may be obtained from the Borough Engineer, Town Hall, Salford. Tenders, endorsed "Pointing at Electric Mains Depot," must be delivered to L. C. Evans, town clerk, Town Hall, Salford, not later than 3 p.m. on August 17.

August 19. YORK.—Erection of four pairs of semi-detached houses on the Holgate Gardens Estate, York. Plans and bills of quantities with John C. Proctor, A.R.I.B.A., Cabinet Chambers, Basinghall Street, Leeds, to whom all tenders must be sent by August 19.

August 20. FELLING.—Erection of Workmen's Club at Felling. Persons desirous of tendering should apply to George Bell, quantity surveyor, Market Street, Newcastle, who will supply quantities. Tenders to be sent to the architect, H. Miller, Felling, not later than August 20.

August 20. ANGLESEY.—Additions and alterations to the dwellings at the North Stack Fog Gun Station. The plans may be inspected, and forms of tender, together with specifications, obtained on application to the Superintendent, Trinity Store, Holyhead. Tenders, sealed and marked outside "Tender for work to Dwellings at North Stack Fog Gun Station," are to be addressed to the Secretary, Trinity House, London, E.C., and delivered on or before August 20.

August 20. OBAN.—Erection of a new post office at Oban for the commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the postmaster. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Parliament Square, Edinburgh, on payment of one guinea. The sums so paid will be returned to those persons who send tenders in conformity with the conditions specified below. Tenders must be delivered on August 20, addressed to the Secretary, H.M. Office of Works, etc.,' Storey's Gate, London, S.W., and endorsed "Tender for Oban New Post Office."

August 22. KEA.—Erection of a cattle run at Carlyon, in the parish of Kea, for the Right Hon. Viscount Falmouth. Plans, conditions and specification, are now at the farmhouse at Carlyon. Tenders should be sent on or before August 22, to George Gow, Treglothnan Office, Truro.

August 22. PERTH.—Erection of Perth City Hall:—(1) mason work; (2) carpenter and joiner work; (3) steel and iron work; (4) plumber work; (5) glazier work. Plans at the office of Stephenson and Scott, Measurers, 38, Tay Street, Perth. Schedules of quantities from the Town Clerk, Perth, on payment of deposits of £1 1s. for each of Works 1, 2 and 3, and 10s. 6d. for each of Works Nos. 4, 5, and 6. Tenders, with priced schedules ,must be lodged with the town clerk, Perth, not later than 10 a.m. on August 22, endorsed "City Hall. Tender for .....Work."

August 24. NEWRY.—Erection of goods shed, 80 ft. by 25 ft., of timber and slated roof, Edward Street Station, Newry; 3-roomed gate cottage, near Fintona Junction, and 4-roomed gate cottage, near Banbridge, for the Great Northern Railway Co. (Ireland). Persons wishing to tender may see the drawings and specifications at the office of W. H. Mills, engineer-in-chief, Amiens Street terminus, Dublin, or copies of them, at the office of the district engineer, Belfast, and can obtain at the said offices forms of tender on payment of 1s. each. Tenders made out on the forms supplied by the company, should be delivered, under sealed cover, endorsed "Tender for ——," to T. Morrison, secretary, Secretary's Office, Amiens Street Terminus, Dublin, not later than to a.m., August 24.

August 24. ARMAGH.—Renovation and improvement of tontine buildings for use as a town hall and municipal offices, in accordance with plans and specifications prepared by J. Caffrey, M.R.S.I., Armagh, for the Urban District Council. Plans and specifications may be seen at the Town Clerk's Office, where copies of the tender form, and schedule of quantities may be obtained by making a deposit of one guinea, which will be returned on receipt of a bona-fide tender. Tenders, accompanied by a schedule of prices, and containing the names and addresses of two solvent sureties willing to join in a bond for £1,000 for the due performance of the contract, will be received by J. Lennon, Town Clerk, Urban District Council Offices, Armagh, up to six o'clock on August 24. The contractor must pay all expenses in connection with the preparation and execution of, and stamp duty on, contract and bond.

August 26. STOCKTON HEATH.—Erection of a new school at Stockton Heath, for the Cheshire County Council. Application may be made for bills of quantities to the architect, Joseph Holt, A.R.I.B.A., 9, Albert Square, Manchester, and drawings, specifications, and conditions of contract may be inspected at 9, Albert Square aforesaid. All applications must be accompanied by a deposit of £2, which will be returned on receipt of a bona-fide tender. Sealed tenders, marked "Stockton Heath New School," must reach Geo. F. Ashton, clerk to the Sub-committee, 71, High Street, Runcorn, not later than 10 a.m. on August 26.

August 27. KING'S LYNN.—Taking down the property known as "Paradise," King's Lynn, for the Corporation. Tenders, on forms to be supplied, must be delivered to J. H. Webb, Borough Surveyor, by 10 a.m. on August 27.

August 27. RAFEL FAWR (near Fishguard).—Erection of a dwelling house with stone or brick at Rafel Fawr, near Fishguard. Plans and specifications may be seen at Rafel Fach during next week. Sealed tenders are to be delivered to J. J. Moris, Rafel Fach, on or before August 27.

August 31. GREENOCK.—Renewal of the eastern portion of the East India Wharf, for the trustees of Greenock Harbour. Plans at the engineer's office, Municipal Buildings, and copy of the specification and schedule and form of tender may be obtained from him on payment of £1, Tenders, marked "Tender for East India Wharf," must be lodged with Thos. Wilson, secretary and general manager, Greenock, on or before Aug. 31. Any further information may be obtained from Mr. Robert Crawford, C.E., engineer to the trustees.

September 5. LEICESTER.—Erection of a superintendent's house in connection with the Beaumont Leys Farm Bacterial Works, for the Corporation of Leicester. Particulars may be obtained at the borough engineer's office, on payment to the Borough Treasurer of £2, which will be returned on receipt of a bona-fide tender. Sealed tenders, on the forms supplied, addressed to "The Chairman of the Sewage Works and Farms Committee, Town Hall, Leicester," are to be delivered not later than 9 a.m., on September 5, endorsed "Tender for Superintendent's House."

September 8. HAWARDEN.—Erection or a new Council school to accommodate 500 scholars, at Shotton, for the Education Committee. Plans and specifications can be seen at the office of the county surveyor, County Buildings, Mold, from whom copies of the bill of quantities can be obtained on payment of a sum of two guineas, which sum will be returned on receipt of a bona fide tender. Tenders, on forms which will be supplied, to be delivered in sealed endorsed envelope, at the address printed thereon, not later than noon on September 8.

September 9. LONDON, W.—Erection of a block of shops and showrooms at 143-9, Great Portland Street, London, W. Drawings, specification, and conditions of contract may be inspected at the offices of the architects, John W. Simpson and Maxwell Ayrton, 3, Verulam Buildings, Gray's Inn, W.C., from August 24 to Sept. 8, between 10 and 4. Bills of quantities and forms of tender may be obtained at the same address on payment of three guineas. The sums so paid will be returned to those persons who send in tenders on the forms provided in conformity with the conditions. Tenders must be delivered before noon on Sept. 9, addressed to the Owner, Great Portland Street site, care of Messrs. Jubber and Co., 61, Great Portland Street, W., and endorsed "Tender for Shops and Showrooms."

No date. MILLBROOK, PLYMOUTH.—Erection of a shop and premises in West Street, Millbrook, for Messrs. West Bros. For particulars apply to Carder and Carder, M.S.A., architects and surveyors, 24, Lockyer Street, Plymouth.

No date. BURNLEY.—Pointing of brick circular chimney, at Burnley, with either cement and sand or oil mastic; height 66 ft., circumference, 21 ft. Tenders to Oswald Lister, Ilkley.

No date. SEDBERGH.—Erection of premises at Sedbergh, for P. A. Thomas. Tenders to be sent to E. D. Dennis, architect, Sedbergh.

No date. HAROME (near Helmsley).—Erection of a Wesleyan chapel, at Harome, near Helmsley. Persons desirous of tendering are to send their names to W. J. Morley and Sons, architects, 269, Swan Arcade, Bradford, when quantities will be forwarded.

No date. SOUTH UIST.—Erection of a school to accommodate 104 scholars, with dwelling-houses for headmaster and assistant teacher, at Lochboisdale, South Uist. Also, for a school to accommodate 30 scholars, with dwelling-house for teacher, situated at East Gerinish, for the School Board of South Uist. All in accordance with plans and specifications prepared by J. Wedderspoon, C.E., Inverness. Sealed tenders, marked on the outside, "Tender for Lochboisdale School," or "Tender for East Gerinish School," as the case may be, to be lodged with A. M'Elfrish, clerk to the school board of South Uist, Lochmaddy.

No date. BELLAGHY.—Erection of a teacher's residence at Bellaghy, Co. Derry, for the Rev. Peter M'Namee, P.P. Plans and specification may be obtained upon application at the parochial house, Bellaghy, or to J. V. Brennan, C.E., architect, Belfast Bank Chambers, Belfast.

No date. BELFAST.—Erection of a villa on Donegall Road, Belfast. Plans and specification can be obtained upon application to Frank J. M'Cann, architect, 102, Donegall Street, Belfast.

No date. LYDNEY.—Erection of two cottages at Lydney for Richard Phipps, Esq., J.P., Buckenshill, Bromyard. Plans and specifications may be seen by appointment with W. Coldrick, Drockholland, Lydney.

No date. KENDAL. — Pulling down shop premises, together with the cottages and warehouses in the rear, in Highgate, Kendal, and building on the site new shop premises, motor garage, and workshops. Also for pulling down and rebuilding part of the shop premises adjoining the above. Plans can now be inspected and other information obtained on application to John Hutton, M.R.S.I., architect, Kendal. Bills of quantities will be supplied on application and date for sending in tenders will be printed thereon.

No date. CARFORTH, near Leeds.—Bricklayer, Joiner, and Plumber's Work required in minor alterations to the head teacher's house at the Kippax Provided School. Specifications and quantities may be obtained from R. J. Smith, Education Offices, Garforth, near Leeds.

No date. CRAMLINGTON.—Erection of house and shop. Specifications can be seen at the Colliery Office, Cramlington.

No date. MIRFIELD.—Erection of proposed new works, for the Mirfield Engineering Co., Ltd. Plans and specifications may be had on payment of 10s., which will be returned on receipt of a bona-fide tender. Applications to W. A. Entwistle, managing director, Company's Offices, Newgate, Mirfield.

No date. PENCOED. — Erection of house and shop at Pencoed. Communications to be addessed to S. M. Davies, 11, Adamsdown Square, Splott, Cardiff.

No date. FRIZINGHALL (Bradford).—Erection of a wool warehouse at Bolton Hall Road, Frizinghall. Quantities will be forwarded when ready. Communications to be addressed to Abm. Sharp, architect, Market Street, Bradford.

ENGINEERING.

August 17. TIVERTON. — Construction of a reservoir, with earthen and clay puddle dam, on the Rackenford Manor Estate, for F. J. Coleridge Boles, Esq. Plans and specification may be seen and all information obtained from W. F. Siddalls, civil engineer, Drumore, Tiverton, to whom tenders, endorsed "Reservoir," are to be sent by August 17.

August 18. TRALEE.—Construction of a reinforced concrete viaduct, at Fenit Pier, Tralee, in accordance with the drawings and specification of G. A. E. Hickson, M.I.C.E.I., for the Tralee and Fenit Pier and Harbour Commissioners. Drawings and specification, and such further particulars, can be obtained on application to G. A. E. Hickson, Engineer's Offices, 25, Denny Street, Tralee, on deposit of £1 1s., which sum will be returned to all bona fide tenderers. Tenders will be received by the secretary, Harbour Office, Tralee, up to 10 a.m. on August 18, and must be enclosed in a sealed envelope and marked "Tender for Viaduct."

August 20. REIGATE.—Erection of complete surface-condensing plant, with cooling tower, etc., for the Corporation. General conditions, specifications, and forms of tender may be obtained from W. S. Ross, electrical engineer to the Corporation Electricity Works, Wray Common Road, Reigate, Surrey, on payment of a deposit of one guinea, which will be returned on receipt of a bona fide tender. Sealed tenders, endorsed "Tender for Condensing Plant, etc.," must be delivered to Alfred Smith, town clerk, Municipal Buildings, Reigate, Surrey, not later than noon, August 20.

August 22. KILLARNEY.—Extension and improvement of the Killorglin waterworks, for the Rural District Council. Plan and specification to be seen at the clerk's office. The works include relaying of pipes from the head works at Lake Cummernamuck to Killorglin, erection of a reservoir, and other extensive improvements. Estimated cost £727. Sealed tenders, containing the names and addresses of two solvent sureties, willing to join contractor in a bond for £1,000, will be received by P. Carey, clerk of Council, Boardroom, Workhouse, Killarney, up to noon on August 22.

August 22. DOWNPATRICK.—Construction of a complete system of waterworks for Castlewellan, for the Rural District of Downpatrick. The works consist generally of the construction of a storage reservoir, lined with concrete, and filters, and the supply and laying of about 3,670 yds. of cast-iron pipes, varying in diameter from 4 to 3 ins., with sluice valves, hydrants, street wells, etc. Plans and specifications may be seen, and a copy of the specification, form of tender, bill of quantities, and index plan can be obtained upon payment of one guinea (which will not be returned) at the office of the engineer, Mr. J. M'Aleenan, C.E., Castlewellan, or Messrs. Swiney and Croasdaile, MM.Inst.C.E., Avenue Chambers, Belfast, between 10 a.m. and 5 p.m., except on Saturday, when the office closes at 2 p.m. Tenders, endorsed "Tender for Waterworks," to be delivered in sealed envelopes to R. L. Morrow, clerk to the Downpatrick Rural District Council, Poor-Law Union, Downpatrick, not later than 8 a.m. on August 22.

August 25. WEST HARTLEPOOL.—Construction of a new entrance from the west harbour to the coal dock, West Hartlepool; also for the construction of necessary temporary timber dams and dolphins; the excavation and removal of the old entrance; the removal of the dams and dolphins after completion of the new entrance, and all contingent works, for the North-Eastern Railway. Plans may be seen and specification obtained on personal application to T. M. Newell, Dock Engineer's Office, Hull. Sealed tenders, endorsed "New Entrance, West Hartlepool," to be delivered to R. F. Dunnell, secretary, N.E.R. Co., York, not later than 9 a.m. August 25.

August 26. UPPER EDMONTON, N.—Installation of hot and cold water supplies, hot water heating, ventilation, fire hydrants, and gas supply at the nurses' home at the new infirmary, Upper Edmonton, N., now being erected under the architect, Stuart Hill, 106, Cannon Street, E.C., for the Guardians of the Edmonton Union. Copies of the specification can be obtained on payment of five guineas (cheque), which amount will be returned on receipt of a bona fide tender in conformity with the conditions specified, of the consulting engineer, Alexander Drew, of 154-6, Temple Chambers, Temple Avenue, E.C., where also the plans can be seen. Sealed tenders, on forms which will be supplied, to be delivered to F. Shelton, clerk, Lower Tottenham, before 9 a.m. August 26.

Aug. 26. SNARESTONE.—Construction of a pilot shaft and headings or drifts at Snarestone, adjacent to Snarestone pumping station, for the Hinckley Urban District Council. Plans may be inspected and specification and form of tender may be had on payment of the sum of two guineas (to be returned on receipt of a bona fide tender), on application at the office of the surveyor at the council offices, Hinckley, or at the office of T. and C. Hawksley, 30, Great George Street, Westminster. Tenders must be delivered before noon on Aug. 26, to A. S. Atkins, clerk, Council Offices, Hinckley.

Aug. 26. HINCKLEY.—Enlargement of high-level cast-iron tank on the tower at waterworks at Hinckley, for the Urban District Council. Plans may be inspected and specification and form of tender may be had on payment of the sum of two guineas (to be returned on receipt of a bona fide tender), on application at the office of the surveyor, at the council offices, Hinckley, or at the office of T. and C. Hawksley, 30, Great George Street, Westminster. Tenders must be delivered to A. S. Atkins, clerk, Council Offices, Hinckley, before noon August 26.

Sept. 1. ROCHESTER.—Construction of a wharf (in timber) at the Common Creek, on the River Medway, at Rochester, for the Corporation. Plans and specifications can be seen and bills of quantities obtained, on application to William Banks, A.M.I.C.E., such application to be accompanied by a deposit of three guineas, which will be returned on receipt of a bona fide tender. Sealed tenders, endorsed "Tender for Wharf," are to be delivered before 4 p.m. on September 1, to Apsley Kennette, town clerk, Guildhall, Rochester.

September 1. WOOLWICH, S.E.—Installation of a new ironing machine in the staff laundry at the Brook Fever Hospital, Shooter's Hill, Woolwich, S.E., in accordance with drawing and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief for the Metropolitan Asylums' Board. The drawing, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £2. The amount of the deposit will be returned on 7 to persons who have sent in bona-fide tenders and returned the drawing and specifications in accordance with the instructions. Tenders, addressed at noted on the form, must be delivered aat the office of the Board not later than 10 a.m. Sept. 1.

No date. GLOUCESTER.—Constructing sluice-gates suitable for outfall on flood land against River Severn, near Gloucester. Persons desirous of tendering should apply to R. T., 07646, Address and Inquiry Office, "Hereford Times," Hereford.

IRON AND STEEL.

August 17. BUCKHAVEN.—Providing and delivering at Markinch, Cameron Bridge, Wemyss Castle, and Methil Stations, about 1,184 tons dry-sand cast-iron pipes, 12, 10, 9, 8, and 6 in. diameter, and special castings, for the Wemyss, Buckhaven, Methil and Innerhaven Waterworks, Wemyss. Copies of the specification and schedule may be obtained at the office of the engineers, J. and A. Leslie and Reid, C.E., 72a, George St., Edinburgh, on payment of £1, which will be returned to all who send in a bona fide tender, and on the specificaion and schedule and documents lent for making up a tender being returned to the engineers. Tenders, endorsed "Cast-iron Pipes," must be lodged with W. T. Ketchen, clerk, Municipal Buildings, Buckhaven, not later than August 17.

PAINTING AND PLUMBING.

August 17. LICHFIELD.—Painting, decorating and general repairs to the Art School, Dam Street, for the City Council. Specification can be had on application to the city surveyor. Tenders, endorsed "Art School," and addressed to the town clerk, to be delivered before noon on August 17, to Herbert Russell, town clerk, 5, Market Street, Lichfield.

August 19. LEEDS.—Painting the Monk Bridges, the Globe Road Bridge, and the railings, girders, etc., in connection with the widened portion of Water Lane, for the Corporation. Specifications may be seen and forms of tender and schedule of work obtained from W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on payment of a deposit of one guinea, which will be refunded on receipt of a bona fide tender. Tenders, properly endorsed, must be received at the Town Clerk's office, not later than 10 a.m., August 19.

August 20. SALFORD.—Exterior painting at the Ladywell Sanatorium, for the County Borough. Specification and form of tender, at the borough engineer's office, Town Hall, Salford. Tenders, endorsed "Painting at Sanatorium," addressed to the Chairman of the Health Committee, must be delivered to L. C. Evans, town clerk, Town Hall, Salford, not later than 10.30 a.m. on August 20.

August 24. LEEDS.—Painting at the Town Hall, Municipal Buildings, and Jewish Baths, Albert Grove, for the Corporation. Specifications, forms of tender, and schedules of works, at the office of W. T. Lancashire, city engineer, on payment of a deposit of one guinea. Tenders must be received at the town clerk's office not later than 10 a.m., August 24.

No date. SHERBURN HILL (Durham).—Painting corrugated iron Co-operative Hall, large shed and harness room, for Sherburn Hill Co-operative Society. For particulars apply at the stores any day during shop hours.

No date. MERIONETH.—Painter's work required to be done at the following schools: — Manod Council School, Blaenau Festiniog, Dyffryn Council School. Aberangell Council School, for the Merioneth Education Committee. Specification and further particulars may be obtained on application to the architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

No date. WOODHOUSE (near Sheffield). — Painting the interior of the Woodhouse working men's club, Belmore Road, Woodhouse, near Sheffield. Applications to be made to the secretary.

ROADS AND CARTAGE.

August 15. HINDLEY.—Flagging parts of the playgrounds and making an ashpit at Argyle-street Council School for Education Committee. Specifications can be obtained on application from Mr. James R. Booth, Secretary of Education. Tenders are to be sent to Thomas Robey, clerk to the Council, Council Offices, Hindley, not later than August 15.

August 17. WANTAGE. — Steam rolling and scarifying, for the U.D.C. Particulars, with form of tender, may be obtained frm Wm. Hanson, surveyor, Town Hall, Wantage, to whom sealed tenders, endorsed "Rolling," should be sent by August 17.

August 19. TICEHURST.—Steam rolling in the district from the first week in November, for the R.D.C. The contractors will be required to supply one or more rollers, with driver and mate to each, scarifiers, sleeping-vans, water-carts, with horse and man to each, and also necessary appliances. The work to be undertaken either by the piece or day work, as the Council may determine. Particulars with W. N. Wood, surveyor, Ticehurst. Tenders, endorsed "Steam Rolling," to be sent to J. C. L. Andrews, clerk to the Council, Wadhurst, Sussex, not later than August 19.

August 20. MORLEY.—Providing and laying about 1,060 super. yds. of tar macadam on the playground of Queen Street Council School, for the Education Committee. Specifications and full particulars may be obtained on application to W. E. Putman, Assoc.M.Inst.C.E., borough engineer and surveyor, Town Hall, Morley. Tenders, endorsed "Tar Macadam," to reach the town clerk, Town Hall, Morley, not later than 10 a.m., August 20.

August 24. LEEDS.—Hope Street improvement, including, inter alia, the formation of a 75 ft. street between Quarry Hill and North Street, and the construction of subways under the same, some 630 yds. lin. of retaining walls, the culverting of a portion of Lady Beck and other street works, for the Unhealthy Areas Committee. The drawing, specification, and stipulations may be seen at the city engineer's office, Municipal Buildings, Leeds, and bill of quantities, etc., obtained on deposit of three guineas, which will be returned on receipt of a bona-fide tender. Tenders, endorsed "Hope Street Improvement," must be received at the Town Clerk's Office not later than 10 a.m. on August 24.

September 14. STREATHAM.—Making up and paving the following new streets, viz.:—(a) Thrale Road, Streatham. (b) Part of Crowborough Road, Streatham, between Chillerton Road, and Ramsdale Road. (c) Part of Ramsdale Road, Streatham, between Rectory Lane and Crowborough Road, for the Council of the Metropolitan borough of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained at the borough engineer and surveyor's office, New Streets Department, 53, East Hill, Wandsworth, between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving —— Road," must be delivered to Henry George Hills, Town Clerk, Council House, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on September 14. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

SANITARY.

August 17. HASTINGS.—Laying sewers in Waldegrave and Cornwallis Streets, and at the rear of Queen's Road, Hastings, and other work in connection therewith, for the Corporation. Drawing and specification may be seen and form of tender obtained, at the office of the borough engineer, P. H. Palmer, M.I.C.E., Town Hall, Hastings, between 10 a.m. and 5 p.m. Tender under cover, endorsed "Tender for Sewer, Waldegrave and Cornwallis Streets," must be delivered to B. F. Meadows, town clerk, Town Hall, Hastings, not later than noon, August 17.

August 17. DUNHAM MASSEY.—Construction of a detritus tank and screening chamber at the sewage disposal works, Woodcote, Dunham Massey, of the Altrincham U.D.C. Particulars (on deposit of one guinea), with H. E. Brown, surveyor, Town Hall, Altrincham. Tenders, endorsed "Tender for Screening Chamber," addressed to the Chairman of the Sewage Farm Committee, Town Hall, Altrincham, are to be sent in not later than 4 p.m. on August 17. Fair wages clause.

August 18. PORTSMOUTH.—Constructing, completing, and maintaining in thorough repair for six calendar months from the completion of the whole, an eight-stall urinal, upon a site adjacent to Copnor Bridge in the borough of Portsmouth, for the Corporation. The specification and plan may be seen and a form of tender obtained at the borough engineer's offices at the Town Hall. The form of tender is to be completely filled in and sent under cover to reach Alexander Hellard, town clerk, Town Hall, Portsmouth, not later than 10 a.m., August 18. Fair wages clause.

August 20. INNERLEITHEN.—Laying about 1,400 yds. of 4 in., 5 in., 6 in., 9 in., 15 in., and 18 in. sewers to replace existing ones, for the Town Council. Persons wishing to tender will receive schedules for the proposed works from James Thomson, C.E., 22, Rutland Square, Edinburgh, on payment of £1 (which will be returned on receipt of detailed tender), and they will be shown over the ground on giving W. Stobie, town clerk, Innerleithen, 24 hours' notice of their intended visit. Tenders to be delivered on or before August 20.

August 24. GALASHIELS.—(1) Construction of over 15 miles of main and Subsidiary sewers; sewage purification works, including detritus tanks, sedimenaion tanks, and bacteria beds; and the laying out of land for filtration purposes. (2) Providing and erecting sewage distributors, gas producer plant, dynamos, motors, pumps, air compressors, and sludge pressing plant. (3) Erection of pump house with sludge tank, manager's house, and formation of approach roads, for the town council of Galashiels. Persons desiring to submit tenders may obtain copies of the general conditions, specifications, bills of quantities, and forms of tender upon application to W. A. Baird Laing, A.M.I.C.E., at the offices of Messrs. Kyle, Dennison, and Laing, C.E., 175, Hope Street, Glasgow, or 34, Queen Street, Edinburgh, on payment of the sum of £5 5s. in the case of contract No. 1, and £3 3s. in the case of each of contracts Nos. 2 and 3. This amount will be returned to the tenderer after the town council have come to a decision on the tenders received, provided he shall have sent in a bona fide tender, and shall not have withdrawn the same. Plans and drawings may be inspected and other particulars obtained at Mr. Laing's Glasgow office on any day up to August 24; or they may be inspected and other particulars obtained at the Burgh Buildings, Galashiels, on August 11 and 18. An assistant engineer will be at the Burgh Buildings, Galashiels, on August 18, to accompany contractors over and point out the site of the works. The successful tenderer will be required to execute a contract, the draft of which may be inspected at the town clerk's office, Galashiels, between 10 and 4 o'clock, except on Saturdays. Each tender, along with the combined conditions, specifications, and filled up schedule or bill of quantities, must be delivered in a sealed envelope, appropriately endorsed on the outside, to J. B. Lumsden, town clerk, town clerk's office, Galashiels, not later than 1 o'clock afternoon, August 24.

August 24. TRING. — Execution of all work involved by the connection of house drains to the new system of sewerage in the town of Tring, on the basis of a schedule of prices, for the U.D.C. Specifications and schedules may be obtained at the offices of the engineers, Willcox and Raikes, of 63, Temple Row, Birmingham, on payment of a deposit of two guineas, which will be refunded on receipt of a bona fide tender and the return of all documents Sealed tenders, with schedule of prices filled in, in detail, on the form supplied, and endorsed "Tring, House Connections," must be delivered to A. W. Vaisey, clerk to the Urban District Council, Tring, Herts., not later than noon on August 24.

August 27. SURBITON.—Construction of main drainage, for the Urban District Council (subject to the sanction of the L.G.B.). The drawings, specification, bills of quantities and forms of tender may be inspected at the offices of the engineer, C. Nicholson Lailey, M.I.C.E., 53, Victoria Street, Westminster, between 10 a.m. and 5 p.m. (Saturdays excepted), until August 25. Tenders, sealed and endorsed "Surbiton Main Drainage," are to be addressed to F. J. Bell, deputy clerk, Surbiton Urban District Council Offices, Ewell Road, Surbiton, and delivered there before 6 p.m. on August 27.

MISCELLANEOUS.

August 13. PORTSMOUTH.—Supply of Purbeck paving, etc., gravel, sand, and shingle, granite, oils and paints, castings, lime, timber, drain pipes, Portland cement, plumbing work, dredging, erecting ventilating shafts, etc., etc., for the Corporation. Specification and printed form of tender with regard to each of the above items may be obtained at the town clerk's office, Town Hall. Sealed tenders, on the prescribed form, endorsed "Tenders for ——," are to be delivered to A. Hellard, town clerk, Town Hall, not later than 10 a.m., August 13. Fair wages clause.

August 14. BINGLEY. — Asphalting the playgrounds at Myrtle Park Provided School, Bingley, for the West Riding County Council. Plans may be seen and specifications obtained on application to J. Vickers-Edwards, county architect, County Hall, Wakefield. A deposit of £1 is required, which will be returned on receipt of a bona-fide tender. Cheques, etc., must be made payable to the West Riding Treasurer, and sent to him direct, at the County Hall, Wakefield, otherwise applications will not be entertained. Sealed tenders, properly endorsed, to be forwarded to the County Architect not later than 10.30 a.m. on August 14.

Bankruptcies.

During the week ended July 31st, sixteen failures in the building and timber trades of England and Wales were gazetted.

J. Thompson, architect, Kendal. Adj., July 29.

J. F. Greenhalgh, architect, London. Liabilities, £3,678; £988 unsecured.

T. Swart, painter and decorator, St. Helens. P.E., C.C., Liverpool, August 17, at 11.

G. Sayce (trading as J. G. Sayce), builder and contractor, Smethwick. R.O., July 31.

F. W. Ingram, builder, Oxford. P.E., County Hall, Oxford, August 25, at 11.30.

F. Taylor, joiner and builder, Manchester. P.E., C.C., Manchester, August 28, at 10.

S. Warburton, builder and contractor, Miles Platting. Gross liabilities, £24,142; £11,819 expected to rank for dividend; deficiency, £1,106.

R. Bennett, architect, Cheapside, E.C. R.O., July 27. First meeting, Bankruptcy Court, August 13, at 11. P.E., same, September 22, at 11.30.

J. W. Dowdall (trading as Jno. Dowdall and Son), builder, Southampton. R.O., July 28. P.E., C.C., Southampton, August 19, at 12.

J., Jno., and W. L. Paddington (trading as J. and W. Paddington), contractors, Colden Common. Adj., July 3.

C. L. Peppiatt, builder, London. Liabilities, £7,986; £2,470 expected to rank for dividend: assets, £2,500.

W. Keeley and F. J. Beor, builders, Gloucester. Gross liabilities, £1,924; £279 expected to rank for dividend; assets estimated at £69; deficiency, £210.

H. W. L. Prentice, builders' merchant, New Barnet. R.O., July 30. First meeting, 14, Bedford Row, W.C., August 14, at 12. P.E., Town Hall, Barnet, August 27, at 11.

A. C. Yea, road contractor, Newton Abbott. R.O. July 28. First meeting, O.R.'s, Exeter, August 14, at 10.30. P.E., The Castle, Exeter, same day, at 11.30.

A. Dunn, builder, Gloucester. Gross liabilities, £15,233; £14,327 fully secured; £892 expected to rank for dividend; assets, £4,661; estimated surplus, £3,768.

Williams and Son, Ltd., brickmakers, builders, etc., Langley, Bucks. Unsecured debts, £6,467; secured claims, £15,620; estimated surplus assets, £3,246.

C. K. West and T. Bayliss (trading as West and Bayliss), builders and contractors, Prestwich. R.O. July 27. First meeting, O.R.'s, Manchester, August 12, at 2.30. P.E., C.C., Salford, October 7, at 10.30.

J. M. Grant (Acton Concrete Partition Co.), 63, Cornhill, E.C. R.O., July 17. Liabilities, £37,896; £33,257 expected to rank for dividend; estimated net assets, £744. Debtor acquired in 1905 the business of the Acton Concrete Partition Co., with a view to developing the patent. He had no capital, but made arrangements for financing the business, which he was eventually compelled to close in consequence of the action of a creditor. He has also acted as a director of other companies, one of which he formed ten years ago for the purpose of purchasing land and reselling it at a profit to builders. He had put £4,000 into that company, which is now in liquidation. The debtor also acquired land at Wealdstone, which he has developed on his own account, for the purpose of assisting the company last mentioned. In reply to the chairman, the debtor stated that the whole of his liabilities had arisen through his connection with two companies, for which he had given his personal guarantees for over £30,000, and which had been unsuccessful through no fault of his own. At a meeting of creditors held on Thursday last, Mr. A. G. Baxter, chartered accountant, was appointed trustee to administer the estate.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

A competent architectural assistant (24) desires appointment, permanent or temporary; good designer, accurate draughtsman; constructional details, specifications, quantities, moderate salary.—Box 4484, BUILDERS' JOURNAL Office.

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECTS' Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4456

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Junr., 5 years' London experience, neat draughtsman; good colourist, details.—Box 4480, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4498

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4481 BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, BUILDERS' JOURNAL Office.

ARCHITECT (age 29) desires post as traveller calling on architects, builders, etc. (north preferred).—Address Box 4497, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant desires engagement, 15 years' experience; competent draughtsman, colourist, etc.; working and detail drawings, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4470

ARCHITECT'S Junior Assistant, good draughtsman, 6½ years experience, working drawings, details, perspectives, surveying, specifications; assist quantities; mod. sal. for experience in good office.—"H.," 53, Hartwood Road, Southport. 4489

ARCHITECT'S Junior Assistant; disengaged; (21); 4½ years' experience; neat draughtsman and colourist; details; specifications; surveying; assist with quantities.—Box No. 4474, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, BUILDERS' JOURNAL Office.

ARCHITECT-SURVEYOR'S assistant requires situation at once. Three building construction certificates, and Prelim. R.I.B.A.; articled to A.M.I.C.E. and M.S.A.; good all-round experience. Age 24.—Box 4492, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (33), disengaged; 14 years' experience in good offices; first-class testimonials, and references; can take charge; specimens sent; salary £2. — Box 4491, BUILDERS' JOURNAL Office.

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—Knowledge of gas-engine; good refs.—T. S., 4, York Terrace, King's Road, Herne Bay. 4450

ARCHITECT and surveyor's assistant (24); eight years' experience; working drawings, details, design, surveying, specifications, quantities; student R.I.B.A., moderate salary.—Box 4495, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S Clerk (21), good draughtsman, thorough practical knowledge of construction and details, certificates for geometry, building and carpentry, and joinery. Capable of assisting with estimates, and picking up decorative work.—Box 4,400 BUILDERS' JOURNAL Office.

BUILDER'S assistant disengaged, 21 years' experience, comprising office routine, plans, specifications, quantities, outside supervision; measuring-up, levelling and surveying; good references; abstainer—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4494

BUILDER'S general assistant, disengaged, 14 years' experience; accounts, prime cost, time sheets, invoices, ledgers, cash and measurements, auction and estate work, and book-keeping; highest references.—Peet, 49, Bushwood Road, Kew. 4389

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 4455

JUNIOR Draughtsman (19), desires re-engagement; assist generally; good refs.; town and country; shorthand; probationer; R.I.B.A. — C. Weston, The Laurels, Rotherfield, Tunbridge Wells. 4376

JUNIOR Assistant (20) requires situation in surveyor's or builder's office, 3 years' experience with London surveyor; can assist in abstracting, working up, variations, etc.; willing worker.—W. Cooke, 102, Faraday Road, Wimbledon, S.W. 4333

JOINER-MACHINIST, or general assistant; used to office, bench, or building work, planer, saw, spindle, mortise, or entirely bench; construction certificates; good draughtsman; abstainer; references.—Box 4419, BUILDERS' JOURNAL Office.

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

PLUMBER (gas and hot-water fitter) wants job well up in all branches; would supply all tools; not afraid to turn hand; would suit builder or jobbing man; town or country; wages, 8½d. per hour for constant employment.—S. K., Shanklin, Benhi Road, Sutton, Surrey. 446

SANITARY Drainer (competent), wants situation good work; iron or earthenware; take charge; years' experience; good references; age 36.—W Gent, 42, Westbrook Road, Thornton Heath. 447

STOREKEEPER and yardman (age 28), seek re-engagement in builder's yard. Well up in boo ing materials in and out works. Fifteen year experience. First-class references. Distance object.—M. Poole, 12, Jardin Street, Albany Roa Camberwell, S.E. 447

THOROUGHLY competent builder's book-keep and general assistant requires engagement, years' experience in London with builders a shopfitters; good reasons for leaving prese berth; excellent references Age 32.—Apply B 4414, BUILDERS' JOURNAL Office.

WANTED, architect and surveyor's assistan shortly disengaged; thorough general e perience; quick and accurate draughtsma supervising; entire charge.—Box 4447, BUILDER JOURNAL Office.

YOUTH (age 18) requires situation in builder or surveyor's office. Desirous of learning es mating. Three years' previous experience.—App W. B., 8, Medley Road, West Hampstead, N.W 44

YOUTH seeks situation with architect or builde good tracer, well up in p.c. and office work; e cellent references.—J., 164, Wellesley Road, Ilfor Essex. 44

Appointments Vacant.

EXPERIENCED representative wanted by we known firm of lock manufacturers; must ha influential connection amongst leading architec and contractors in London district; state sala required and full particulars of experience. Box 4427, BUILDERS' JOURNAL Office.

TRAVELLER wanted, with established connecti amongst architects, builders, contractors, deco tors, etc., to sell our Artificial Marble, on sala and Commission; must have exceptional referenc as to ability. Apply by letter only, giving f particulars, and stating terms required, The Fas Marble Company, Ltd., 46, Cannon Street, Lond E.C. 44

WANTED, for a permanency in the office of an o established firm of surveyors in the city, a yo of good appearance and education, with previ office experience, who can write a good ha quick and accurate.—Apply, in own handwriti with copies of testimonials, stating salary ask to Box 4457, BUILDERS' JOURNAL Office.

Business Wanted.

WANTED, a jobbing builder's business in Lond suburbs preferred. Apply, stating all particula to Box 4415, BUILDERS' JOURNAL Office.

Businesses for Sale.

FOR Sale, a good old building business, in to of 10,000, at about £2,500, most of which co remain at 5 per cent. to good men; the busin would suit joiner, bricklayer and painter; up date shop and machinery.—Applicants for tended payment terms, must state amount capital, age and class of work used to; g references indispensable.—Box 4452, BUILDE JOURNAL Office.

JOBBING builder and decorators' business Suffolk; old-established; freehold house premises for sale.—Box No. 4475. BUILDE JOURNAL Office.

Partnerships & Practice

YOUNG architect seeks partnership with es lished architect or estate agent (province moderate capital.—Box 4473, BUILDERS' JOUR Office.

Dissolution of Partnershi

MR. A. E. TUTTE, architect and surveyor, ha dissolved partnership with Mr. Cook (Cook Tutte) and closed the offices at 394, Commer Road, Portsmouth, has opened offices at 91, H don Road, Portsmouth.

August 19, 1908. Volume 28, No. 706.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Cumberland's Compromise.

Cumberland County Council has distinguished itself by creating a somewhat peculiar post, and, with it, a rather pernicious precedent. It has resolved to appoint a "Surveyor of County Buildings and Schools," who is to be made responsible for "the ordinary repairs, alterations, and maintenance of all county buildings, police stations, and schools, and the erection of new buildings, if required." The surveyor is to have £300 a year and reasonable travelling expenses, the Council holding itself responsible for the necessary clerical assistance, at a cost not exceeding £100, and, of course, providing a properly equipped office, as well as defraying all incidental expenses. In short, the surveyor will be paid £300 a year net. That the Council expect him to earn it is quite evident from the terms of the recommendation—"That the said Surveyor be required to devote the whole of his time to the services of the county, and be responsible for the above-mentioned duties, and, in addition, that he prepare and submit plans, drawings, specifications, and estimates, and take out quantities, obtain tenders, and carry out the execution of any new work which he may be required to do by the County Property, the Standing Joint, or the Education Committees, and all plans, specifications, etc., so prepared shall become the property of the County. Where any committee consider that an architect should be appointed for any special purpose, it be left to the committee to employ one upon such terms as they consider necessary." It had been previously proposed to retain a County Architect, but, the Council jibbing at the expense, the present weak compromise is the result. Lord Morpeth, as a member of the Council, very pertinently asked, "Why was the new functionary to be called a Surveyor of County Buildings and Schools, instead of what he must necessarily be—an architect?" Naturally enough, it seemed to his lordship that "the committee had not made up their minds whether they wanted an architect or a clerk of works." That they could not reasonably expect to get, at the price, a satisfactory combination of the two, was rather caustically pointed out by another member of the Council, who supported Lord Morpeth's motion to refer back the recommendation. The cheeseparing and timorous policy, however, was allowed to prevail; and the Council has thereby condemned itself to realise, sooner or later, and with more or less poignancy, that parsimony is by no means synonymous with economy. The Council is indeed sanguine if it expects that £300 a year will obtain the exclusive services of a fully qualified and self-respecting architect. But perhaps it is only looking for a glorified builder's foreman.

Architecture in the East.

In the first of the interesting series of articles in the "Times" on "Archæology in India," to which attention was directed in these columns last week, it is observed that of Hindu architecture there are two distinct types, the Northern or Indo-Aryan, and the Southern or Dravidian, and the earliest examples date from the seventh century A.D. It is characterised by extraordinarily elaborate sculpture. The frieze of the Siva temple at Halebid, for example, contains on its lowest band alone, which rises to a height of barely 1ft. from the ground, a varied procession of at least 2,000 beautifully carved elephants. The writer accuses a former Public Works Department of having, in their zeal for the construction of roads, bridges, and railways, effaced many valuable relics of antiquity in India; so that Fergusson, the great authority on Eastern architecture, sarcastically remarks that the Temple of the Sun, the famous Black Pagoda in Orissa, "seems to have fallen even without the aid of the Public Works Department." Such vandalism, however, is no longer possible, thanks to the Ancient Monuments Act that was passed during Lord Curzon's viceroyalty in 1904. The second article of the series sketches the history of the archæological survey of India, which was reorganized in 1899. In 1902 Lord Curzon appointed Mr. J. H. Marshall to the post of Director-General of the Archæological Department; and as Mr. Marshall is a distinguished Cambridge graduate and a highly trained archæologist, he may be expected to do exceedingly valuable work. In the third article of the series, which appeared in the "Times" of Wednesday last, it is stated that in the United Provinces and the Punjab, "where are to be seen some of the most beautiful specimens of architecture in the world," the work of conservation has been vigorously prosecuted. In Delhi, the correspondent was specially struck by the beautiful restoration which was being carried out by an Italian artist, of the mosaic marble panels in the Hall of Audience, which were originally executed by another Italian, when the palace was built, in the middle of the seventeenth century. In Southern India the stone sculptures in the old temples are found covered with many coats of whitewash, obliterating all details, so that East and West have at least one point in common—the vandalism of whitewashing. These articles may serve as a much-needed stimulus to the study by Western builders of the little-known architecture of the East.

Extending Romsey Abbey.

The application for a faculty to authorise an addition to Romsey Abbey is greatly disturbing the minds of the lovers of ancient buildings. For the famous old Hampshire Abbey it is claimed that it is the only "nuns' church" still in existence in England, and that it probably contains more purely Norman work than any other building in the kingdom. It is therefore easy to understand the alarm that has been caused by the proposal to erect a porch at the north-west door. Those who are applying for the faculty urge that the fabric originally included a porch in this position; but in reply it is contended that the modern work could not be a reproduction of any former work, because there are no plans or drawings in existence that might afford guidance for the design of the new structure. It may be true that the original foundations have been discovered, but these apparently stretch right across the roadway, where building is now out of the question, and the proposed porch would be only 16ft. in length. A twentieth century addition to a twelfth-century building seems to be so daring a proposition that it is difficult to withhold one's sympathy from those who are strenuously opposing it. The Chancellor has wisely decided to defer judgment until October 23rd, and, in the meantime, to fortify himself with the opinion of experts. Sentimentality is apt to run riot against every attempt, wise or foolish, at restoration, but in the present instance it really seems that those who are opposed to the innovation have so good a case that they can well afford to state it temperately and with dignity. This appears, from what we have seen of the controversy, to be exactly the attitude that has been adopted by the opponents of the scheme.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Aug. 31	PARISH CHURCH AT BISHOPS-WEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 31	COUNTY HIGH SCHOOL FOR GIRLS, ROMFORD.—Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.
No date.	COUNCIL CHAMBERS AT BELLSHILL, BOTHWELL. To cost £2,000. Site plan and conditions from Robert Anderson, Parish Council Offices, Bellshill. Deposit one guinea.

Intermediate School for Boys, Cardiff.

Mr. Leonard Stokes, F.R.I.B.A., of London, the Assessor appointed by the Cardiff Education Authority, has delivered his report on the 34 sets of plans submitted. The first premium (£50) has been awarded to Messrs. Teather and Wilson, of Cardiff, who have been appointed as architects for the work; the second premium (£40) has been given to Messrs. James and Morgan, of Cardiff. The third premium (£30) was awarded to a second set of plans submitted by Messrs. Teather and Wilson, but the premium has not yet been paid over.

New Receiving and Vagrant Wards, Islington Workhouse, London.

The Board of Guardians have provisionally adopted the plans of Mr. William Lockwood, London, for these additions to the St. John's Road Workhouse. Messrs. Greenaway and Newberry, London, were awarded the two premiums of £15 and £10 for the best set of plans out of the seven submitted, but the assessor, Mr. Lewis Solomon, considered that the cost, estimated at £3,350, would be nearer £5,000. The board have, therefore, adopted Mr. Lockwood's plans, subject to approval by the Local Government Board, and to proof, by the architect, that the work can be executed at a cost, as estimated by him, not exceeding £2,000.

County High School, Romford, Essex.

The governors of this school invite competitive designs from architects for a new school, for 200 girls, at Romford. Printed conditions, instructions, and site plan can be obtained from the Clerk to the Governors, 71, South Street, Richmond, on written application to be made by or before August 24, 1908, accompanied by a deposit of £5 5s., £5 of which will be returned on receipt of a bona fide design. The particulars will be posted to competitors on or about August 29. Designs to be delivered by October 31. The deposit conditions appear to be as evil as they well can be. The Governors, in plain words, charge competitors 5s. for the particulars and site plan, and force from them a loan of £5 for over two months. Why? It is idle to say that 5s. will not cover the cost of the particulars and the site plan. There must be 3s. to 4s. profit on each one. So far from deterring applications for these conditions by insisting on a deposit of £5, the Governors ought to encourage them. Applications at, say, 3s. 6d. profit each are not to be despised in these hard times. They might even realise the amount of the premiums. And as the applications must be in by a certain date, the Governors are in no danger of printing more copies than will actually be required. If by this requisition of £5 the Governors hope to eliminate the smaller fry, and limit the applicants to the great and revered heads of the profession, they are doomed to disappointment. They will merely attract the rich architect—which is quite another matter.



Garden Front.



Entrance Front.

"DENHOLME," WALTON-ON-THAMES. WALTER E. HEWITT, A.R.I.B.A., ARCHITECT.

The accommodation in this house comprises on the ground floor, a large sitting-room, hall, dining-room, drawing-room, billiard-room, and the usual offices; on the first floor, eight bedrooms and dressing-rooms, two bathrooms, etc.; and on the top floor, five bedrooms, bathroom, box-room, etc. The exterior is faced with purple clamp bricks of varied colour, with red dressings. The roofs are tiled. The builder was Mr. Frank Hawkey, of 81, Brighton Road, Surbiton, and the Architect, Mr. Walter E. Hewitt A.R.I.B.A., of 22, Buckingham Street, Strand, W.C., who also arranged the laying-out of the garden.

HINTS ON ROUGH-CASTING.

By Ralph Stone.

There is so much bad rough-cast to be seen on buildings, villa property and the like, more particularly in connection with speculative work, that as a result this material is often condemned as a very bad one to build with. As a matter of fact, rough-cast when used can either make or mar a building; a poor building can be made to look well with good rough-cast work, while many good buildings have been spoilt by its application in an ineffective manner. The very nature of the material gives an opportunity to unscrupulous builders for scamping, and it is often used as a cloak to hide a multitude of sins.

It may therefore, be worth while to mention a few points about rough-cast which are necessary in order to produce good work. In connection with brickwork, both the horizontal joints and the vertical joints of the brickwork should be raked to a depth of about one inch before the application of the covering. In cheap work it is better not to fill in the mortar flush with the face of the brick; both material and time can be saved by building in the usual way and omitting to rake out the mortar, so as to form a key for the rough-cast. The brickwork should be well damped before the first coat of mortar is applied, so that the bricks will not absorb the moisture too rapidly from the mortar. This is more especially necessary when common bricks—which are most porous—are used; and it is, of course, usual for common quality bricks to be used where the surface is to be rough-casted. The effect of omitting to moisten the bricks is to make the coat of mortar dry too quickly and eventually to crack off in large pieces. The first coat should be of a rich lime mortar with a large proportion of hair, and should be mixed a week before using. Immediately after its application it should be scratched in order to form a key for the second coat, but before applying the second layer the first must be allowed to dry thoroughly. When the drying is accomplished, the surface should be sprinkled with water before the second coat is applied. If pebble-dashing is required, the second coat should be so mixed as to dry a little faster, or there will be a tendency for the pebbles to sink when the dashing is being carried on, making unsightly holes after the rough-cast is dried. A point worth noting is that there should be an abundance of pebbles (well washed in order to free them from soil and other earthy matter which would prevent cohesion), and these pebbles should be applied liberally; nothing looks worse than pebble-dashing carried out in a scanty manner. This remark applies also to cases where brick chippings are used instead of pebbles.

This method lends itself to very nice effects where there is a five or six foot plinth of stone-work and rough-cast with brick chippings above. An alternative method to dashing the second coat with pebbles is to apply a third coat in a semi-fluid state composed of gravel or chippings of various sorts, together with lime mortar. This can be made in any colour by the adding of suitable tinting matter, in which case the rough-cast, after application, should be gone over with a brush dipped in the tint in order to obtain a uniform colour.

Rough-casting should not be attempted in frosty weather, and if, when done, it is exposed to brilliant sunshine, a shade should be made to cover the work, or the moisture, which is a great factor in the process of making the mortar set firmly, would be extracted too soon. If a pug mill is not used, great care should be taken in order to keep the mortar free from lumps, as this not only causes inconvenience, but produces a great tendency for the rough-cast to crack and split into pieces.

Sea sand should be absolutely barred, as it attracts damp. On very wet days great patches of white mould will appear, giving a streaky and detrimental appearance to the house. If sea sand is the only kind obtainable, it is preferable to use brick dust, and it does not matter if this is not ground very finely, because the methods of old-time builders have taught us that to a certain degree the rougher the material the more cohesive the effect obtained.

Rough-cast is a very useful material when alterations to a stone house are being carried out. There are, frequently, openings, which, for cheapness sake, can be filled up with brick and covered with rough-cast. It should be remembered that where it is applied to stonework special care must be taken to see that a good key is provided; there is invariably a larger plane surface in stonework than in brickwork, for in the latter one does not generally get a larger plane surface than 9ins. by 3ins. It very much assists the appearance of a building if brick quoins are made to project, the thickness of the rough-cast, at the angle of buildings, windows, etc., and this not only sets off the look of the house, but obviates the difficulty which is often met with in applying rough-cast at angles.

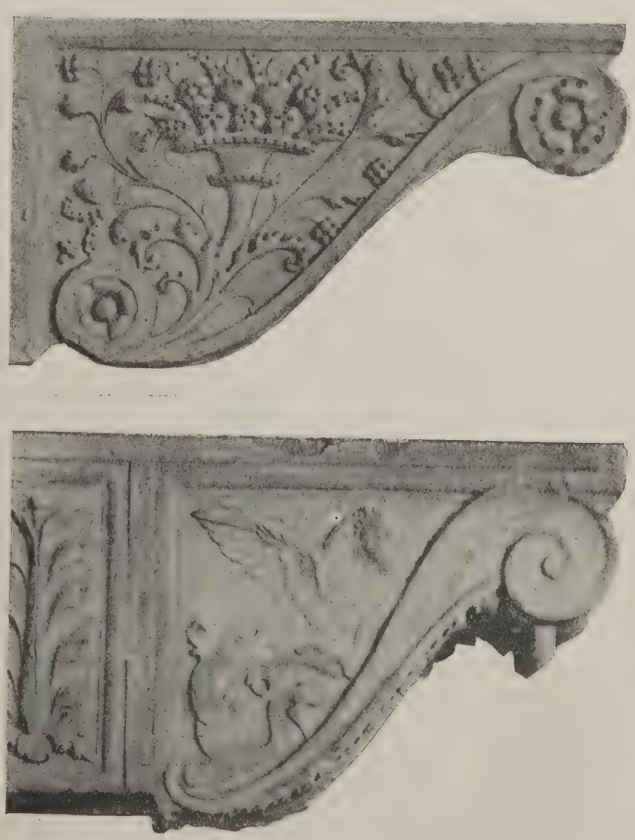
Rough-cast can be made to form remarkably beautiful effects. Hunt, in his book on Tudor architecture, mentions that this composition was sometimes studded with fragments of glass, which made a brilliant display in sunshine and by moonlight. There is no reason why it should not be amenable to a considerable amount of novel and artistic treatment, which would tend to raise it from its present position as a suspicious adjunct to jerry-building.

THE L.C.C. WORKS DEPARTMENT.

The Policy of Municipal Trading.

The London County Council have finally decided to shut down the Works Department, and a committee has been appointed to consider the best means of giving effect to this decision. The Belvedere Road establishment has had a decidedly stormy career. It was started in the teeth of fierce opposition from a minority of the Council, it continued under the cross fires of opposing parties, and became the shuttlecock of political rivals. Quite early in its existence a grave scandal threatened to wreck it, and relentless suspicion on the one side, and blind partisanship on the other, have kept it constantly in a state of turmoil. The decision to end it was reached after scenes as exciting as those that heralded its birth. Now that its operations are to cease, it may be interesting to consider what effect this and similar departments in other centres exercise upon the building trade.

It is obvious that a municipal works department cannot be successful unless it is constantly occupied with plenty of work; and it is equally clear that work cannot, or should not, be created with the sole object of keeping the works department employed. It might be possible for a public department to compete for con-



BALCONY CORBELS IN MARBLE: ITALIAN RENAISSANCE

tracts outside public work; but it is very certain that such a course would be strenuously opposed by the ratepayers (who would have to take the risk of such operations not being profitable), and particularly by those ratepayers who were engaged in the building and contracting trades, and who are forced to pay rates for the purpose of starting and maintaining a formidable competitor against themselves. There is an inevitable temptation, therefore, to keep such a department busy, either by giving it unnecessary work, or by letting it spin out the jobs as long as possible, in which latter case a profit can only be shown by paying much more for the work than its market value. In one or two cases a certain amount of success has been achieved by appointing a capable manager and giving him a free hand—in fact, setting him up in business as a contractor, but at a fixed salary in lieu of profits. With conscientious men, having full powers to engage and dismiss workmen, a profitable department has been made, principally because when work was scarce, or there were no jobs, the men were all or in part paid off. But the protagonists of municipal building departments are not the people who usually pay off a staff; their ideas run more to a staff of permanent employees, and they pay, as a rule, higher wages and exact less work from their men. The temptation to the men to take their time is easily understood; it is part of the self-same policy of keeping their department occupied. Certain it is that the London County Council set a standard of speed for bricklaying that is very far below the capabilities of a competent workman doing good work.

It is almost inevitable that work executed under such conditions will turn out too costly; there is every opportunity for expenses to mount, and no safeguards against it. At the recent conference of the Builders' Federation, held in Birmingham, Mr. Pringle, from Australia, gave some very significant particulars as to direct-labour departments in South Australia. The cost of stonework per foot cube, employing direct labour, was from 10s. to 12s. The architects' estimate for this work was 6s. per foot cube. When, in view of these figures, the city authorities decided to revert to the old contract system, the same work was carried out by a private firm at from 3s. 9d. to 4s., or nearly 75 per cent. less!

The L.C.C. Works Department was first attacked for "cooking" accounts, and on investigation it was found that profits made on one job had been transferred in part to other jobs, upon which the estimates had been exceeded, so that a small profit on every job might be shown. More recently the competitive element in the Department's work was eliminated; the Department took work at the figure estimated for the job by the engineer or architect, and if it considered this figure too low, the work was put out to contract. If the final cost of the completed work came out at less than the amount of the architect's or engineer's estimate, the Department considered that it had saved the ratepayers' money; but it can readily be seen that there can be no guarantee of saving to the ratepayers unless a Works Department tenders in competition with outside contractors.

There is some apprehension, now that the Works Department of the London County Council is to be disbanded, that the Council may revert to the old and vicious policy of a "list" of contractors, which means that the particular firms upon the list will form into a ring, arranging between themselves who takes the work, and at what figure. In the matter of contracts there should be a fair field and no favour, and contractors themselves would prefer that it should be so. The very onerous conditions as to contracts and deposits laid down by the Council are amply sufficient to ensure that the work shall be carried out by trustworthy and substantial firms. Hence the list, besides leading to abuses, is entirely unnecessary.

Our Plate.

Designs for Chimneypieces, by James Gibbs.

The chimneypieces illustrated on our plate this week are typical examples of the refined and scholarly work of Gibbs, though rather more elaborate in detail than the later Georgian examples of a similar type. The utility of the second, fourth, and sixth chimneypieces would be doubtful at the present day, owing to the absence of shelf accommodation, and the brackets in the second, third, and fifth examples look rather heavy over the architrave mouldings below them. It is worthy of note that the later Georgian architects refrained from making the chimneypiece an aggressive feature in the room, a defect that is too often apparent in modern interiors, considering that the grate is out of use for several months in the year.

Notes and News.

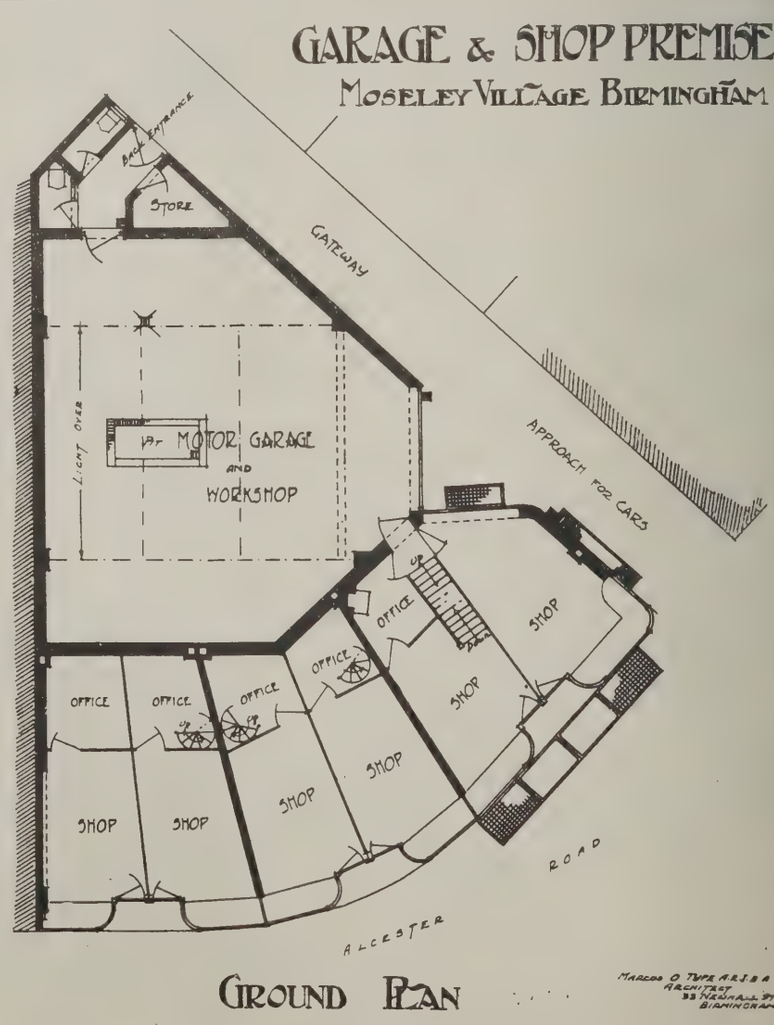
THE SYNCHRONISATION OF CLOCKS is being energetically advocated by the Executive Committee of the British Science Guild, who point out that there is no general system for providing the public with exact standard time. The Guild will ask the Local Government Board to pass a by-law compelling the synchronisation of public clocks.

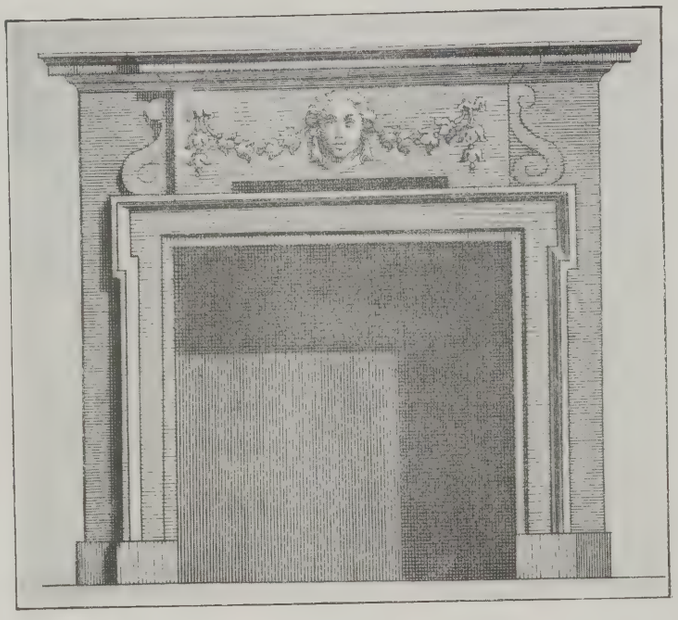
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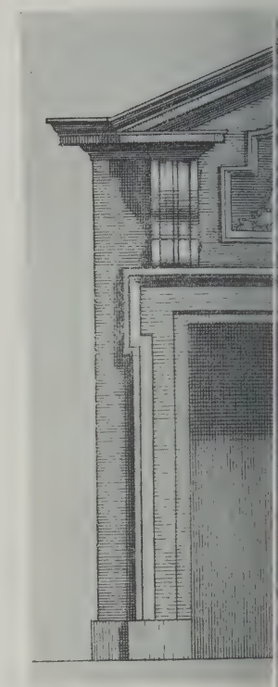
THE NEW NAVE OF HEXHAM ABBEY, which was consecrated on Saturday week, was designed by Mr. Temple Moore, F.R.I.B.A., and, with other works of restoration, has cost about £30,000. The Abbey church was built, it is believed, at about the beginning of the thirteenth century, and it stands on the site of a church that was destroyed by the Danes in 875 and 995, and was partly restored in the latter part of the eleventh century.

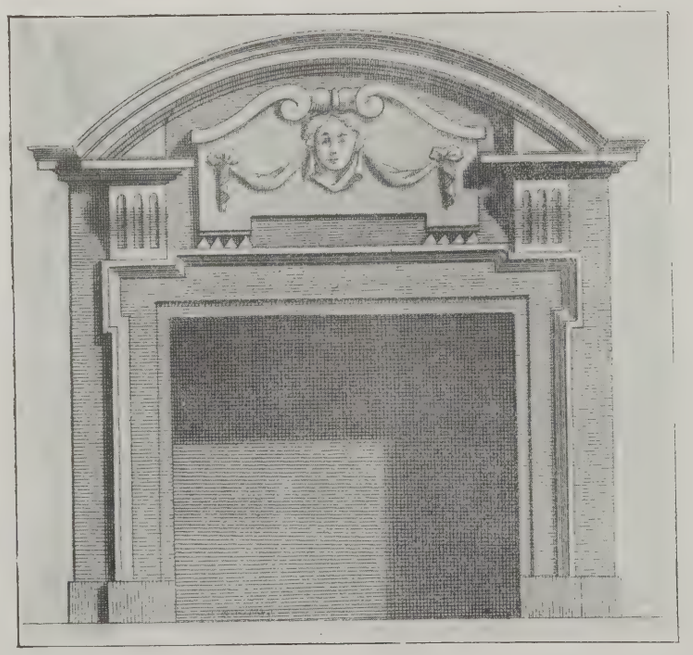
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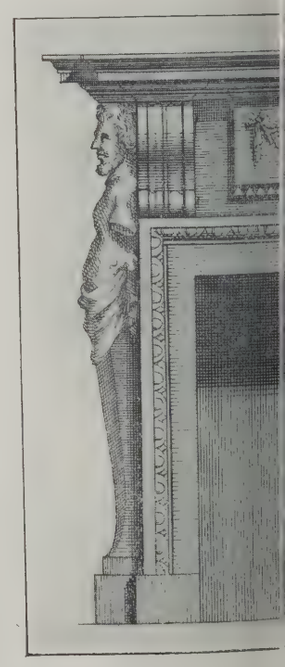
A MEMORIAL PULPIT that has been erected in the parish church of St. James, Benwell, Newcastle-on-Tyne, to the memory of the late Bishop Lloyd, has an alabaster base, while the upper part is of oak. There are four panels, illustrating, respectively, the lifting up of the serpent in the wilderness, the baptism of our Lord, the call of St. James and St. John, and the Great Commission. At the four corners are figures of Moses, Elijah, St. James, and St. John. The other panel



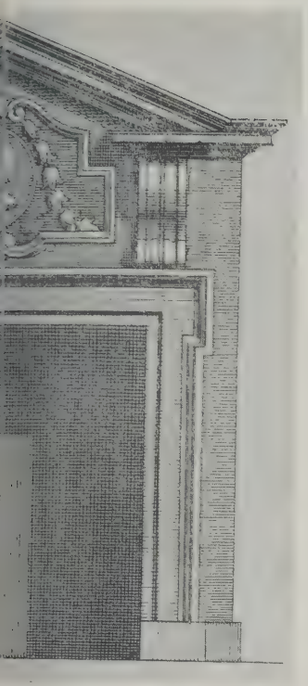


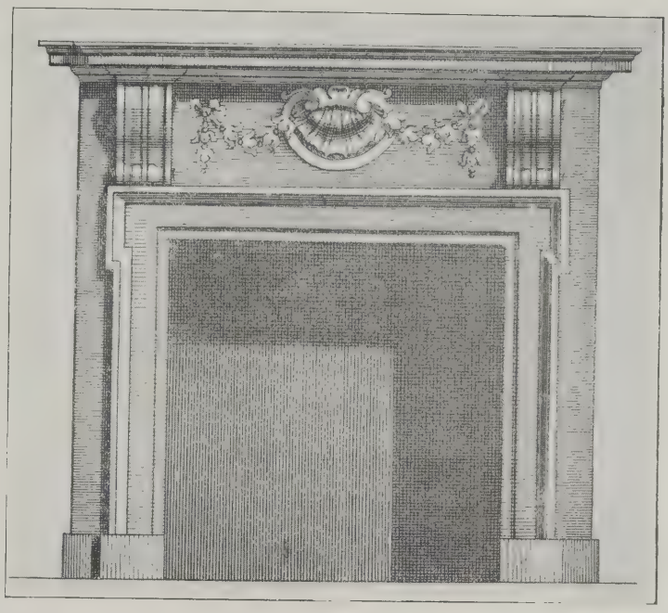


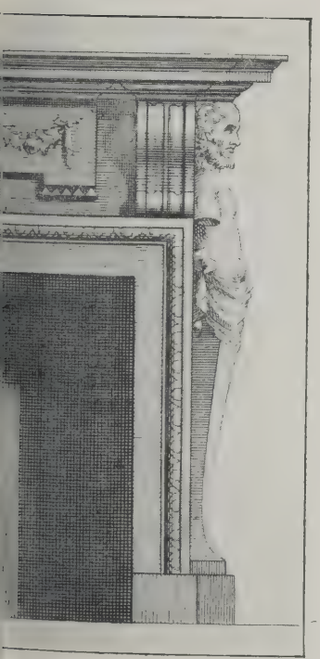


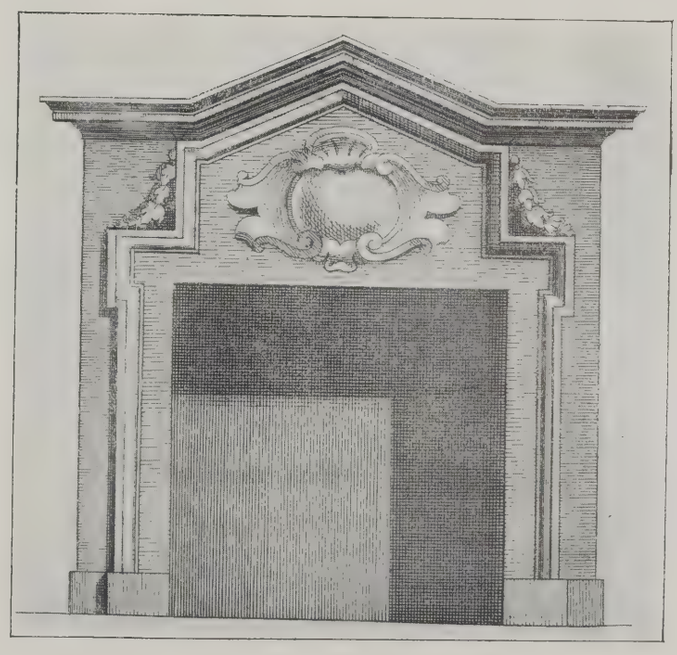


DESIGNS FOR C









S, BY JAMES GIBBS.



GARAGE AND SHOPS, MOSELEY VILLAGE, NEAR BIRMINGHAM. MARCUS O. TYPE, A.R.I.B.A., ARCHITECT.

ars the initials of the donor (Miss isten) and of the late bishop. Above e pulpit is a figure of the crucified ord, beneath which is the last text ven by Bishop Lloyd—"God so loved e world."

* * *

SOME UNUSUALLY CHEAP COTTAGES are ing built, it is stated, in Sheffield, by . A. J. Brown, of Grimesthorpe, the t price being about £160 per house. A teworthy feature of these houses is the h arrangement, which is on a special n, patented by Mr. Lancaster, of ndon. The bath itself is in the kit-n, covered, when not in use, by a rd which makes a serviceable table. e ordinary cistern is done away with, l, by a very ingenious arrangement, its ce is taken by the domestic set-pot. e water for all purposes can be heated ter from the living-room fire, or by a under the set-pot, so that there is ays available a plentiful supply of hot er at a minimum cost.

* * *

'ROPOSED ADDITIONS TO MAGDALENE LLEGE, CAMBRIDGE, will comprise a new g with a frontage to the river, new eping-rooms," and a large lecture tre. Excavations for the work are in progress.

* * *

TURKISH PARLIAMENT HOUSE, which, ording to last Wednesday's news-ers, the Sultan had offered to build, be the first important material mani-ation of the new spirit in that country, architects are naturally very curious ee what shape it will take—whether design will be traditional, modern, or a compromise between old and new or East and West.

* * *

THE REMOVAL OF THE IMPERIAL THEATRE, which adjoins the site of the old Royal Aquarium, Westminster, is now being very rapidly accomplished. The building, it is said, is being taken down in sections, for re-erection on another site about a dozen miles away, the material being stacked away, so that in about seven months' time it will be seen again exactly as at Westminster. Possibly this statement was suggested by the decision to re-erect Crosby Hall in Chelsea. It is probably only the interior decorations, such as the costly marble slabs and the huge mirrors, that are being stored in the manner described.

* * *

PONTYPRIDD MASTER BUILDERS' ASSOCIATION, which is affiliated to the South Wales Federation of the National Federation of Building Trades Employers of Great Britain and Ireland, report, through the local secretary, Mr. Alfred W. Julian, that the day of meeting of this association has been altered from the first Saturday in the month to the last Monday, and the time of meeting to 8 p.m., instead of 7 p.m.

* * *

AS A MEMORIAL TO THE LATE MR. G. F. BODLEY, R.A., who died on October 21st, 1906, an ante-chapel, built from one of the last designs prepared by Mr. Bodley, has been added to the church of the Holy Angels, Burton-on-Trent, and was on August 12th dedicated by the Bishop of Lichfield. The work has been carried out by Mr. R. Bridgeman, of Lichfield. The church to which the ante-chapel has been added was the work of Messrs. Bodley and Garner.

* * *

MR. JAMES DENVER has been appointed secretary to the Northern Centre of the National Building Trades' Employers' Federation of Great Britain and Ireland. The appointment was made at the half-yearly meeting of the Council, held recently in Birmingham.

* * *

THE NEW SOUTH PARADE PIER AT SOUTHSEA, which was ceremonially opened by the Mayor of Portsmouth on August 11th, is 610ft. long, and varies in breadth from 72ft. to 147ft. The various buildings include an entrance hall, measuring 54ft. by 34ft., a tea-room, and a skating-rink or small concert hall. The pavilion provides seats for 1,100 persons on the ground floor and 600 in the balcony. The work has cost about £70,000. The architect is Mr. G. E. Smith, and the contractor Mr. T. H. Yelf.

* * *

A NEW CHURCH FOR LITTLEHAMPTON, of which the foundation stone has just been laid, will, when completed, provide accommodation for 666 persons, and the cost is estimated at £9,500; but at present only the nave, south aisle, and porch, are to be finished, at an expenditure of about £3,000. The building is to be in the Decorated style, and is to be constructed of dark red bricks and flints with stone dressings. It will be faced internally with red brick and stone dressings.

PROPOSED NEW WORKS.

The Local Government Board has recently held, or has decided to hold, inquiries into proposed expenditure by public bodies as follows:—Electricity supply and plant, Kingston-upon-Thames Borough Council, £12,600 (August 18). Water-supply works and plant, Runcorn Rural District Council, £400 for township of Frodsham and £200 for lordship of Frodsham (August 20); Conway Rural District Council, £1,000 for Llansaintffraid (Aug. 18). Sewerage, drainage, sewage disposal works, and plant, Caversham Urban District Council, £255 and £650 (August 19); Hastings Borough Council, £1,175 (Aug. 21). Street improvements, new roads, pleasure grounds, and public walks, Caversham Urban District Council, £105 and £275 (Aug. 19); Abercarn Urban District Council, £5,340 (Aug. 21); Swansea Borough Council, £6,000 and £600 (Aug. 19). Various, Manchester City Council, £1,500, site for baths (Aug. 21); Clacton Urban District Council, £200 for cliff improvement.

Beverley Town Council have appointed a committee to inquire into the necessity of building municipal offices on the site adjoining the free library.

With respect to the proposed Carnegie Library for New Mills, Lancs., a subcommittee has been appointed to inspect suitable sites and report to the New Mills Public Free Libraries Committee.

Messrs. Lipton are about to start several refreshment shops in London, where it is expected that twenty will be opened before the end of the year. If the adventure is successful, it will be extended to the provinces.

Harecourt Chapel, Canonbury, which dates from the days of Oliver Cromwell, who was associated with the building, is to be restored and re-decorated in accordance with a scheme that has been prepared by Mr. George Carter.

It has been decided to build an abbey in East Dulwich. The Emperor Francis Joseph, and many members of the Austrian nobility, are contributing towards the cost, in response to an appeal by Dom Fultor, O.S.B., the rector of a Catholic mission in Lordship Lane, S.E.

Further work immediately required at York Minster includes attention to the window mullions throughout the building, and the provision of a suitable pulpit. The estimate for absolutely necessary work that ought to be done without delay is £600.

Mr. J. J. Burnet, A.R.S.A., Glasgow, has submitted to the directors of the City and County (Perth) Royal Infirmary a report, with plans showing a new infirmary to contains 100 beds, and estimated to cost £50,000. The directors postponed consideration of the report, and resolved to invite Mr. Burnet to a conference on the subject.

It has been decided, at a special meeting of Alton Urban District Council, to build a convalescent home and an isolation hospital. The site for the home has been selected, and the surveyor has been requested to prepare plans and estimates for the hospital, which are to be submitted to the Local Government Board, whose sanction is to be sought for a loan of £5,000.

Bangor City Council have decided to adopt Mr. Gill's plans for a museum addition to the library buildings, and to invite tenders from local contractors only. A councillor objected to the floor of the museum being on a lower level than the floor of the library, as he thought that people would not care to go downstairs to inspect the exhibits, but his motion on the subject was ruled out of order.

Views and Reviews.

Modern Steam Heating of Buildings.

"Baldwin on Heating," having been first published in 1878, and being now in its sixteenth edition, may be fairly regarded as being entitled to the rank of a standard treatise of approved merit and substantial value. Former so-called editions, however, were but little more than reprints, with corrections, but without revision. The present issue is a real "edition," bearing evidences of drastic general revision, and including facts relating to the principles of modern steam fitting, which useful industry has now, it is claimed, "risen to the dignity of a branch of engineering science that may be known as domestic engineering, and that includes substantially all that goes to make up the engineering plant of a modern city building, except the electric light and elevator systems, which do not properly belong to the subject." The arrangement is so systematic, and the style so terse, that, in spite of the expansiveness of the subject, the book is of quite handy size, and might even be accommodated in one of the fairly capacious pockets that the heating engineer occasionally affects. The principles are enunciated with remarkable clearness, and the practical details are plainly and comprehensively described and copiously illustrated.

*Baldwin on Heating; or, Steam Heating for Buildings Revised. By William J. Baldwin, M.Am.Soc.C.E., etc. Sixteenth Edition, revised and enlarged 12mo. viii.+404 pages, 143 figures, and 15 plates. Cloth, 2 dols. 50 cents. (10s. 6d. net). New York: John Wiley and Sons. London: Chapman and Hall, Ltd.

The Priory Church of St. Bartholomew, London.

The most ancient, and in many other respects the most interesting, church in London, that of St. Bartholomew-the-Great, has been the subject of many monographs. The latest is an addition to Messrs. Bell and Sons' cheap and useful, but some what arbitrarily named, "Cathedral Series." The author, Mr. George Worley, has made a conscientious study of the venerable Smithfield church, and has succeeded in presenting a thoroughly interesting account of this remarkable relic of the twelfth century. Rahere, the founder of the church and priory, died in 1144. Thomas of St. Osyth, the second prior, who died in 1174, built the transepts and the easternmost bays of the nave, which was probably completed during the succeeding half-century, as its fragmentary remains reveal the Early English style. Roger de Walden, Bishop of London (1405-1406), introduced Perpendicular work when he built a chantry chapel to the north-east of the choir, inserted a new clerestory, and substituted a square east end for the circular apse. The Lady Chapel dates from about 1410, when also, probably, the central tower was rebuilt. The Dominican Order of Black Friars, introduced by Queen Mary, had begun to rebuild the nave, when, on the accession of Elizabeth, they were expelled, and the church was in considerable danger of destruction, Bishop Grindal even proposing to take off the roof-lead and transfer it to St. Paul's Cathedral. How the building was subsequently hemmed in and encroached upon by modern factories and other buildings is a matter of recent history. The real work of restoration was begun in 1863 by the Rev. John Abbiss and the Rev. F. Phillips, was continued by the Rev. William Panckridge, and was greatly advanced by the Rev. Sir J. Borradaile Savory, Bart. The crowning work was the reconstruction of the Lady Chapel, under the direction of Sir Aston Webb, R.A. This work was completed in 1896. Mr. Worley's interesting and valuable little monograph is well illustrated with views and plans.

*The Priory Church of St. Bartholomew the Great, Smithfield. A Short History of the Foundation and a Description of the Fabric, and also of the Church of St. Bartholomew the Less. By George Worley. With 42 illustrations. 1s. 6d. net. London: George Bell and Sons.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Architect's Liability as to Contract.

LEEDS.—R.S. writes:—"A joiner has a contract for two houses. When about two-thirds of the work has been done, the architect, acting under the contract agreement (R.I.B.A. form), gives him notice to leave the job, and, at the urgent request of the proprietor, puts on another contractor (recommended by the proprietor) to rectify and complete the work. The payment throughout the job is to be up to 80 per cent. by certificate of work done, according to the clause in the R.I.B.A. contract, but the architect, when the first joiner was dismissed, withheld about 40 per cent. of the alleged value of work done as priced out on the contractor's schedule. Is the architect under any liability to the proprietor to complete the work within the amount of the first contract?"

The architect has no personal liability in the matter at all, as there cannot be any charge of negligence brought against him. The first contractor, having undertaken to complete the work in a certain way, and to the satisfaction of the architect, is the person who is liable for the work—he has contracted to deliver a certain article, complete, and as the conditions of contract permit of the action which has been taken by the architect, I am of opinion that any difference in cost is legally recoverable from the original contractor. X.

Fees for Disposal of Leases.

BRIDPORT.—PRO BONO PUBLICO writes: "(1) What is the latest authentic scale of fees payable to architects and surveyors for disposing of leases, or an unexpired term of a lease, by private contract? (2) Would the fees for architects and surveyors be the same as allowed for auctioneers and estate agents? (3) What amount is an architect and surveyor entitled to charge in the following instance? A lease of some property contained the following conditions. (The lease was disposed of by private contract.)—(a) The lessee to keep in a thorough state of repair the premises, both internally and externally. (b) The lessee to lay out in improvements a sum of at least £75. Prior to the lease of the premises being assigned, the dilapidations were valued by the surveyor at £125. Several offers were received, the highest accepted amount be

£800. As the conditions contained in the assignment provided for the purchasers to take over all liabilities expressed in the lease, I shall be glad to know whether the surveyor is entitled to charge on the £800 actual sum paid, and on £125 amount of liability for dilapidations transferred by the assignment (with a separate fee for valuing dilapidations), and upon the £75 liability of improvements also transferred to purchasers by assignment."

(1) The Royal Institute of British Architects sanctioned a schedule of charges for professional work at a general conference of architects of the United Kingdom held in 1872, and that schedule, though not legally binding, is usually accepted as being a fair one. (2) The Surveyors' Institution has also dealt at various times with the same subject, but has not, I believe, issued a public pronouncement upon it. (3) For valuations the recognised charge is 1 per cent. on the first £1,000, and one-half per cent. on the remainder, up to £10,000. Below £1,000, such a fee would not prove remunerative, and a special charge should be agreed upon. I should suggest that in this case the fair thing is to make two charges, one based upon the £125 at which dilapidations were valued, and the second upon the £800 obtained for the lease. "Ryde's Scale" gives 5 guineas as the correct fee in the first case, and 16 guineas for the second, out-of-pocket expenses being additional. X.

National Fire Protection Association.

NEWRY.—E.H. writes: "Can you give me the address of the American Fire Prevention Association?"

There is no such association. We presume, however, you mean the National Fire Protection Association, the address of which is 382, Ohio Street, Chicago, U.S.A.

Stresses in Peculiar Roof Truss.

LONDON, S.W.—W. L. writes: "The accompanying sketch (Fig. 1) represents the truss of a shed, each member of which is constructed of steel angles. It is a form largely used in Germany. The feet of the standards simply rest on concrete bases. Please show the form of stress diagram and funicular polygon such a truss would produce under its own load, combined with that of the wind. The situation is a field, neither specially sheltered nor specially exposed. The principals are 12ft. apart. The vertical load consists of a lantern (continuous), slate sides, and its own weight."

Taking the dead weight as being 16-lbs. per sq. ft. of ground plan, the total weight is 3.42 tons, this being distributed on the truss as shown by the vertical forces on Fig. 1. Adopting a wind pressure of 40-lbs. per sq. ft. of vertical surface, blowing on the side shown, the forces due to the wind come as shown horizontally and inclined. The two inclined forces of 1.15 tons are for the wind on the lantern. The accurate method of finding the forces due to the wind is explained in Charnock's "Graphic Statics," Vol. 1, Sheet 33. The reactions at P and Q have first to be determined; and before this can be done we must make some assumption as to the relative amounts of the horizontal forces carried at P and Q. We will assume that the end Q takes no horizontal force—not because it may not in the actual case, but because by so doing we shall get the maximum possible stresses that can occur. It must be remembered that the stresses in the truss depend very much on the relative amounts of the horizontal force carried by the ends. We next set out the forces on a vector line 1, 2, 3, 4, 5 (Fig. 2); 1, 2 being the resultant force on the node ABC21, and so on; and taking any pole X and starting at the point P, we draw the funicular link polygon P*rstu*, the force lines shown dotted being parallel to 1, 2; 2, 3, and so on. Drawing a line through X parallel to the closing link P*u* to meet the vertical through 5, we get the point 6, from which the reaction at P and Q can be found, and which enables us to draw the reciprocal or stress diagram. To obtain the latter, we draw 1a parallel to 1A on the frame diagram, and 6a parallel to 6A, thus obtaining the point *a*. The points *b*, *c*, *d*, *e*, *f* are obtained in the ordinary manner without much difficulty.

The point *g* coincides with *f*, and *j* and *h* with 6. If it is desired to make the assumption—as is done by some writers—that the reactions Rp and Rq are parallel, we join 5, o on the vector figure, and draw RQ parallel to it. The link polygon is then drawn as before, but the link *tu* will be different, and will probably have to be produced backwards, the point where the line through X, parallel to the closing link Pu cuts 5, o will give the point 6, from which the stress diagram is obtained. It will be found that this gives much smaller stresses than on our assumption; and although it is more likely that the reactions will be equally inclined than that Rq is vertical, since the latter is a possible case and gives much higher stresses, it is safe to adopt it. A.

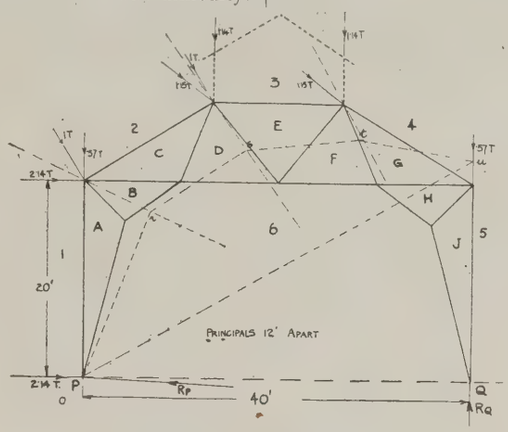


FIG. 1. STRESS IN ROOF TRUSS.

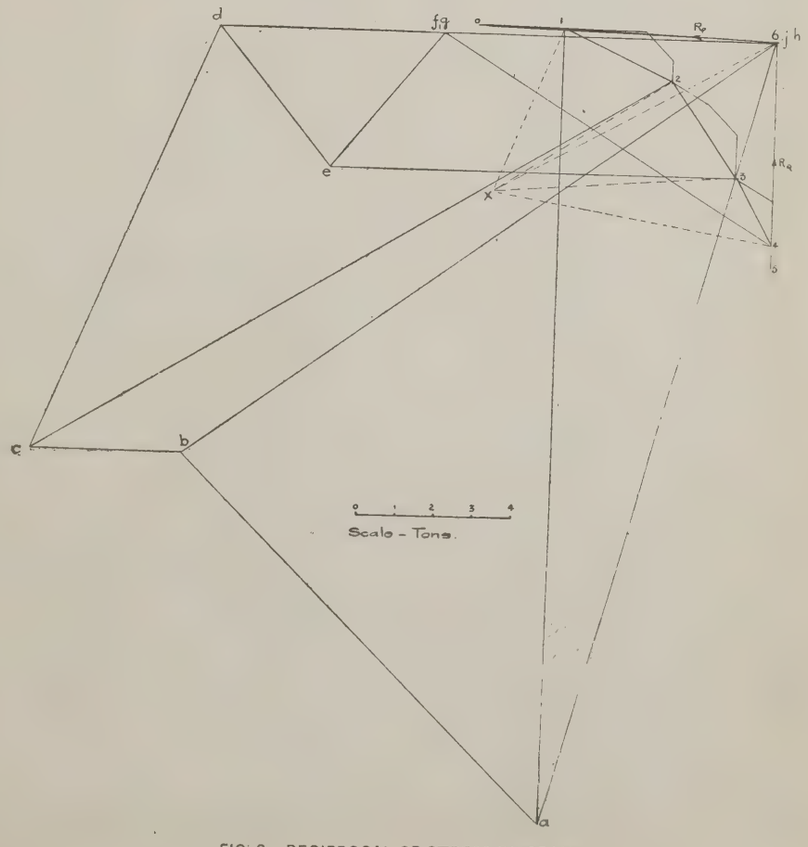


FIG. 2. RECIPROCAL OR STRESS DIAGRAM.

CONTRACTORS' SECTION

(MONTHLY).

THE BUILDING OPERATIONS AND ENGINEERING WORKS BILL.

The above-mentioned Bill, which has now passed its first reading, is the outcome and necessary sequence of the Report of the Departmental Committee on Building Accidents, which was reviewed in our columns in January last. A question put to Mr. Gladstone in the House of Commons a short time ago as to future steps in dealing with dangerous building operations elicited the reply that before regulations could be made further legislation was necessary. This Bill is evidently what was referred to.

The intention of the Bill, it is stated, is to make better provision for the health and safety of persons employed in certain building operations and engineering works and purposes connected therewith.

Its scope is set forth in six clauses and two schedules, and may be considered largely a re-arrangement of certain provisions contained in the Factory and Workshop Act, 1901, and a modification of Sections 4 and 5 of the Notice of Accidents Act, 1906.

The Factory Act above referred to applies to buildings only to a comparatively small extent. Section 105 of the Act, which, in the Bill, it is proposed to repeal, states the provisions that apply. The following is a summary of these :—

Section 17. Under this section a magistrate may, on an application by an inspector, and, being satisfied that any part of the ways, works, machinery, or plant is dangerous to life or limb, prohibit its use until alteration or repair is made. This will remain in force under the Bill.

Section 19 has been replaced by Section 4 of the Notice of Accidents Act, 1906. A modification of this is again proposed by schedule in the Bill, the differences being shown in the following comparison. All deleted portions of the section are printed in italics, and the proposed replacements (where any occur) are shown in the opposite column. Section 5 of the Accidents Act is also dealt with, commencing at paragraph 6 in the schedule. The alterations to both sections 4 and 5 are here shown.

"Notice of Accident Act, 1906."	
Section 4 (1) Where an accident occurs *in a factory or workshop* which is either—	on any premises on which any building operation or engineering work is being carried on
(a) An accident causing loss of life to a person employed in the *factory or workshop*; or	"on the operation or work"
(b) An accident due to any machinery moved by mechanical power, or to molten metal, hot liquid explosion, escape of gas or steam, or to electricity, and so disabling any person employed *in the factory or workshop* as to cause him to be absent at least one whole day from his ordinary work; or	"on the operation or work"
(c) An accident due to any other special cause which the Secretary of State may specify by order, and causing such disablement as aforesaid; or	
(d) An accident disabling for more than seven days a person employed *in the factory or workshop* from working at his ordinary work, written notice of the accident in such form, and accompanied by such particulars as the Secretary of State prescribes, shall forthwith be sent *to the inspector of the district, and also in the case of the accidents mentioned in paragraphs (a) and (b) of this sub-section, and (if the order of the Secretary of State so requires), specifying the special cause of accidents mentioned in paragraph (c) to the certifying surgeon of the district.*	"on the work or operation" "in the case of a building operation to the district council, in the case of an engineering work to the inspector of the district."
(2) If any accident causing disablement is notified under this section, and after notification thereof, results in the death of the person disabled, notice in writing of the death shall be sent to the *inspector* as soon as the death comes to *the knowledge of the occupier of the factory or workshop.*	"district council or inspector" "his knowledge by the person undertaking the building operation or engineering work.
(3) If any notice with respect to an accident *in a factory or workshop* required to be sent by this section is not sent as so required, *the occupier of the factory or workshop* shall be liable to a fine not exceeding ten pounds.	"the person undertaking the building or engineering work.
(4) If any accident to which this section applies occurs to a person *employed in a factory or workshop, the occupier of which* is not the actual employer of the person killed or injured, the actual employer shall immediately report the same to the *occupier*, and in default shall be liable to a fine not exceeding five pounds.	"employed on a building operation or engineering work the person undertaking which "former"
(5) *The foregoing provisions of this section shall be substituted for section 19 of the Factory and Workshop Act, 1901.*	(5) The district council to which a notice is sent under this section shall forthwith forward a copy of the notice to the Chief Inspector of Factories at the Home Office, London.
Sec. 5 (1) If the Secretary of State considers that, by reason of the risk of *serious* injury to persons employed, it is expedient that notice should be given under this Act in every case of any special class of explosion, fire, collapse of buildings, accidents to machinery or plant, or other occurrences *in a mine or quarry, or in a factory or workshop, including any place which for the purpose of the provisions of the Factory and Workshops Act, 1901, with respect to accidents, is a factory or workshop, or is part of a factory or workshop*, the Secretary of State may by order extend the provisions of this Act requiring notice of accidents to be given to *an inspector* to any class of occurrences, whether personal injury or disablement is caused or not, and where any such order is made, the provisions of this Act shall have effect as extended by the order.	"on premises on which any building operation or engineering work is being carried on.
(2) The Secretary of State may by any such order allow the required notice of any occurrence to which the order relates, instead of being sent forthwith, to be sent within the time limited by the order.	"a district council or inspector."

Sections 21 and 22 deal with inquests and formal investigations of accidents. It is proposed that these shall remain in force.

Sections 79-86 give power to the Secretary of State to make regulations for dangerous trades, and state the procedure to be taken when doing so.

Definitions of "Building" & "Engineering" Works.

For Section 79, it is proposed, Clause 1 of the Bill shall be substituted; it simply gives power to the Secretary of State to make such regulations as appear to him reasonably practicable for securing the health and safety of persons employed in building operations and engineering works. Building operations are defined in Clause 5 of the Bill as the construction, repair, or alteration of a building and the preparation for, and laying the foundations of, an intended building; but this definition does not include any operation which is an engineering work. This latter expression means the construction of a railway, tramroad, or tramway, and the construction, repair, or alteration of any harbour, dock, inland navigation, tunnel, bridge, viaduct, sewer, gas work, waterwork, or other work authorised by any local Act of Parliament or Provisional Order, or order having the force of an Act of Parliament.

So far as building operations are concerned, it will be noticed that the Bill is applicable to all classes of buildings whether machinery is used in their construction or not, and whether or not they are over 30ft. in height, and being constructed by means of scaffolding; these being limitations which now exempt a large proportion of erections.

Sections 80-86 will still remain in force and so will section 119, which gives power to the factory inspectors to inspect buildings, with the proviso that where references are made to the Secretary of State and to inspectors, there shall be substituted respectively references to the district council and to surveyors or other officers employed or appointed by the district council for the purposes of the Bill.

Section 136 also stands. It provides for fines in case of death or injury.

Clause 2 of the Bill, which re-enacts the sections of the 1901 Act, just considered with their modifications, also arranges that certain other sections shall apply.

Section 11 is now specially mentioned. It refers to the inspection of steam boilers and, as a matter of fact, has always applied to buildings, in common with other places within the scope of the Act.

Section 73, which makes necessary the notification of lead poisoning, is put in force, and in engineering works it is e

tended to cover the notification, in like manner, of compressed air illnesses.

Register to be Kept.

Sections 128-129 provide that an abstract of these provisions must be affixed and a general register kept. Clause 5 of the Bill states this more extensively :—

Such of the provisions of the Factory and Workshop Act, 1901, applied by this Act as require general registers to be kept and copies of the prescribed abstract and regulations to be kept posted up on the premises when building operations are being carried on, shall be deemed to be complied with if the general register is kept at an office of the person undertaking the operations and copies of the abstract and regulations are kept posted up at each office, yard or shop of the person undertaking the operations at which persons employed by him on the operations attend, and in a position where they can easily be read by such persons.

Powers Given to Local Authorities.

The portion of the Bill, however, which will attract most attention is found in Clause 3. It provides that in the case of a building operation it shall be the duty of the district council to see that the provisions of this Act and of the regulations made thereunder are observed: provided that inspectors appointed under the Factory and Workshop Act, 1901, shall have similar powers of entry and inspection in the case of building operations as are conferred on them in the case of a factory by section 119 of that Act, and if it appears to an inspector on any inspection that any breach of the provisions of this Act, or of any regulations made thereunder, is being committed in respect of any building operation, he shall give notice in writing thereof to the district council in whose district the premises in which the building operations are being carried on are situate, and it shall be the duty of the district council to make such inquiry into the subject of the notice, and take such action thereon, as seems to that council proper for the purpose of enforcing the law, and to inform the inspector of the proceedings taken in consequence of the notice; and where such a notice has been given, and proceedings are not taken within a reasonable time, the inspector may take proceedings in manner provided by sub-section (3) of section 5 of the Factory and Workshop Act, 1901, and that sub-section shall apply accordingly.

All fines imposed in any proceedings instituted by a district council in pursuance of their powers and duties shall be paid to the district council, and carried to the credit of the fund out of which the expenses incurred by the council under this Act are defrayed.

Building operations in this country, and largely so in Scotland, so far as the welfare of the workmen is considered, are at present placed under the control of the Home Office, the executive power being in the hands of the Factory Department. The Committee previously referred to considered this matter as a side issue to their more important duties in drafting rules for safety. On the whole, it was found that the workmen were almost entirely in favour of the controlling power remaining with the Factory Department officials, and in this view a large number of the employers joined.

The Two Points of View.

The men based their opinion upon the idea that the Factory Department, being composed of officials above the danger of local influence, would carry out safety regulations with an even consistency. Those of the employers who were not of this view thought that the local officials, in the form of the district surveyors, building inspectors, etc., formed an already existing staff which was at present dealing with buildings, and could be trusted to carry out extra duties satisfactorily. Much can be said for both these opinions. In the first place the Factory Department is undoubtedly the stronger body, and, provided that the staff is increased sufficiently, and has knowledge of the trade, no objection could be made to it on the score of personnel. The use of the local officials could not be gained more cheaply; an added importance to their work would probably mean increases in the salaries paid. To the ordinary citizen it would make little difference whether he were burdened with the expense either by rates or by taxes.

A compromise might be effected between the divergent opinions by an arrangement of special and direct Home Office supervision of the local authorities. It would be a check upon laxity, and the standard of efficiency, being set up by a central authority, would probably result in a greater uniformity of action than where, for various reasons (local influence being one), the administration depends upon the differing views existing in separate localities. It would mean dual control which the master builders—with reason—would probably object to.

The building trade is not confined to any one locality, neither is a builder to any one district; therefore uniformity of procedure is of extreme importance, and this argument favours the central authority. The dual control is conducive to friction, which it should be the aim of those concerned to avoid. These views will probably be submitted to the Home Office before the Bill finally becomes law, and perhaps, as in this case both the employers and the workmen favour the central and single authority, means will be taken to give effect to their desires.

Market Reports.

The Timber Trade.

Messrs. Denny, Mott and Dickson, Ltd., report that business in hardwoods during July has been dull, and no change is anticipated until the holiday season is more advanced. The teak trade has been very quiet, but the better class of mahogany has been in some demand, and figured logs have realised good prices. There is an excessive supply of small and inferior wood, for which there is small demand. In the soft wood market Messrs. Churchill and Sim report no improvement during July. The supplies have been larger, and the excess quantity is to a considerable extent made up of most inferior quality stuff, for which there is practically no market. The market has been disappointing, and the London demand poor.

The Slate Trade.

The Welsh slate trade has probably never experienced a more severe depression than that which it is now enduring. The demand has fallen off, wages have been lowered, and "short time" is in force at most quarries. It has been suggested that the vogue for tile roofs, especially in the country, is responsible for the falling demand. But the trade itself generally attributes the trouble to the Penrhyn strike, which gave the foreigners a chance to exploit the market. Unfortunately the depression in the trade has attracted the notice of the Tariff Reform and Free Trade political organs, and is now the subject of polemical activity.

SOILS & SUB-SOIL DRAINAGE OF BUILDING SITES.

By Malcolm B. Bennett.

The healthiness of a town depends to a very large extent upon the nature of the soil, chiefly as regards its porosity and permeability. Examining the data given by eminent sanitarians, it would appear that there are very few absolutely unhealthy soils, provided they are natural and not artificially formed, or not polluted from some external source. But there is no doubt whatever that some are much more healthy than others.

Generally speaking, the healthiest soils are those which are the driest, and, as a rule, these are the most porous. On the power to absorb heat, which varies considerably with different soils, depends the amount of moisture a soil will retain.

As a rule, sandy soils warm more rapidly and retain heat longer than do others. The varying power of soils to absorb and retain heat may be stated to be in the following order: sand, gravel, marl, chalk, loam, and clay. The last-mentioned warms very slowly and loses heat rapidly. It will be seen that those soils which retain moisture are the coldest on account of the slowness with which water absorbs heat. Although those soils which are the most porous are generally the driest, they are sometimes found to be saturated with moisture, this being due to an impervious stratum below in the form of a shallow basin which holds up the sub-soil water, and unless this is enabled to drain off either naturally or artificially, the soil above will always remain damp, unless the impermeable stratum happens to be at a considerable depth.

The interstices of all soils are generally filled with what is known as "ground air" at the surface and with "ground water" below. Upon the rise and fall of this "ground water," caused by a heavy rainfall, the "ground air" in the pores of the soil above responds with a similar movement, the rising water driving out the ground air; which may also be extracted in consequence of heightened temperature or decreased atmospheric pressure. Ground air is always very impure owing to the decomposition of organic matter, generally of a vegetable nature, or sometimes of a fouler origin, such as manure, matter from cesspools, or a defective drain. It is also highly charged with carbonic-acid gas, being about 250 times richer in this gas than is the atmosphere. It will thus be seen how easily this ground air might become a source of danger by being extracted from the soil beneath a house on account of the artificial heat generated therein, or by other means, were not the whole of the building site covered with a layer of good concrete or other impervious material as is required by the model by-laws.

The importance should be realised of obtaining a site for building purposes, which combines the advantages of dryness and warmth together with plenty of light and air. The first may be ensured by selecting a soil of a gravelly or sandy nature of considerable depth, and with the lower impervious stratum at a slope sufficient to cause natural drainage and not retain the ground water.

Clay, although it forms a good foundation, is not healthy for a building site, on account of its power to retain moisture. It is also liable to expand or contract upon being subjected to variations of temperature.

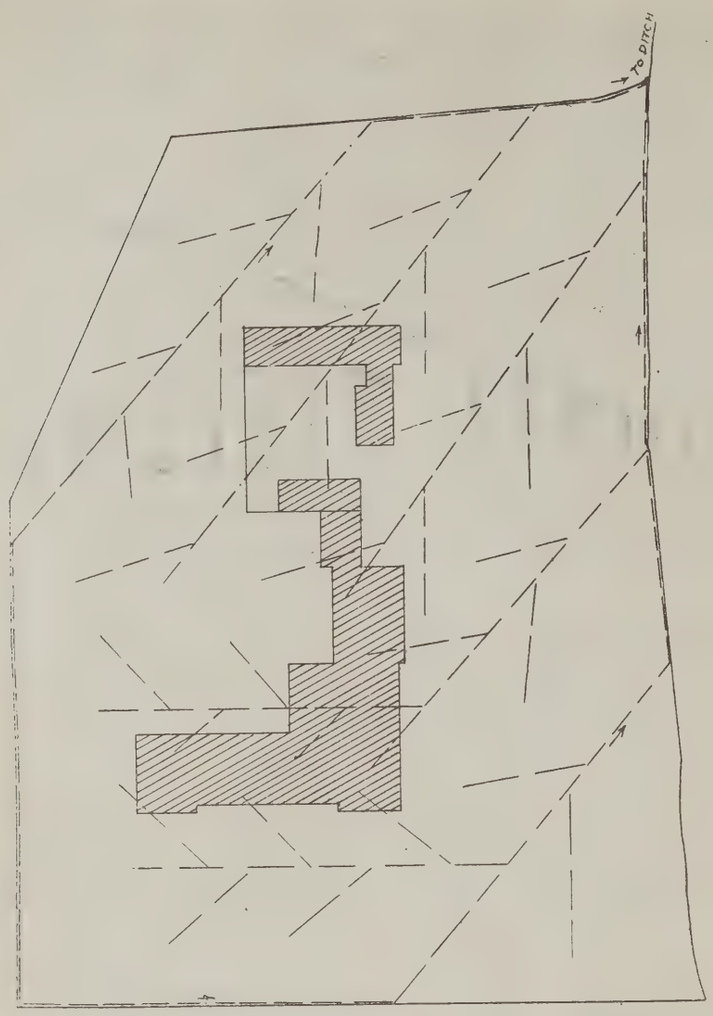


FIG 1

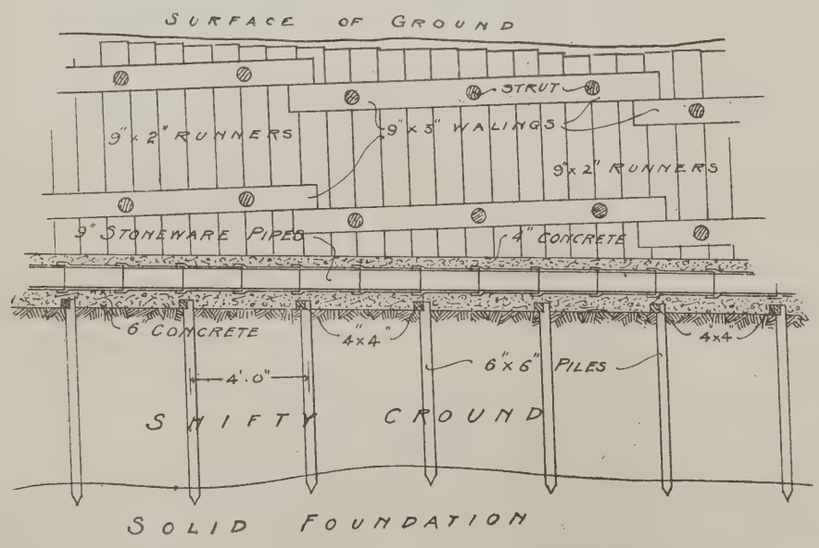
METHOD OF SUBSOIL DRAINAGE.

"Made ground," that is, ground which has been made up or formed by tipping loose soil, dry rubbish, and other refuse, etc., is, in nearly every case, dangerous for use as a building site on account of the quantity of organic matter it usually contains, which, in decomposing, gives rise to dangers likely to imperil the health of anyone living in houses upon it. It is also very unsatisfactory for building upon, as the foundations must be carried down until a hard and natural foundation is reached.

In certain cases, such as in low-lying districts, etc., there may be no alternative to a damp site, in which case it is very necessary to have the subsoil thoroughly drained before commencing to build.

The model by-laws state that "every person who shall erect a new building shall cause the subsoil of the site of such building to be effectually drained by means of suitable earthenware field pipes properly laid to a suitable outfall, whenever the dampness of the site renders such precaution necessary. He shall not lay any such pipes in such manner or position as to communicate directly with any sewer or cesspool, or with any drain constructed or adapted to be used for conveying sewage, but shall provide a suitable trap with a ventilating opening at a point in the line of the subsoil drain as near as may be practicable to such trap." In the case of a large site, this may be done in the following manner:—A narrow trench, three to five feet in depth, is cut around the site to intercept any water likely to flow from the adjoining land. Smaller trenches are then cut dividing the whole of the site into bays, each one running from the highest to the lowest part of the site. From these, again, diverge other trenches running in herring-bone fashion from the centre of each bay.

At the bottom of these trenches, which should be cut to a fall of not less than 1 in 60, is then laid a series of 2 or 3in. earthenware "agricultural" or "field pipes," each about 12 or 15 inches long. These pipes are generally laid "dry" with a butt joint, the space being left for



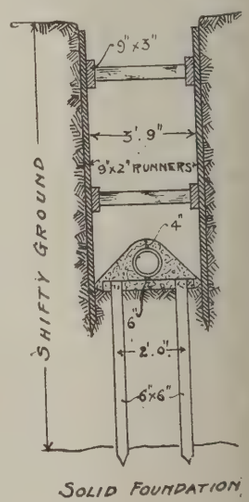


FIG. 2.

METHOD OF SUPPORTING DRAINS ON SHIFTY GROUND.

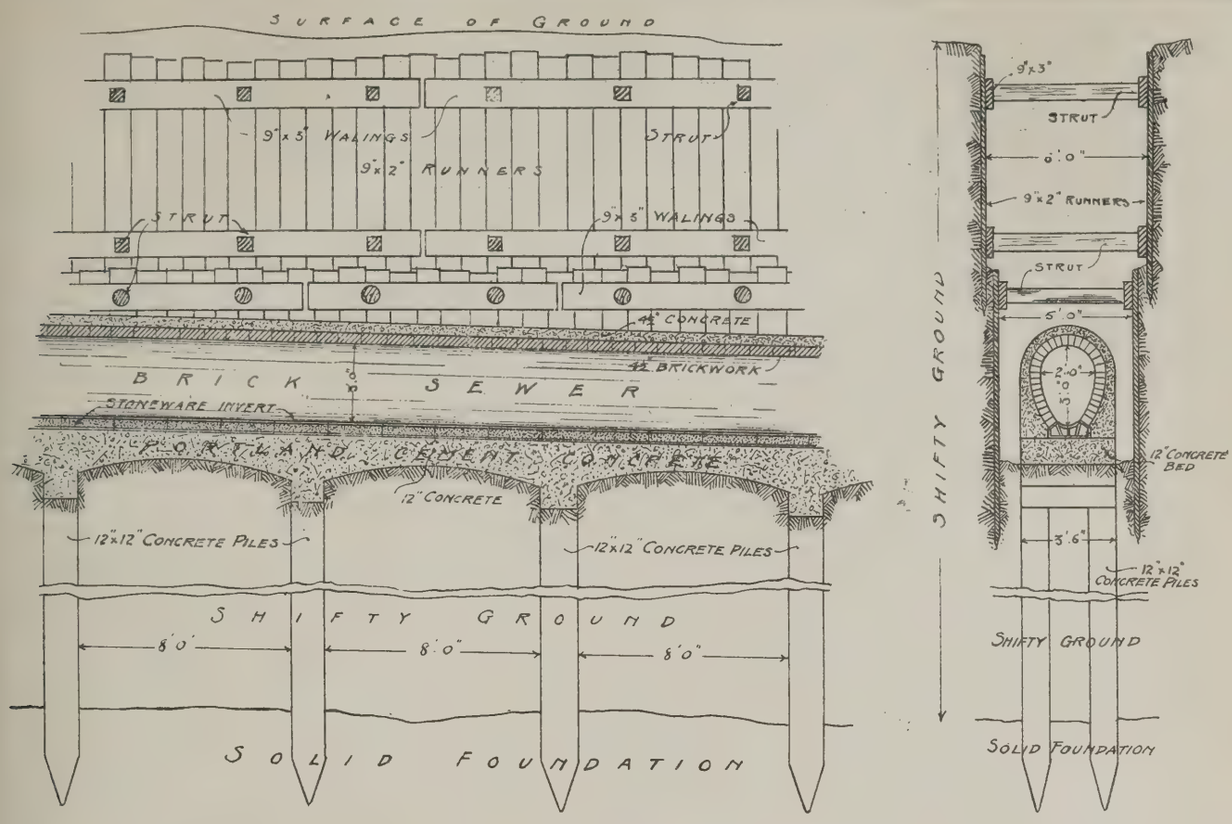


FIG. 3.

the water to find its way in. In place of the pipes, large stones are sometimes employed, spaces between them being formed to allow the water to flow through. Loose earth of a pebbly or gravelly nature is then lightly filled in above all trenches and rammed on the top only. The distance apart of the tributary trenches generally varies from about 10 to 20ft. in clay, and 25 to 40ft. in lighter soils.

The fall of all trenches or pipes naturally leads from the highest point of site to the main trench at the lowest point, which should discharge into a ditch, or sometimes a sewer, in which case it must be disconnected by means of a syphon trap and properly ventilated. That portion which is between the disconnecting trap and the sewer must be constructed with non-porous pipes and properly jointed, as required in the case of an ordinary drain. Fig. 1 shows an illustration of subsoil drainage.

It may sometimes be necessary to construct a drain or sewer in loose, shifty, or waterlogged soil, or in "made ground." This may be done by either of the following methods:—

First, by sinking a shaft (if in waterlogged soil) just clear of the line of drain and to a depth of a few feet below the drain level, so as to enable the ground water to be drawn off by pumping and thus facilitate the excavating of the trench. This must then be cut to the required width and depth of the drain, care being taken that the sides are thoroughly well timbered. Small piles are then driven on both sides of the trench, right down through the loose soil until the solid ground is reached. These piles are generally driven every 4ft. along the trench, being at every other joint of the stoneware pipes, though the distance will vary according to the nature of the ground. The tops of the piles are then sawn off at a level sufficient to give the required fall, and cross-pieces of timber are then fixed to the head of each pile on either side of the trench.

The ground should be solidly rammed to the level of the bottom of concrete bed, and the concrete bedded around and carried by the top cross-pieces of timber. The pipes are then laid in the ordinary way and the concrete flaunched up at the sides or completely covered around the pipes. Iron pipes, on account of their additional strength, may be used with advantage in such a case, as well as many of the patent composition jointed stoneware pipes now on the market. Fig. 2 illustrates such a method of construction.

Where the loose shifty soil extends to a considerable depth, or where there is any likelihood of the timber piles being attacked by insects or subjected to alternations of dryness and moisture, armoured concrete piles should be used in place of timber. These piles can be cast to almost any required length, and are capable of making a permanent and satisfactory job. Fig. 3 illustrates a method of carrying a brick sewer through very loose and shifty ground of considerable depth by the aid of concrete piles.

Another method is to construct solid concrete piers in place of the piles, but at a distance apart of about 9ft., being the length of an ordinary iron pipe. This distance, however, may vary according to the nature of the soil. The piers should be the full width of the trench and must be carried down to the solid foundation. The intermediate space between piers is spanned by a flat concrete arch—as in the previous case—which forms the bed upon which the pipes are carried. This is a more costly method, however.

Contractors' Notes.

Swansea Building Trade.

The Swansea plasterers have handed in their notices, as the Association desires to bring about an alteration of the working rules. The joiners of the town, numbering 300, have also given in their notices, asking for an advance of 1d. per hour. The matter is to come before the Master Builders' Association, and will probably be referred to the Conciliation Board.

The Plumbers and the "Hall-mark."

The plumbers in conference at Edinburgh on August 8th devoted considerable time to the question of compulsory registration. One of the speakers held that: "When they considered the amount of power the plumber had in his hands, and how much suffering he could cause by carelessness and dishonest work, if it was worth while that doctors should have a hall-mark of some kind before they were let loose on the community to cure disease, it was equally important for the health of the community that plumbers should be registered in some way before they were allowed to take part in sanitary work." The "Glasgow Herald," commenting upon this, says: "The National Registrationists must continue to educate the plumber until it is the aim of the least ambitious to take his D.P.H. In too many cases he considers that his professional status can be adequately maintained by smoking his pipe in the drawing-room until the boy has come back with the tools which the Worshipful Plumber is forbidden by professional etiquette to carry, and that the true and only necessary hall-mark for him is the horrid mess he leaves in the lobby." The plumber has long been a stock subject

for profane jesting, but he will be pained to find a staid Scottish newspaper indulging in such heartless levity.

Grimsby Building By-laws—Peculiar Procedure.

The Corporation of Grimsby has been having some trouble over breaches of its building by-laws, and recently proceeded against half-a-dozen offenders. Mr. H. G. Whyatt, the Borough Surveyor, who prosecuted, explained that for a long time the Corporation had allowed persons to commence the erection of buildings before the plans had actually been deposited, and when the plans were found to be in order nothing was said. Last winter, however, cases arose in which buildings were so commenced, and the plans when deposited were all right, yet the buildings when completed did not accord with the deposited plans, and were in violation of the by-laws. Some builders were let off by the Corporation, others were made to alter their buildings, while yet others were compelled to pull down. These cases caused a good deal of friction between the members of the Committeee, the Town Council, and the builders of the town, and eventually the Council gave a hard-and-fast ruling that in the future cases of the kind the town clerk should at once proceed against the offenders; hence the present cases. Three cases were dismissed on technical grounds, the evidence as to dates of the offences not coinciding with the dates given on the summonses. Three other defendants were each ordered to pay 7s. 6d. costs. The usual custom is for the building owner to give fourteen days' clear notice of intention to commence building after the deposit of the plans. The present procedure, which, it is presumed, the Council will now reform, seems to afford endless opportunities for trouble and expense both to the Corporation and to the builders.

Law Cases.

ARCHITECT'S FEES AND A "SPECULATIVE ARRANGEMENT." — In the Manchester County Court on August 10th, John Knight, architect and surveyor, claimed £38 as fees for work done and services rendered to Julius Frankenburg, who trades as the Hulme Bacon-smoking Company in Milton Street, Hulme.—Dr. Atkinson, who appeared for the plaintiff, explained that the defendant was the owner of nine houses in Yarburgh Street, Moss Side, and that in October last his solicitor called on the plaintiff, told him of a scheme to turn the houses into a residential club, and asked him if he would prepare the plans. After an interview with Mr. Frankenburg, plaintiff did this, and made an extra copy for the solicitor. Subsequently the solicitor mentioned that the idea was to form a company to carry out the scheme, and asked him if he would put some money into it. When he declined, he was told that it would not matter, but that as Mr. Frankenburg would be taking a large part of the purchase money in shares he wanted to get rid of some of them. Mr. Knight then said something to the effect that if the thing turned out a success he might take some of his remuneration in shares, but that he could not promise anything.—In confirming this statement, plaintiff, in his evidence, denied that he ever promised to take shares as payment, and he denied that it was at all usual for architects to make plans on the system of "no cure no pay." The defence raised was that the whole arrangement was speculative. The solicitor who made it with Mr. Knight, had, it was urged provided him with similar work in the past, the conditions being that pay would only be given in the event of the syndicate being formed and the scheme carried through.—Judge Parry said he agreed that there had been a considerable amount of speculation in the case, but he had come to the conclusion that Frankenburg gave the order for the work to be done, and that the plaintiff looked to him for payment. The defendant had not proved, however, that the plaintiff had entered into a purely speculative bargain. The work of surveying and the drawing of the plans had been carried out, and the defendant had actually used the plans in attempting to carry out his scheme. Undoubtedly they would be the basis of the syndicate's operations if the scheme were carried through. At the same time he thought it was well understood that Mr. Knight was not to get the whole of his fees in cash, but that he was to accept part in the form of shares. He would therefore award him £25, with costs on that amount.

FACULTY FOR A SIDE CHAPEL.—At a Consistory Court of London, held in St. Paul's Cathedral on August 12th, by Dr. Tristram, K.C., Chancellor of the Diocese, a petition was presented praying for a faculty authorizing the erection of a side-chapel with the holy table in the church of St. Thomas, Orchard Street, Portman Square. The Rev. A. G. Locke, the vicar, in moving for the faculty, stated that the population of the parish at the last census was 7,979, and there was accommodation in the church for 1,050. The side-chapel was needed for the greater spirituality of the daily services when there were but few persons present, as well as for economy in light and fuel and for lessening the strain on the voice of the officiating minister. It was proposed to fit up a portion of the north aisle immediately west of the organ as a side-chapel with a holy table, and to substitute chairs for six pews under the gallery. The proposal was placed before a meeting of the vestry on July 24th, and unanimously approved. It was also supported by the congregation as a whole.—Mr. W. H. Trollope, the people's churchwarden, gave evidence in support of the application.—The Chancellor decreed the faculty as prayed. He had seen the plans and approved them.

INTERNATIONAL CONGRESS ON ROADS.

An important international congress, convened by the French Government, will meet in Paris in October next to deal with a great variety of problems concerning the construction, maintenance and regulation of roads. It is evident that many of these questions have an intimate connection with the enormous extension of motoring in recent years, and their solution has become an urgent necessity. Among the points to be considered are the materials used in constructing roads, the means of counteracting wear and dust, watering, turnings and obstacles, the deterioration caused by new kinds of locomotion, and signals and sign posts indicating dangerous gradients, distances, altitudes, and the like. Not only the wear and tear caused by motors but the reciprocal action of different kinds of thoroughfares on tyres and cars generally will be discussed. The congress will be the first of the sort ever held, and it will no doubt throw much interesting light on the highway of the future. The Roads Improvement Association is taking a very active interest in this congress, and Lord Cadogan, the president of the Association, has addressed a circular letter to the road authorities of Great Britain asking them for statistics respecting attempts to deal with the dust problem, which information will be submitted to the Congress. The circular asks for a return of the length, area, and cost of the roads (*a*) laid with dustless road material; (*b*) treated with a surface coating of tar; and (*c*) treated with other palliatives. Information is also sought as to comparative cost, results, notes of efficiency, etc. The returns, when collated and summarized, should be of considerable value to road authorities. It is estimated that the cost of collecting and summarizing these reports will be about £150. Contributions towards this expense are gladly received by the Hon. Secretary of the Roads Improvement Association, 1, Albemarle Street, Piccadilly, London, W.

THE PORTLAND CEMENT TRADE.

Trade continues dull, and consumption is still low for the time of year. The falling-off is no doubt mainly due to the diminished demand for export, for the published figures relating to Portland cement exported from the United Kingdom for the six months to June 30th last, show a reduction, as compared with the corresponding period of 1907, of no less than 90,666 tons. Notwithstanding the stagnation in the home building trades, it is pretty generally admitted that the demand in the United Kingdom itself is very much as it was a year ago, so that the present unsatisfactory position of the trade may be regarded as almost wholly due to the slackness in the over-seas markets. Whatever the cause, there is no doubt that the present low level of prices is causing grave anxiety to many manufacturers who are still suffering from dear fuel, and to an extent which means that present prices show little or no profit on their sales. Fortunately there is more activity in the larger constructional work throughout the country, and many important projects, we are informed, are about to be put in hand, owing, perhaps, to some extent, to the more favourable monetary conditions, which now permit the raising of loans on moderate terms. There is no doubt that cheap money is the one factor in the situation which the cement maker is relying upon at the moment for an improvement in his trade. A reduction in the cost of manufacture consequent upon cheaper fuel in the late autumn will result in some improvement in the position, and if by that time there is, as is expected, a substantial increase in the number of large constructional works put in hand, we shall certainly see a hardening of prices, and possibly a substantial advance. As evidence of the fact that present prices are absolutely unremunerative, it is mentioned that a number of works in practically all the cement-making districts have been closed, while others are on substantially reduced make; but notwithstanding this fact, it may be doubted whether stocks at works show in the aggregate any increase over the figures of a year ago.

Current Market Rates of Materials in the Various Trades.

The quotations given in this list apply only to larger quantities purchased in London (the minimum quantity for which these prices are applicable being given where practicable). Retail purchasers must expect to pay a reasonable advance on wholesale rates, as well as carriage. The trade discounts for each item have not been considered, as these would be affected by the quantity of the goods purchased. The endeavour is made to give fair average prices, which would in many cases be affected by the quality of the materials required.

BRICKLAYER.

The current rates for stocks, Flettons, and other common building bricks, and for local facings are not given, as local considerations obviously affect their prices, and readers who may make use of the information given in these columns can readily obtain quotations for themselves.

		Current rates.	Rates for similar materials on Aug. 1.
Best blue pressed Staffordshire bricks	per 1,000	3 5 0	
do. bullnose bricks	do.	3 15 0	
Best Stourbridge fire bricks	do.	4 15 0	

Glazed Bricks.

Best white and ivory white-glazed one side	per 1,000	10 7 6	
do. glazed one end	do.	9 17 6	
do. quoins, bullnose bricks, and bricks glazed on 4½in. side	do.	13 17 6	
do. glazed two sides (double stretchers)	do.	15 17 6	
do. glazed two ends (double headers)	do.	12 17 6	
do. glazed one side and two ends	do.	16 17 6	
do. glazed two sides and one end	do.	17 17 6	
Splays, chamfers, and squints (to an angle of 45 degs.)	do.	15 7 6	
Double bullnose bricks, double splays, round ends, bullnose stops, and mitres	each	0 0 5	
Double bullnosed mitres ...	do.	0 0 7	
Internal angles, 2½in. radius	do.	0 0 4	
do. do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Best buff and cream	per 1,000	11 17 6	
do. glazed one end	do.	11 7 6	
Other colours, extra ...	do.	4 0 0	
do. quoins, bullnoses, and bricks, glazed on 4½in. sides*	do.	15 17 6	
do. glazed two sides (double stretchers)*	do.	18 17 6	
do. glazed two ends (double headers)*	do.	15 17 6	
do. glazed one side and two ends	do.	19 17 6	
*These bricks in other colours, extra	do.	3 10 0	
do. glazed two sides and one end	do.	20 17 6	
Splays, chamfers, and squints for an angle of 45 degs	do.	19 17 6	
In other colours, extra ...	do.	3 0 0	
Internal angles, 2½in. radius	each	0 0 5	
do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Ordinary-quality salt-glazed bricks, glazed one side ...	per 1,000	8 17 6	
do. glazed one end	do.	8 7 6	
do. quoins, bullnoses and bricks, glazed on 4½in. sides	do.	12 7 6	
do. glazed two sides (double stretchers)	do.	14 7 6	
do. glazed two ends (double headers)	do.	11 7 6	
do. glazed one side and two ends	do.	15 7 6	
do. glazed two sides and one end	do.	7 6	
do. splays, chamfers, and squints for an angle of 45 degs.	do.	13 17 6	
Specially prepared or dipped salt-glazed with plain glazed side or ends, as described above, same price as for best ivory whites	per 1,000		
Ordinary-quality salt-glazed double bullnoses, double splays, round ends, bullnosed stops and mitres	each	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed double bullnosed mitres	do.	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed internal angles, 2½in. radius	do.	0 0 3	
do. 4½in. radius	do.	0 0 5	
Best dipped salt-glazed internal angles, 2½in. radius	do.	0 0 4	
do. 4½in. radius	do.	0 0 8	
Ordinary salt-glazed moulded bricks (stretchers and headers)	do.	0 0 8	
Best dipped do.	do.	0 0 8	
Second-quality glazed white and ivory white, 30s. per 1,000 less than best white			
Second-quality coloured bricks, same price as best whites of their respective descriptions			
Plain arch bricks £6 per 1,000 above list for respective kinds and colours			£4 per 1,000 above list.
Cambered arch bricks 1s. 2d. each, any kind or colour, if not exceeding 9ins. by 4½ins. by 2 ins			1s. each.
Rich majolica glazed bricks (headers and stretchers)	per 1,000	21 17 6	
do. quoins and bullnoses ...	do.	26 17 6	

Sand, Ballast, Cement, Lime, and Fireclay.

Thames and pit sand ...	per yard	0 7 0	
Thames ballast	do.	0 5 6	
Best Portland cement ...	per cask	0 5 10	
Best ground blue lias lime	per ton	0 19 0	
(NOTE.—The charge for the sacks to be added to prices per ton.)			
Grey stone lime	per yard	0 11 6	
Stourbridge fireclay in sacks	per ton	0 27 6	upwards

MASON, SLATER AND TILER.

The average current prices for stone per foot cube are given in the following list, the railway rates being calculated on the assumption that orders will be given for full truck loads of about 4 tons upwards.

Brown Whitbed Portland stone (in blocks containing on an average 20 ft. cube)	per ft. cube	0 2 0	
White Basebed do.	do.	0 2 1½	
Bath stone	do.	0 1 6	
Beer stone	do.	0 1 6	
Ancaster stone	do.	0 1 10	
Greenshill stone	do.	0 1 10	
Chilmark stone	do.	0 1 9	
Darley Dale stone	do.	0 2 3	upwards
Red Mansfield stone	do.	0 2 4	
Closeburn red freestone ...	do.	0 2 0	
Hard York stone	do.	0 2 10	
do. 6 in. sawn both sides landings (random sizes)	per ft. super	0 2 4	
do. 6 ins. rubbed two sides do.	do.	0 2 7	
do. 3 ins. sawn two sides slabs	do.	0 1 0	
do. 2 ins. self-faced random slabs	do.	0 0 6	
Broken Granite (blue Guernsey), 1½ ins. ...	per ton.	0 9 9	c i.f. Thames
do. do. 2 ins. ...	do.	0 9 6	do.
do. do. 2½ins ...	do.	0 9 0	do.
do. (Imperial blue Scotch), 1½ ins.	do.	0 8 9	do
do. do. 2 ins. ...	do.	0 8 6	do.
do. do. 2½ ins. ...	do.	0 8 3	do.
do. (Midland Counties), 1½ ins.	do.	0 11 0	London station
do. do. 2 ins. ...	do.	0 10 9	do.
do. do. 2½ ins. ...	do.	0 10 6	do.
Granite Kerb (Norwegian), 6 ins. by 12 ins. ... per foot		0 1 4	c.i.f. Thames
do. do. 12 ins. by 6		0 1 4	do.
do. do. 12 ins. by 8		0 1 6	do.
do. (Imperial blue Scotch) 6 ins. by 12 ins.	do.	0 1 3	do.
do. do. 12 ins. by 6		0 1 3	do.
do. do. 12 ins. by 8		0 1 5	do.
do. (grey Jersey), 6 ins. by 12 ins.	do.	0 1 3⅜	do.
do. do. 12 ins. by 6		0 1 3⅜	do.
do. do. 12 ins. by 8		0 1 5⅜	do.
Circular kerb 4d. per foot extra.			
Granite Pitchings (Aberdeen), 3 ins by 5 ins ...	per ton.	1 15 0	do.
do. do. 3 ins. by 6 ins.	do.	1 14 0	do.
do. do. 4 ins. by 5 ins.	do.	1 14 0	do.
do. do. 4 ins. by 6 ins.	do.	1 13 0	do.
do. (Imperial grey Scotch) 3 ins. by 5 ins.	do.	1 10 0	do.
do. do. 3 ins. by 6 ins.	do.	1 9 0	do.
do. do. 4 ins. by 5 ins.	do.	1 9 0	do.
do. do. 4 ins. by 6 ins.	do.	1 7 6	do.
do. (grey Jersey), 3 ins. by 5 ins.	do.	1 7 6	do.
do. do. 3 ins. by 6 ins.	do.	1 6 6	do.
do. do. 4 ins. by 5 ins.	do.	1 6 6	do.
do. do. 4 ins. by 6 ins	do.	1 5 0	do.
do. (blue Guernsey), 3 ins. by 5 ins	do	1 14 0	do.
do. do. 3 ins. by 6 ins.	do.	1 13 0	do.
do. do. 4 ins. by 5 ins.	do.	1 13 0	do.
do. do. 4 ins. by 6 ins.	do.	1 12 0	do.

Slates.

*Best blue Bangor Countess slates	per 1,000 of 1,200	13 0 0	upwards
do. 20 ins. by 12 ins.	do.	13 15 0	
First-quality Bangor Countess slates	do.	12 17 6	
do. 20 ins. by 12 ins.	do.	13 10 0	
do. Ladies	do.	7 5 0	
Permanent green Countess slates	do.	11 10 0	upwards
do. 18 ins. by 10 ins. ...	do.	9 10 0	
do. Ladies	do.	6 10 0	
Best "Eureka" unfading green Countess slates ...	do.	15 15 0	
do. 20 ins. by 12 ins. ...	do.	18 7 6	
do. 18 ins. by 10 ins. ...	do.	13 5 0	
do. Ladies	do.	10 5 0	
Best blue Portmadoc Countess slates	do.	13 10 0	
do. Ladies	do.	6 10 0	

**These prices are for lots not less than 4 tons.*

Tiles.

Plain red roofing tiles ...	per 1,000	2 2 0	
do. hip and valley tiles ...	per doz.	0 3 6	
Best Broseley tiles	per 1,000	2 10 0	
do. ornamental tiles	do.	2 15 0	
do. hips and valley tiles ...	per doz.	0 3 10	
Edwards's (Ruabon) brindled red or brown tiles ...	per 1,000	2 17 6	
do. ornamental do.	do.	3 0 0	
Valley tiles	per doz.	0 3 9	
Hip tiles	per doz.	0 4 0	
Peake's mottled or red Staffordshire tiles	per 1,000	2 12 0	
do. ornamental do.	do.	2 15 0	
Valley tiles	per doz.	0 3 6	
Hip tiles	do.	0 4 0	
Best "Rosemary" plain tiles	per 1,000	2 8 0	
do. ornamental do.	do.	2 10 0	
Valley tiles	per doz.	0 3 8	
Hip tiles	do.	0 4 0	
"Hartshill" sand-faced tiles	per 1,000	2 10 0	
do. pressed do.	do.	2 7 6	
do. ornamental	do.	2 10 0	
Valley tiles	per doz.	0 3 5	
Hip tiles	do.	0 4 0	

CARPENTER AND JOINER.

Fir timber best middling Danzig	per load	4 15 0	
Seconds	do.	4 10 0	
Riga and Libau, full size	do.	3 5 0	
Swedish Balks	do.	3 0 0	
Pitch-pine (average 30 ft.)	do.	4 5 0	
Swedish Deals, 3 ins. by 11 ins., and 4 ins. by 11 ins. 1st quality	per standard	22 10 0	
do. 2nd do.	do.	20 0 0	
do. 3rd do.	do.	13 10 0	
do. 4th do.	do.	11 5 0	
do. 1st quality 3 ins. by 9 ins.	per standard	19 10 0	
do. 2nd do.	do.	16 0 0	
do. 3rd do.	do.	12 10 0	
do. 4th do.	do.	11 10 0	
Swedish Battens, 2½ ins. by 7 ins. 1st quality	per standard	14 10 0	
do. 2nd do.	do.	13 0 0	
do. 3rd do.	do.	11 10 0	
do. 4th do.	do.	10 10 0	
Battens, 2½ ins. by 6 ins., 2 ins. by 6 ins., and 2 ins. by 4 ins. do.	do.	9 10 0	
do. 2 ins. by 4½ ins. and 2 ins. by 5 ins.	do.	9 0 0	
For foreign sawn boards 1 in. by 9 ins. and 1½ ins. by 7 ins. add to price of battens		0 10 0	
For ¾ in. do. add	do.	1 0 0	
White Sea first yellow deals 3 ins. by 11 ins. (average price)	do.	24 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Second yellow deals 3 ins. by 11 ins.	do.	19 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	12 0 0	
White Sea first yellow battens 2½ ins. by 7 ins. and 3 ins. by 7 ins.	do.	17 0 0	
Second do.	do.	13 10 0	
Third do.	do.	11 10 0	
Petersburg first yellow deals 3 ins. by 11 ins.	do.	21 10 0	
For 3 ins. by 9 in. deduct from above	do.	4 0 0	
do. second yellow deals 3 ins. by 11 ins.	do.	14 0 0	
For 3 ins. by 9 ins. deduct	do.	1 10 0	
do. third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	11 0 0	

Rates on Aug. 1.

upwards

upwards

		Current Rates.	Rates on Aug. 1.
Petersburg battens, 1st per standard		14 0 0	
do., second	do.	11 10 0	
do. third	do.	10 10 0	
White Sea, first white deals, 3 ins. by 11 ins.	do.	15 10 0	
For 3 ins. by 9ins. deduct from above	do.	1 0 0	
do., second white deals 3 ins. by 11 ins.	do.	13 10 0	
For 3 ins. by 9 ins., deduct from above	do.	1 0 0	
do., first white battens ...	do.	11 0 0	
do., second do.	do.	10 0 0	
Pitch-pine deals	do.	19 0 0	
Add for less than 2 ins. thick	do.	0 10 0	
First yellow pine regular sizes	do.	40 0 0	
do., oddments	do.	32 0 0	
Second yellow pine regular sizes	do.	33 0 0	
do., oddments	do.	28 0 0	
American whitewood planks	per ft. cube.	0 4 6	
Kauri pine planks	do.	0 4 0	
1 in. by 7 ins. yellow flooring, planed and shot ...per square		0 14 0	
Add, if matched	do.	0 0 6	
1¼ in. by 7 ins. yellow, planed and matched ...	do.	0 16 6	
1 in. by 7 ins., white planed and shot	do.	0 12 6	
1 in. by 7 ins., white, planed and matched ... per square		0 13 0	
1¼ in. by 7 ins., do.	do.	0 15 6	
¾ in. by 7 ins., yellow matched boarding, beaded or V-jointed	do.	0 11 6	
1 in. by 7 in., do.	do.	0 15 0	
¾ in. by 7 ins., white do. ...	do.	0 10 0	
1 in. by 7 ins. do.	do.	0 13 0	
For 6 ins. boards deduct from the above prices ...	do.	0 6 9	

Hardwoods.

Teak	per load	18 0 0	
Danzig and Stettin oak logs (large)	per ft. cube	0 3 0	
do., small	do.	0 2 6	
Wainscot oak logs	do.	0 5 9	
Dry wainscot oak (in the 1 in.)	per ft. super	0 0 9	
¾ in. do., do.	do.	0 0 7	
Dry Honduras mahogany (Tabasco), in the 1 in. ...	do.	0 0 10	
do., selected Figury do. ...	do.	0 1 8	
do., American walnut do....	do.	0 0 10	

FOUNDER AND SMITH.

Cast-iron columns and stanchions, including patterns	per ton	7 10 0	
do., drain pipes, 3 ins. diameter, L.C.C. weights, in 9 ft. lengths, coated with solution	per yard	0 2 4	
do., do., 4 ins. diameter ...	do.	0 3 0	
do., do., 5 ins., do.	do	0 3 10	
do, do., 6 ins., do.	do.	0 4 6	
do., do., 9 ins., do.	do.	0 6 3	
Rolled steel joists, Belgian (ordinary section)	per ton	5 10 0	
do., English	do.	7 0 0	
Rolled steel fencing wire...	do.	7 0 0	
do., galvanised	do.	9 0 0	
Steel compound girders (ordinary section)	do.	9 5 0	
Angles, channels, etc., do.	do.	9 5 0	
Galvanised sheets, common brands	do.	13 10 0	
Wrought-iron gas tubes (current discount off standard lists)	p.c.	70 p.c.	
do., water tubes	do.	67½ p.c.	
do., steam tubes	do.	62½ p.c	
do., galvanised gas tubes...	do.	57½ p.c.	
do., do., water tubes ...	do.	55 p.c.	
do., do., steam tubes ...	do.	50 p.c.	

		Current Rates.	Rates on Aug. 1.
Expanded metal lathing, ⅜ in. mesh (short way) 24 gauge, in quantities of not less than 300 yds. ...	per yard	0 0 10	
do., 22 gauge	do.	0 1 3½	
do., 20 gauge	do.	0 1 5½	
do., ½ in. mesh, 24 gauge...	do.	0 0 10½	
do., 22 gauge	do.	0 1 4½	
do., 20 gauge	do.	0 1 6½	
(For quantities of between 300 and 700 yds. deduct approximately 10 per cent. from above; for quantities of between 700 to 1,400 yds., deduct approximately 15 per cent.)			

PLUMBER, COPPERSMITH, AND GLAZIER.

Sheet lead, 3 lbs.	per ton	17 12 6	17 2 6
do., above 3 lbs.	do.	17 2 6	16 12 6
Lead water pipe up to 2 in.	do.	17 12 6	17 2 6
Lead barrel pipe	do.	18 12 6	18 2 6
Lead pipe, tinned inside ...	do.	44 10 0	44 0 0
do., and washed outside ...	do.	47 0 0	46 10 0
do., soil pipe, up to 4½ ins.	do.	20 12 6	20 2 6
do., do., to 6 ins.	do.	21 12 6	21 2 6
do., do., above	do.	22 7 6	21 17 6
Lead sash weights	do.	20 2 6	19 12 6
Sheet zinc	do.	28 0 0	upwards
Copper sheets	do.	71 0 0	do.
do., nails	per lb.	0 0 11	
do., wire	do.	0 0 10	
Plumber's solder	per ton	65 0 0	
Tinman's solder	do.	80 0 0	
Old lead (against account, etc.)	do.	12 5 0	11 15 0
Clean scrap copper, do ...	per cwt.	2 10 0	
Clean scrap brass do. ...	do.	1 18 0	
Old zinc, do.	do.	0 13 0	
15 oz. English sheet glass, thirds (in crates)	per foot	0 0 2½	
do., do., fourths	do.	0 0 1¾	
21 oz. do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 2	
26 oz., do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 4	
32 oz., do., do., thirds ...	do.	0 0 4	
do., do., fourths	do.	0 0 3½	
For obscured sheet glass add to fourths	do.	0 0 1	
15 oz. fluted sheet	do.	0 0 3½	
21 oz., do., do.	do.	0 0 4	
For obscured fluted sheet, add to above	do.	0 0 1	
¼ in. plain rolled plate ...	do.	0 0 2½	
3-16 in., do., do.	do.	0 0 2½	
¼ in. do., do.	do.	0 0 3	
For rolled fluted plate add to the above prices ...	do.	0 0	

upwards

NEW BUILDINGS.

The Royal Princess's Theatre, Glasgow, has been remodelled at a cost of more than £2,000.

A cheap church that has just been completed is that of St. Paul, Stuart Street, Bradford, the cost per sitting being rather less than £8. The church seats 542 persons, and has cost only £4,000. Mr. E. Lingan Barker, of Manchester, is the architect.

A town hall and municipal offices for Girvan are to be erected at the expense of Mr. John McMaster, of Canterbury, who stipulates that the old town steeple shall be embodied in the design, and that the cost of the work is not to exceed £7,500.

New Council schools at Thornaby which have been built at a cost of £10,0 and are to be opened on August 24 will accommodate 800 children, and the is provision for further extensio Messrs. Clark and Moscrop, of Darlin ton, are the architects, and Messrs. Dickenson and Son, of Middlesbrou the contractors.

Obituary.

MR. DUNCAN MACKELLAR, R.S.W., Glasgow, who died last Thursday mo ing, at the residence of his brother, Lochgoilhead, was a native of Inverar where he was born about 60 years a He was, throughout most of his life, as ciated with Glasgow. As a student London, he spent much time in So Kensington Museum, making sketches old furniture and other articles, wh he afterwards found useful for the c tume subjects for which he had a spec liking; after leaving London he visit many well-known historical houses, su as Haddon Hall and Hardwicke Hall, Derbyshire, and old Moreton Hall, Cheshire, where he gathered material future pictures. One of his latest p tures, "The Minuet," and one of the b examples of his work, hung at this yea exhibition of the Royal Glasgow Ins tute of the Fine Arts, was purchased the corporation, and is now in the g leries at Kelvin Grove.

Bankruptcies.

E. H. YATES, plumber, Clayton, R.O., Aug.

J. F. BECKETT, builder, contractor and un taker, Upwell, Isle of Ely, R.O., Aug. 7.

W. M. ALLEN, builder, Dalston, R.O., Aug First meeting, Bankruptcy Court, Aug. 21, at P.E., same, Sept. 22, at 11. Adj., Aug. 6.

J. W. WARNE, builder and contractor, Al Inn, Albert Street, and Tennyson Avenue, Ki Lynn, R.O., Aug 8.

C. E. CHAPPEL, builder and contractor, Stoc Heath. Liabilities estimated at £1,326 5s. assets, realised, £40 9s. 5d.

E. J. STREVENS, Architect and Surveyor, Cam well, R.O., Aug. 6. First meeting, Bankru Court, Aug. 20, at 12. P.E., same, Sept. 29 11.30.

J. and J. BAKER, builders and contractors, hill and Westcliffe-on-Sea. First meeting, Hastings, Aug. 18, at 12. P.E., Town Hall, H ings, same day, at 11.

W. H. HOLDSWORTH, painter and paperhan Hipperholme, Halifax, R.O., Aug. 5. First m ing, C.C., Halifax, Aug. 21, at 10.45. P.E., Oct. 30, at 2. Adj., Aug 5.

R. BENNETT, architect and surveyor, descr as of 96, Cheapside, E.C. Liabilities, £10,123 which £7,308 were returned as contingent £2,815 as unsecured; assets, valued at £10 nearly the whole of that amount being, howe represented by equities of redemption.

When TENDERING . . .

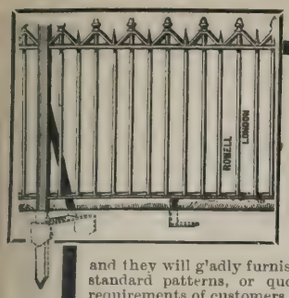
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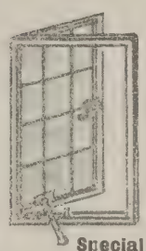
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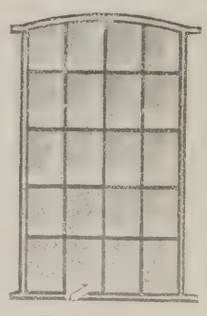
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Telephones : ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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Advertisements for the above can be received up till 12 noon Tuesday at

CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Appledore (Devon).—For erecting a new council school at Northam, Appledore, for the Devon County Education authority. Quantities by Mr. S. W. Haughton, 22, Courtenay Street, Plymouth :—

Johnson and Co., Plymouth	£3,796 5 10
Cock, Lamerton, and Cock, Bideford	3,773 7 4
W. E. Bennett, Bodmin	3,539 13 7
P. Wilkins and Son, Bristol	3,517 0 0
R. Pollard and Co., Paignton	3,516 8 5
E. Ellis and Son, Bideford	3,431 15 5
R. Goss and Sons, Combe Martin	3,311 11 8
G. B. Turpin, Plymouth	3,259 0 0
F. J. Stanbury, Plymouth	3,184 7 2
J. Paynter, Plymouth	3,168 1 8
F. J. Badcock, Ashburton	3,157 9 0
R. Pickett, Ilfracombe	3,054 17 8
A. N. Coles*, Plymouth	2,906 10 8

*Accepted.

Beckenham.—For alterations and extensions to the technical institute, Beckenham Road, for the Urban District Council. Mr. John A. Angell, surveyor :—

Hawkey and Oldman, Mile End	£1,420
B. E. Nightingale, Albert Embankment	1,400
F. and G. Foster, Norwood Junction	1,297
J. Elliman, Beckenham	1,296
J. and C. Bowyer, Upper Norwood	1,234
F. W. Green, Beckenham	1,196
Crossley and Son, Bromley	1,186
F. Webster and Son, Dulwich	1,138
A. Sedcole, Commercial Road, E.	1,127
Jones and Andrews,* Beckenham	1,125
E. A. Hough, Herne Hill	1,123

*Accepted.

Broadstone.—For the erection of a house at Broadstone, for General MacGregor. Mr. Walter Andrew, architect, Parkstone, and 24, Lime Street, E.C. :—

Jones and Seaward	£1,895 0 0
Jenkins and Sons, Ltd.	1,827 0 0
E. S. Griffin	1,700 0 0
McWilliam and Son	1,674 0 0
Burt and Vick	1,601 10 0
A. and F. Wilson*	1,585 0 0

*Accepted.

Cardiff.—For the erection of the laboratory and art block at the Canton Secondary School :—

D. Davies and Sons	£4,320
J. Allan	4,072
Griffiths and Sons	3,982
W. Thomas and Co.	3,895
Blacker Bros.	3,855
E. Turner and Sons	3,855
J. H. Maggs and Co.	3,800
D. W. Davies	3,775
G. Beames	3,745
Knox and Wells	3,737
F Bond,* Beda Road, Cardiff	3,545

* Accepted.

*Accepted.

Connah's Quay (Flintshire).—For executing work at Connah's Quay Waterworks, for the Connah's Quay Gas and Waterworks Co. :—

S. Cowburn and Sons, Queensferry	£3,237 15 0
A. H. Price and Co., Castle Boulevard, Nottingham	2,980 0 0
Bennie and Thompson, 80, Liverpool Road, Warrington	2,730 19 6
Holme and King, Liverpool	2,610 14 10
C. L. Warren, St. Paul's Road, Seacombe	2,556 10 0
Jowett Bros., Burscough	2,215 13 0
F. W. Southorn, Nuneaton	2,196 8 2
R. Allen,* Halton View, Widnes	2,126 13 6
R. C. Brebner and Co., Edinburgh	1,996 0 0

*Accepted.

Dudley.—For the erection of the Dudley Training College, for the Council :—Oakley and Coulson, Dudley, £10,799 (accepted subject to the approval of the Board of Education).

Dundee.—Accepted for the purification plant at the gasworks :—A. and J. Main, Glasgow; Barrowfield Ironworks, Glasgow; New Conveyor Co., Smethwick, Birmingham. The cost of the plant is £11,522 10s.

(*Tenders continued on page viii.*)

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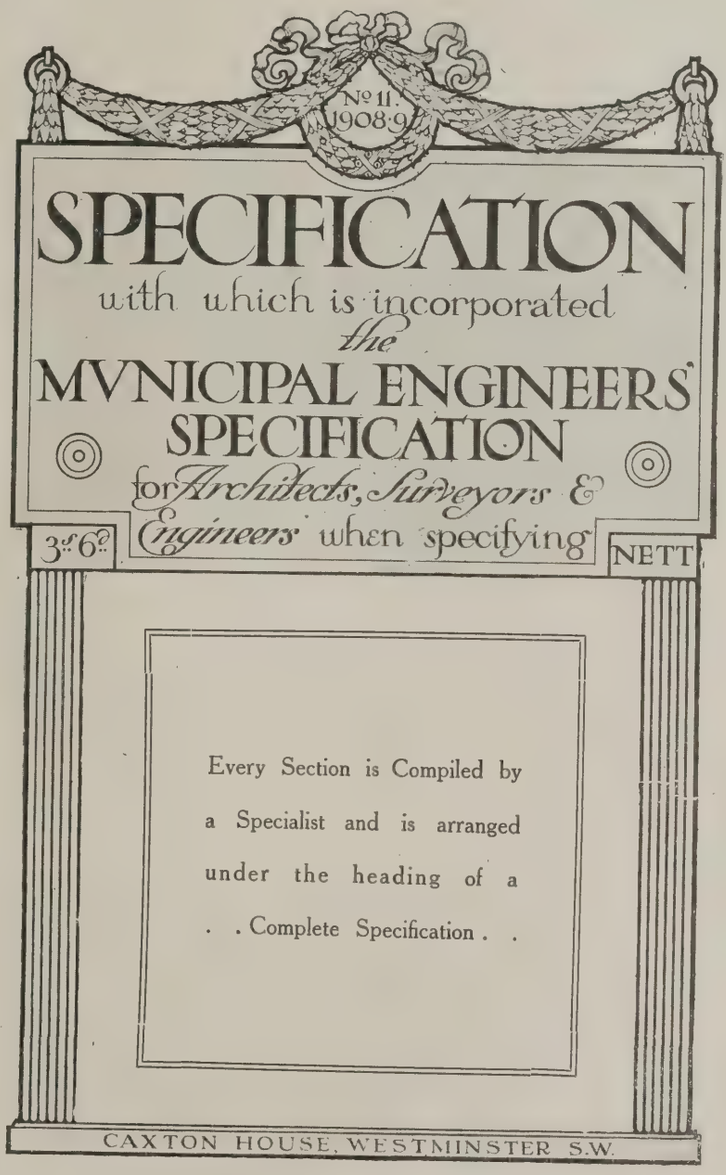
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(*Tenders continued from page vi.*)

Dartford.—For the execution of cleaning and painting works and repairs at Gore Farm (Convalescent) Fever Hospital, for the Metropolitan Asylums Board. Mr. W. T. Hatch, engineer-in-chief:—

W. J. Simms and Sons ...	£7,209	0	0
McCormick and Sons ...	6,987	0	0
E. Proctor and Sons ...	6,704	0	0
W. Hussey	6,550	0	0
Vigor and Co.	6,480	0	0
J. Carmichael	5,939	0	0
M. McCarthy	5,835	0	0
G. H. Gunning and Sons ...	5,540	1	10
J. W. Ellingham	4,920	0	0
W. F. Blay	4,877	0	0
L. Kazak,* 3 and 4, Station Road, Belvedere	4,697	0	0

*Accepted.

Guildford.—For the construction of about 339 yds. of 14 in. cast-iron pumping main, 1,515 yds. of 15in. cast-iron siphon, and one screening chamber, for the Town Council. Mr. C. G. Mason, A.M.I.C.E., borough engineer and surveyor, Tuns Gate:—

A. G. Osenton, Parkstone, Dorset	£3,453	0	0
G. Bell and Son, Tottenham Hale	3,238	0	0
James and Co., Gardner Road, Guildford	3,115	17	3
J. Aird and Sons, Belvedere Road, Lambeth	3,078	3	4
G. A. Franks, Railway Approach, Guildford	2,915	0	0
Streeter and Co.,* Shalford, near Guildford	2,798	0	10
J. May, Ashstead, Surrey (withdrawn)	2,430	0	0

*Accepted.

Haddington.—For erecting a new post office at Haddington:—

				Credit.
T. Waddell	£3,505	14	0	£—
G. and R. Cousins ...	3,051	0	0	25
H. Scott	2,977	0	0	35
J. and W. Orr ...	2,946	0	0	40
R. Baillie	2,926	2	5	—
J. Farquharson ...	2,920	0	0	20
T. Angus	2,875	0	0	50
W. Grant	2,804	0	0	20
W. Black and Sons*...	2,750	0	0	20

*Accepted.

Hartlepool.—Accepted for the conversion of the Victoria Dock into a tidal basin:—A. Fasey and Son, Leytonstone. £85,000.

Hounslow.—Accepted for erection of infants' department and caretaker's house at Hounslow Heath new schools, for the Heston and Isleworth District Council:—W. Lacey, Staines Road, infants' department £3,740 7s. 4d., caretaker's house £300.

Hull.—Accepted for work to be done in completion of the city hall:—W. Sanderson, Hull, £25,177.

Marske-by-the-Sea.—Accepted for the erection of new Sunday school and alterations to Wesleyan Church, Marske-by-the-Sea. Mr. D. M. Spence, architect and surveyor, Shotley Bridge:—W. Gatton, Marske-by-the-Sea, £900 14s. 9d.

Motherwell (Scotland).—For the construction of a covered service reservoir, for the Corporation:—

W. G. Flett, Lenzie	£9,600
J. Urquhart, Uddingston	9,585
Shanks and McEwan, Glasgow ...	9,528
Henderson and Duncan, Edinburgh...	9,327
W. Dobson, Edinburgh	9,262
F. Mitchell and Son, Manchester...	8,719
J. MacEwan,* Wishaw	8,717

*Accepted.

Newbury (Berkshire).—For the erection of a house at Newbury, Berkshire, for James Buchanan, Esq. Walter Andrew, architect, Parkstone, and 24, Lime Street, E.C.:—

Adey and Co.	£1,874
Kingerlee and Sons	1,589
T. Plumb	1,558
G. Head	1,500
McCarthy E. Fitt	1,487
H. Elms	1,480
Houghton and Co.	1,395
E. A. Bance	1,295
Hoskings Bros.	1,250
A. J. Chivers*	1,235

Parkstone.—For alterations and additions to "Hillmorton," Parkstone, for W. S. Hogg, Esq. Walter Andrew, architect, Parkstone, and 24, Lime Street, E.C.:—

W. Southgate	£259
Baker and Pearcy*	197

*Accepted.

Parkstone.—For alterations and additions to "Huntly," Parkstone, for Colonel P. S. Druitt. Walter Andrew, architect, Parkstone, and 24, Lime Street. E.C.:—

J. Hillman	£449	3	0
A. E. Rogers*	440	0	0
Maker and Pearcy	436	0	0
A. and F. Wilson	430	0	0

* Accepted.

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MIDLANDS CEMENT COMPANY, Ltd., to adopt an agreement with the Collo's Portland Cement Co., Ltd., to work iron furnaces and works for the manufacture of by-products from iron furnaces; to carry on business as ironmasters and cement manufacturers, etc. The first directors are: A. W. Farnsworth, G. F. Metzger, F. Goddard and T. Garland. Registered Aug. 5 by C. and S. Harrison and Co., 19, Bedford Row, W.C. Capital: £25,000.

CROWLE BRICK AND TILE CO., Ltd., to acquire the business of brick and tile manufacturers carried on at Crowle, Lincs., as Oakland Brothers. The first directors are: G. Oakland, E. Oakland, S. Oakland, J. W. Craven, G. Wilson and E. Wilson. Qualification, £500. Registered Aug. 11, by Waterlow Bros. and Layton, Ltd., Birchin Lane, E.C. Capital: £10,000.

J. J. UDALL AND CO., Ltd., to acquire the business carried on at 36, Carlton Place, and 32, Carlton Crescent, Southampton, as J. J. Udall and Co., and to carry on the business of builders, contractors, builders' merchants, plumbers, sanitary engineers, hardwaremen, gasfitters, brick and tile makers, estate agents, etc. The first directors are: G. Franklin, W. R. Franklin and J. J. Johns. Registered Aug. 11 by Lomer, Son and Grierson, Southampton. Capital: £5,000.

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The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

ugust 20. EASTER COLTFIELD.—Alterations d additions to cottage at Easter Coltfield lton Brodie estate. Plans and specifications y be seen with Charles C. Doig, architect, 147, gh Street, Elgin, and offers will be received by on or before August 20.

ugust 21. SALTAIRE. — Extension of Sir us Salt's Hospital, Saltaire. Persons desirous tendering are requested to send in their names W. Wilcock and Son, architects, 9, Leeds ad, Bradford, before August 21.

ugust 22. DROGHEDA (Ireland).—Erection of vestry at St. Mary's church, Drogheda. Plans d specifications may be obtained from Frederick w, M.R.I.A.I., architect and C.E., Drogheda, to gust 22.

ugust 22. CHARFIELD. — Erection of a ourer's cottage at Starveall Farm, near Char-d, for the governors of Wootton-under-Edge ummar school. Plans, etc., can be seen at offices of the clerk, or at those of T. Scam-ll, Son, and Perkins, architects, 10, John Street, stol. Tenders to reach H. Goldingham, clerk the governors, Wooton-under-Edge, before noon August 22.

ugust 22. TINSLEY.—Alterations and additi ts to the Tinsley and district working men's and institute. Persons desirous of ten-ing are requested to forward their names, to-her with a deposit of £1 1s. (returnable) to vid B. Jenkinson, A.R.I.B.A., Architect and veyor, Imperial Buildings, Rotherham, not later n August 22.

ugust 22. COOKSTOWN.—Erection of a resi-ce on the Ballimenagh Farm, about half a mile n Cookstown. Tenders will be received up to gust 22, by the architect. Plans and specifi-ions can be seen at the office of T. Tipping, , architect, Magherafelt.

ugust 22. STAFFORD.—Alterations at 6 and Foregate Street, for the Corporation. Plans, cification, and particulars on application to W. ckshaw, borough engineer, on and after August Tenders to be sent to Richard Battle, town rk, Borough Hall, by August 22. Fair wages use.

ugust 22. CRUDEN.—Mason work, etc., in re-construction and widening of the bridge at t Erroll, in the parish of Cruden, for the Dis-t Committee. Plans and specifications may be at the Kilmarnock Arms Hotel, Port Erroll, with Wm. Davidson, architect, Ellon, and offers be lodged with A. J. Raeburn, Esq., district k, Ellon, on or before August 22.

ugust 24. WHITLAND.—Erection of a dwell-house and out offices, etc., at Whitland, for Wainwright. Plans and specifications may be pected at Vesper House, St. Mary's Street, tland. Sealed tenders, endorsed "Dwelling-use, Whitland," to be sent to J. Preece James, hitect, Tenby, not later than August 24.

ugust 24. UXBRIDGE.—Alterations to the ncil Chamber and market hall, for the Urban rict Council. W. T. Harvey, clerk, will re-e tenders up to August 24.

ugust 24. UXBRIDGE.—Alterations to a fire ion, for the Urban District Council. Tenders be delivered to W. T. Harvey, clerk, not later August 24.

ugust 24. HARPURHEY.—Erection of public hs and wash-houses in Rochdale Road, Har-ey, for the Corporation of Manchester. The will be let in three contracts, viz.:—1, gene-contract; 2, supply and delivery of cast iron-; 3, supply and delivery of steelwork. Draw-may be seen and specification and bill of tities obtained at the office of the city archi-Town Hall, upon payment of three guineas each set of quantities, which sum will be re-ed on receipt of a bona fide tender. All ues or postal orders are to be made payable he Corporation of Manchester. Sealed tenders, osed in the official envelope, to be delivered he office of the architect not later than 3 on August 24.

ugust 24. WIDNES.—1. Erection of two fire rgency exits at the West Bank council ools. 2. Alteration of outer doors at the three council schools, for the Sites and Buildings Committee of the Corporation. Specifications can be seen any day at the offices of G. H. Danby, secretary, Town Hall, Widnes. Tenders to be sent in addressed to the chairman of the sites and buildings committee, at or before noon on August 24.

August 25. BILSTON, STAFFORD.—Erection of a cottage at the sewage disposal works of Bilston, located at the Lunt, for the Urban District Council. Plan and specification can be seen, and copies of the quantities and form of tender obtained, at the office of the engineer, Baldwin Latham, M.Inst. C.E., Parliament Mansions, Victoria Street, Westminster, S.W., or on application to the town clerk, at Bilston, on deposit of two guineas, which will be returned after a contract has been entered into, to every person making a bona fide tender, on the return of the documents entrusted to them. In the event of a tender being withdrawn the deposit will be forfeited. Sealed tenders, in the form supplied, endorsed "Tenders for the Erection of Cottage," are to be delivered on or before August 25, to John D. Wassell, clerk to the Council, Town Hall, Bilston.

August 25. WARDLEY.—Enlargement of Wardley Council School, for the Felling Education Committee. Plan and specification of the work may be seen any morning between the hours of 9.30 and 10.30 at the office of H. Miller, architect, Council Buildings, Felling; and bills of quantities may be obtained on application to George Bell, quantity surveyor, Market Street, Newcastle-on-Tyne. Sealed tenders, endorsed "Tender for School," must reach Ralph Hall, clerk of the Committee, Council Buildings, Felling, not later than August 25.

August 25. TATTINGSTONE.—Erection of a water tower and provision of water tanks at the workhouse, Tattingstone, for the Guardians of Samford Union. Plans and specification can be obtained on application to H. J. Wright, architect, 4, Museum Street, Ipswich. Tenders, endorsed "Water Tower," must be delivered to Arnold J. Haward, clerk to the Guardians, 34, Princes Street, Ipswich, at or before 10 a.m. August 25. Approved security may be required for the satisfactory performance of the work.

August 25. DUNDEE.—Erection of a new school in Dens Road, for the School Board. Plans may be seen and specification and schedules of measurement obtained at the office of the architect, James H. Langlands, 31, Murraygate. Offers, accompanied with priced schedules, signed, and sealed, to be lodged with the clerk, I. E. Williams, Esq., Albert Square, not later than August 25.

August 26. PAINSWICK.—Repairs, etc., to cottage adjoining sewage-disposal works at Painswick, for the Rural District Council of Stroud. Specifications prepared by G. P. Milnes, 6, Rowcroft, Stroud, may be seen and permission to view obtained on application to Joseph Everatt, New Street, Painswick. Tenders, endorsed "Repairs to Cottage," must be sent to Fredk. Winterbotham, clerk, by August 26.

August 26. KNOCKANEY (Co Limerick). — Erection of a curate's residence, and out-offices, at Knockaney, Co. Limerick, according to the plans and specification prepared by John Guerin, Esq., architect, Knockaney, Bruff. Plans, etc., can be seen at the residence of the architect, to whom sealed tenders are to be sent up to August 26. The names of two solvent securities who are willing to join in a bond for the due performance of the contract, to be given with each tender.

August 26. CHESHIRE.—Erection of schools, for the County Council. Tenders should be delivered to G. F. Ashton, clerk, not later than August 26.

August 27. ILFORD.—Alterations and additions to a school, for the education committee. Address all communications to W. S. Torbitt, secretary, who will receive tenders up to August 27.

August 28. PONTARDAWE.—Rebuilding (1) The Cross Inn, Pontardawe, together with stables; (2) The Dillwyn Arms, Pontardawe, for E. Evans Bevan, Esq., Neath. Plans and specification may be seen and bills of quantities obtained at the offices of the architect. Sealed and endorsed tenders to be sent to J. Cook Rees, architect, Parade Chambers, Neath, on or before August 28.

August 31. RINGWOOD.—Partial reconstruction of Treening four-arch bridge, and Scutts one-arch bridge, across the River Avon near Ringwood, for the County Council. Plans, specifications, and conditions of contract and all other necessary information can be obtained upon application at the office of W. J. Taylor, county surveyor, The Castle, Winchester, between 9 a.m. and 5 p.m. (Saturdays 9 a.m. and 1 p.m.). A deposit of two guineas will be required for the documents, which will be returned on receipt of a bona fide tender. Deposits must be made by cheque payable to the Hants County Council, and crossed Bank of England, or the particulars will not be sent. Tenders must be endorsed "Reconstruction of Bridges, Ringwood," and be delivered to H. Barber, Clerk of the County Council, The Castle, Winchester, on or before 10 a.m. on August 31.

August 31. EAST HAM.—Erection of workshops, etc., in accordance with drawings, specifications, conditions, and bills of quantities (which may be obtained on application to Adam Horsburgh Campbell, M.Inst.C.E., Town Hall, East Ham, E.), for the Higher Education Committee. For a copy of the bills of quantities tenderers are required to deposit with S. A. Batchelor, secretary, the sum of £5, which will be returned upon the receipt of a bona fide tender. Tenders to be enclosed in a sealed envelope, addressed "To the Chairman, Technical College, East Ham, E.," and endorsed "Technical College Extension," not later than 10 o'clock a.m. August 31. The firm whose tender is accepted will be required to enter into a contract, with approved security, for the due and faithful performance thereof. Fair wages clause.

August 31. USWORTH.—1. Erection of 50 workmen's dwellings. 2. Roadmaking and surface drainage in connection therewith at Usworth, in the rural district of Chester-le-Street, for the County Council of Durham. Plans, specifications, and general conditions of contract can be seen and bills of quantities obtained at the office of Brown and Spain, architects, 51, Fawcett Street, Sunderland. Sealed tenders, endorsed "Usworth Housing," to be delivered to Robt. A. Wheatley, deputy-clerk to the County Council, Shire Hall, Durham, not later than August 31.

August 31. COVENTRY.—Construction of a canal quay wall about 660 ft. long, for the Gas Committee of the Corporation. Form of tender, specification, bill of quantities, and general conditions may be obtained, and drawing may be seen, on application to Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry, and on payment of one guinea, which will be returned on receipt of bona fide tender. Sealed tenders, addressed to the chairman of the gas committee, gas works, Coventry, must be delivered by first post August 31, endorsed "Tender for Canal Quay Wall."

September 1. CRADLEY HEATH.—Erection of library in front of Cornegreaves Old School, Spinner's End, Cradley Heath, for the Rowley Regis U.D.C. Plans, specification, and conditions, prepared by Wills and Anderson, the council's architects for this purpose, may be seen at the council's offices, Old Hill, on and from August 20 between the hours of 10 a.m. and 4 p.m. (Saturdays, from 10 a.m. to 1 p.m.) Quantities may be obtained at the same place on payment of £1, which will be returned if a bona fide tender is sent in. Tenders, duly endorsed, must reach Daniel Wright, clerk, Council Offices, Old Hill, Staffordshire, not later than noon on September 1.

September 2. POPLAR.—Erection of verandah at children's block of Poplar workhouse. Persons desirous of tendering should communicate with J. H. Lough, 45, Upper North Street, Poplar, E., by August 10. Tenders to be submitted not later than September 2.

September 2. GAINSBOROUGH.—Erection of the buildings in connection with proposed refuse destructor, for the U.D.C. Drawings may be seen, and specification, form of tender and bill of quantities obtained from Sam W. Parker, engineer and surveyor, Council Offices, Gainsborough, upon payment of £2 2s., which will be returned to the contractors on receipt of a bona fide tender, provided the same is not withdrawn. Tenders, enclosed in an official sealed envelope, endorsed "Refuse Destructor Buildings," must

be delivered to Decimus M. Robbs, clerk to the council, not later than September 2.

September 5. LEICESTER.—Erection of a superintendent's house in connection with the Beaumont Leys Farm Bacterial Works, for the Corporation of Leicester. Particulars may be obtained at the borough engineer's office, on payment to the Borough Treasurer of £2, which will be returned on receipt of a bona-fide tender. Sealed tenders, on the forms supplied, addressed to "The Chairman of the Sewage Works and Farms Committee, Town Hall, Leicester," are to be delivered not later than 9 a.m., on September 5, endorsed "Tender for Superintendent's House."

September 5. KIRKBURTON, near Huddersfield.—(1) Erection of six cottages; (2) sett paving road to boiler house; (3) extension to stables, for the West Riding County Council. Plans may be seen and bills of quantities obtained on application to the country architect. A deposit of £1 is required, which will be returned on receipt of a bona-fide tender. Cheques, etc., must be made payable to the West Riding Treasurer and sent to him direct at the county hall, Wakefield. Sealed tenders, properly endorsed, to be forwarded to J. Vickers-Edwards, county architect, County Hall, Wakefield, not later than 10.30 on September 5.

September 5. LEICESTER.—Erection of superintendent's house at the sewage disposal works, for the corporation. Tenders to be submitted to the chairman of the sewage works and farms committee not later than September 5.

September 8. HAWARDEN.—Erection or a new Council school to accommodate 500 scholars, at Shotton, for the Education Committee. Plans and specifications can be seen at the office of the county surveyor, County Buildings, Mold, from whom copies of the bill of quantities can be obtained on payment of a sum of two guineas, which sum will be returned on receipt of a bona fide tender. Tenders, on forms which will be supplied, to be delivered in sealed endorsed envelope, at the address printed thereon, not later than noon on September 8.

September 8. SPAXTON.—Structural reparation to the exterior of the fabric of the church of St. Margaret, for the Reparation Committee. Specifications and condition of contract may be inspected at the offices of the architects, Cottam and Samson, 43, High Street, Bridgwater, and 1, Hammet Street, Taunton, who will supply forms of tender; or at the church, where also the stone that will be used for the work may be seen between the hours of 10 a.m. and 5 p.m. Sealed tenders, endorsed "Tender for Works of Preparation, Spaxton Church," to be delivered at the offices of the architects, or at the address of the chairman of the committee, Spaxton Rectory, Bridgwater, not later than 5 p.m. on September 8.

September 9. LONDON, W.—Erection of a block of shops and showrooms at 143-9, Great Portland Street, London, W. Drawings, specification, and conditions of contract may be inspected at the offices of the architects, John W. Simpson and Maxwell Ayrton, 3, Verulam Buildings, Gray's Inn, W.C., from August 24 to Sept. 8, between 10 and 4. Bills of quantities and forms of tender may be obtained at the same address on payment of three guineas. The sums so paid will be returned to those persons who send in tenders on the forms provided in conformity with the conditions. Tenders must be delivered before noon on Sept. 9, addressed to the Owner, Great Portland Street site, care of Messrs. Jubber and Co., 61, Great Portland Street, W., and endorsed "Tender for Shops and Showrooms."

September 9. LETCHWORTH GARDEN CITY.—Erection and completion of a new County Council school at Letchworth Garden City, for the Education Committee of the County Council. Persons desiring to tender for the work may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturday, when they may be seen from 10 a.m. till 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office, on or after the above-mentioned date, upon payment of two guineas, which sum will be returned to the tenderer upon receipt of a bona fide tender and the documents which have been supplied to him. Sealed tenders, endorsed "Tender for New School, Letchworth," must be delivered to Urban A. Smith, county surveyor, County Surveyor's Office, Hatfield, not later than 5 p.m. on September 9. Such security for the due execution of the works as the council may require must be given by the contractor.

September 12. KILLALOE (Co. Clare).—Erection and completion of a new chapel at Garraunboy, Killaloe, Co. Clare, for the Very Rev. Canon D. Flannery, P.P., and committee. Drawings and specification may be seen at the parish priest's house, Killaloe, or at the office of the architects. Bills of quantities for the use of builders tendering can be had at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick, or with the parish priest. Sealed tenders, endorsed "New Chapel, Garraunboy," accompanied by bills of quantities, must be delivered to the parish priest on or before September 12. Two solvent sureties required for the due performance of the contract.

September 14. FARNBOROUGH.—Erection of a children's home at the workhouse, Farnborough, Kent, for the Guardians of the Bromley Union. Plans and specification may be seen after the 25th inst., at the office of the architect, John Ladds, 93, Pemberton Road, Harringay, N., between the hours of 10 a.m. and 4 p.m. (Sundays excepted). Builders desirous of tendering must apply by letter to the architect on or before August 25 for copies of the quantities, enclosing a £5 Bank of England note, which will be returned to those builders sending in a bona fide tender upon their returning the receipt given within three months from the date thereof. Tenders, endorsed "Children's Home," must be delivered to Edward Haslehurst, clerk to the Guardians, Union Offices, Park House, Beckenham Lane, Bromley, Kent, not later than 5 p.m. on September 14. No order will be given for commencement of the work until the Local Government Board have sanctioned the necessary loan in connection therewith. The person whose tender may be accepted must be prepared to enter into a contract and a bond, with sufficient surety, for the fulfilment thereof.

October 7. INVERNESS.—Construction of a boat shelter at the Harbour of Inverness, the total cost of the scheme not to exceed £10,000, for the Harbour Trustees. Plans should be lodged with Kenneth Macdonald, clerk to the Harbour Trustees, Town House, Inverness, on or before October 7.

No date. BIRSTALL.—Erection of 16 cottages on a site adjoining Leylands Road, Birstall, for the Committee of the Birstall Industrial Co-operative Society. Tenders in separate trades required. Bills of quantities have been prepared, and may be obtained on payment of a deposit of one guinea on application to the architect, R. Worcester, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester. The deposit will be returned on receipt of a bona fide tender.

No date. BACUP.—Erection of Northern Council school, Bacup. Persons desirous of tendering are requested to forward at once a list of the branches for which they desire to compete, to the architects, S. Butterworth and Duncan, F.R.I.B.A., Rochdale.

No date. BELFAST.—Erecting and completing a pair of semi-detached villas on Ravenhill Road, Belfast, for W. E. Bourke, Esq., Rosemary Street, Belfast. Plans and specification can be obtained upon application to Frank J. M'Cann, C.E., architect, 102, Donegall Street, Belfast.

No date. COWDENBEATH. — Erection of a house at North Road, Cowdenbeath. For plans and specifications apply Brown, Annbank, Morayfield, Cowdenbeath.

No date. RESOLVEN.—Erection of two houses at Glyn Neath Road, Resolven, for Lewis Lewis, Brondeg House, Resolven. Plans and specification may be had on application to the abovenamed.

No date. BELFAST.—Roof 240 by 50 ft., for Belfast. All particulars with W. P. Butterfield, Galvanising Works, Shipley.

No date. FLEETWOOD.—Erection of new wards, etc., at the Fleetwood Cottage Hospital. Plans, specifications, and bills of quantities may be inspected until August 19 at the office of the architect, Bertram Drummond, A.R.I.B.A., 54, Alfred Terrace, Fleetwood. After inspection copies of the bills of quantities and specifications (the latter to be returned with tender) can be obtained from the architect on payment of the sum of one guinea, which will be returned upon receipt of a bona fide tender.

ENGINEERING.

August 24. RUISLIP-NORTHWOOD.—Supply and fixing of the following machinery (inter alia), viz.:—Two 10-10½ b.h.p. oil engines, two 6-6½ b.h.p. oil-engines, together with shafting, four centrifugal pumps, suctions, valves, spares, etc., for the Urban District Council. Further particulars and form of tender may be obtained from H. Howard Humphreys, M.Inst.M.E., 28, Victoria Street, Westminster, S.W., between the hours of 10 a.m. in the forenoon and 4 in the afternoon. A deposit of £2 2s. will be required, which will be returned on receipt of a bona fide tender. Sealed tenders, endorsed "Pumping Machinery," must reach Edmund R. Abbott, clerk to the Council, Council Offices, Northwood, R.S.O., Middlesex, not later than 4 p.m. on August 24.

August 24. RUISLIP-NORTHWOOD. — Supply and fixing the following plant at the sewage disposal works, near Ruislip Common, Middlesex, for the Urban District Council: Three 90 ft. diameter revolving sewage distributors. Further particulars and form of tender may be obtained from H. Howard Humphreys, M.Inst.M.E., of 28, Victoria Street, Westminster, S.W., between the hours of 10 o'clock in the forenoon and 4 o'clock in the afternoon. A deposit of £2 2s. will be required, which will be returned on receipt of a bona fide tender. Sealed tenders, endorsed "Sewage Distributors," must reach Edmund R. Abbott, clerk to the Council, Council Offices, Northwood, R.S.O., Middlesex, not later than 4 p.m. on August 24.

August 25. NUNEATON.—Construction of a waterworks filter-bed in Hennebique's ferro-concrete construction, for the Corporation. Plans and specification may be seen, and form of tender obtained, on application to the water engineer. Tenders, endorsed "Tender for Filter-Bed," must be delivered to F. C. Cook, water engineer, Municipal Offices, Nuneaton, not later than noon on August 25.

August 26. SUTTON-IN-ASHFIELD.—Supplying and fixing one set of "new treble barrel pumps" with a "coal-gas engine" to work the same, complete, for the Water Committee of the U.D.C. Engine and pumps must be guaranteed to deliver 12,000 gallons per hour, at the rate of 14 pump strokes per minute each barrel into reservoir, which is 150 ft. above the level of the pumps, through 3,333 yds. of 6 in. mains. Pumps will stand on the floor level, with 6 ft. of suction to work from tank below and fed with a ball valve. Sealed tenders, endorsed "Pumps," with plans, specifications, and full particulars, to reach T. Robinson, Waterworks Offices, Sutton-in-Ashfield, not later than August 26.

August 26. BURNLEY.—Supply and erection of steel roof for new retort house at the gasworks of the Corporation. Specification and forms of tender may be obtained on application to the engineer, J. P. Leather, Gas Works, Burnley. Drawings may be inspected at the gasworks, or if desired photo copies will be sent to intending contractors on receipt of 10s. Tenders, endorsed "Steel Roof," must be sent in not later than August 26, addressed to the Chairman of the Gas Committee, Town Clerk's Office, Town Hall, Burnley.

August 28. DONCASTER.—Construction of the Marsh Gate Bridge and approaches over the Great Northern Railway at Doncaster, for the town council. Contract drawings and specification may be seen, and copies of these and of the quantities, for which a charge of three guineas will be made, which will not be returned, may be obtained at the office of the engineers, Parry and Bidder, 13, Victoria Street, Westminster. Tenders must be sent in to R. A. H. Tovey, town clerk, Doncaster, not later than 2 o'clock, on August 26, endorsed "Tender for Bridge." Only tenders from contractors experienced in railway work will be considered

September 4. DONERAILE, Co. Cork.—Construction of waterworks, for proposed sanatorium at Streamhill, Doneraile, Co. Cork, in accordance with plans and specification prepared by Richard Evans, C.E., 53, South Mall, Cork, for the Joint Hospital Board. Plans and specification may be inspected at the engineer's office, between the hours of 10 and 5 o'clock. Quantities will be supplied on payment of a guinea, which will be returned on receipt of a bona fide tender. Each contractor shall lodge with his tender a sum of £10, or a cheque for that amount, duly certified, and, in separate cover, a detailed estimate. In case of a tender being accepted, the sum lodged shall be returned upon the contractor and his sureties signing his contract and bond within fourteen days of acceptance, or in default such sum shall be forfeited. In case of non-acceptance of tenders, the sums lodged shall be returned. The contractor whose tender may be accepted shall sign a bond in which he shall be joined by two sureties or a guarantee society approved of by the board, and shall pay the cost of such bond. Tenders, endorsed "Tenders for Waterworks," must reach E. J. Murphy, secretary, County of Cork Joint Hospital Board, Courthouse, Cork, on or before noon, September 4.

September 15. LEITH.—Execution of the undermentioned works by a utilisation of the material of the existing unfinished iron bridge over the Caledonian Railway Company's line at Victoria Park, for the Corporation of Leith. (1) Construction of a footbridge on the site of the bridge referred to. (2) Widening of Junction Bridge. All conform to relative plans and specifications to be seen at the surveyor's office. Offers, sealed and marked "Bridge," to be lodged with J. R. Findlay, burgh surveyor, Burgh Surveyor's office, 35, Charlotte Street, Leith, on or before September 15.

IRON AND STEEL.

August 26. CHORLTON-CUM-HARDY.—Supplying and fixing wrought iron railings, gates, and guards to staircases and staircase windows at the Oswald Road Municipal school, Chorlton-cum-Hardy, for the Manchester Education Committee. Drawings and specification may be obtained at the education offices, Deansgate, Manchester, on a deposit of £1 1s., which will be returned on receipt of a bona-fide tender. Tenders in the envelope provided must be delivered not later than August 26. Cheques to be made payable to the accountant education offices, Deansgate, Manchester.

PAINTING AND PLUMBING

August 22. BICESTER.—Painting the inside and outside of steel tanks at the Water Tower, and lime-washing and cement washing of the interior of tanks, etc., for the Urban District Council. Specifications and conditions of contract, with forms of tender, may be obtained from R. Parker, surveyor to the council. Tenders, on the prescribed forms, endorsed "Waterworks," must be delivered

to Edward Foster Tanner, clerk to the Council, Bicester, Oxon., on or before noon, August 22.

August 22. BERWICK-UPON-TWEED.—Painting certain farm buildings on the Corporation Estate, etc. For particulars apply to Land Steward's Office, 42, Hide Hill, Berwick-on-Tweed, where tenders (to be sealed and marked "Tender for Painting") must be lodged on or before August 22.

August 24. LEEDS.—Painting at the Town Hall, Municipal Buildings, and Jewish Baths, Albert Grove, for the Corporation. Specifications, forms of tender, and schedules of works, at the office of W. T. Lancashire, city engineer, on payment of a deposit of one guinea. Tenders must be received at the town clerk's office not later than 10 a.m., August 24.

August 24. CARMARTHEN.—Painting Water Street chapel and schoolroom, Carmarthen. Specification can be seen at the Chapel House. Tenders must be sent to Oliver Jones, 22, Picton Terrace, Carmarthen, by August 24.

ROADS AND CARTAGE.

August 22. WORCESTER. — Construction of walks, drains, and other works at the cemetery, Western Worcester, for the Corporation. Drawings and specification may be seen, and form of tender obtained at the office of the city engineer. Sealed tenders, upon the prescribed form, endorsed "Tender," are to be delivered at the Guildhall, on or before August 22. The contract may be seen at the office of Thomas Caink, A.M.Inst.C.E., city engineer, Guildhall, Worcester. Fair wages clause.

August 24. LEEDS.—Hope Street improvement, including, inter alia, the formation of a 75 ft. street between Quarry Hill and North Street, and the construction of subways under the same, some 630 yds. lin. of retaining walls, the culverting of a portion of Lady Beck and other street works, for the Unhealthy Areas Committee. The drawing, specification, and stipulations may be seen at the city engineer's office, Municipal Buildings, Leeds, and bill of quantities, etc., obtained on deposit of three guineas, which will be returned on receipt of a bona-fide tender. Tenders, endorsed "Hope Street Improvement," must be received at the Town Clerk's Office not later than 10 a.m. on August 24.

August 24. PORTSMOUTH.—Materials to be supplied and work to be performed in laying compressed or block asphalt pavement. (1) In certain streets in the borough south of the railway; (2) In certain streets in the borough north of the railway, and maintaining the same in thorough repair for two years from the completion of the whole thereof, for the Corporation. A copy of each specification, form of tender, and schedule of prices may be obtained on application to the Town clerk, at the Town Hall, Portsmouth, on payment of £2 2s., which will be returned on receipt of a bona fide tender with prices filled in as required. The form of tender, with schedule of prices attached to the specification, must be filled in and the whole sent under cover to Alexander Heard, town clerk, Town Hall, Portsmouth, not later than 10 a.m. on August 24.

August 25. GATESHEAD.—Paving, etc., for the Corporation, the following back streets: Back Hutton Terrace (paving); back Holly Gardens, Low Fell (tar macadam). Plans and specifications may be seen and quantities obtained at the office of N. P. Pattinson, borough engineer, town hall, Gateshead. Tenders are to be sent in sealed and endorsed "Tenders for Street Paving," before 2 p.m. on August 25.

August 31. COVENTRY.—Paving 7,500 sq. yds. with 4 in. granite cubes and other work in connection therewith, for the Gas Committee of the Corporation. Forms of tender, specification, bill of quantities, and general conditions may be obtained, and drawing may be seen, on application to Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry, and on payment of one guinea, which will be returned on receipt of bona fide tender. Sealed tenders, addressed to the chairman of the gas committee, Gas Works, Coventry, must be delivered by first post August 31, endorsed "Tender for Paving."

August 31. ST. ALBANS. Supply of broken granite (about 1,000 tons) to be delivered at St. Alban's Station in full truck loads during the ensuing 12 months in such quantities as shall from time to time be ordered by the city surveyor, for the Corporation. Forms of tender can be obtained of the city surveyor, Victoria Street, St. Albans. Tenders (accompanied by samples) to be sent to A. H. Debenham, town clerk, St. Albans, by August 31.

September 1. STROOD (Rochester).—Making, paving, and channelling Bingham Road, Lindsbury, situated partly in the city and partly in the rural district of Strood. Plans and specifications can be seen, and forms of tender obtained, as to that portion within the city at the city surveyor's office, Guildhall, Rochester, during office hours, and to that portion in the rural district of Strood at the office of the district surveyor, L. Randerson, Blendon Villa, Meopham, near Gravesend, between the hours of 9 a.m. and 1 p.m. daily. Sparate tenders, addressed as to the portion within the city to the town clerk, Rochester, **and to that portion** within the rural district of Strood to the clerk at the Rural District Council's offices, 13a, Gun Lane, Strood, Rochester, must be sent in by September 1.

September 1. LEATHERHEAD.—Construction of Belmont Road, for the Urban District Council. 1. Making-up. 2. Construction of storm-water drain. Plans may be seen and specification, schedule of prices, and forms of tender obtained at the office of J. E. Smales, surveyor, Council Offices, Leatherhead, upon payment of a deposit of one guinea, which will be returned on receipt of a bona fide tender. Sealed tenders, endorsed "Private Street Works," must be delivered, addressed to the clerk, Council Offices, not later than 5 p.m. on September 1.

September 2.. LITTLEHAMPTON. — Supply and delivery free, as directed either at council's depots or at roadsides in Littlehampton district, of 500 cubic yards of clean, hand-picked land flints, broken to pass through a 2 in. ring, and equal to sample, which can be seen, for the Urban District Council. The whole to be delivered by the end of November. Forms of tender can be obtained of the council's surveyor, H. Howard, F.S.I., town offices, Littlehampton. Tenders, under cover and marked "Flints," to be forwarded to the chairman of the council, Town Offices, Littlehampton, not later than September 2.

September 5. SEAFORD.—Supply of 550 tons of 1½-in. granite chippings and 170 tons of cracked flints, delivered at Seaford Station, about the end of October, for the Urban District Council. Forms of tender can be obtained from the surveyor. Sealed tenders, endorsed "Road Material," to be sent to W. H. Pawson, clerk, Council Offices, Seaford, Sussex, on or before September 5.

September 14. STREATHAM.—Making up and paving the following new streets, viz.:—(a) Thrale Road, Streatham. (b) Part of Crowborough Road, Streatham, between Chillerton Road, and Ramsdale Road. (c) Part of Ramsdale Road, Streatham, between Rectory Lane and Crowborough Road, for the Council of the Metropolitan borough of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained at the borough engineer and surveyor's office, New Streets Department, 53, East Hill, Wandsworth, between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving —— Road," must be delivered to Henry George Hills, Town Clerk, Council House, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on September 14. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

No date. CRICCIETH.—Construction of new roads and sewers of about 900 ft. in length on an estate at Criccieth. Full particulars may be obtained from G. Bovill, Esq., Estates Office, Rhydycreua, Bettws-y-Coed, North Wales.

FALMER AND OVINGDEAN.—Renovation of a portion of a road (known as "Warren Farm Road") in the parishes of Falmer and Ovingdean in the county of Sussex, for the Guardians of Brighton Parish. Specification, conditions of contract, form of tender, together with all information, may be obtained on application to George Burstow and Sons, surveyors, 16, Gloucester Place, Brighton. Sealed tenders, endorsed "Tender for Warren Farm Road," are to be addressed and delivered to B. Burfield, clerk to the Guardians, Parochial Offices, Prince's Street, Brighton, on or before 10 a.m. on August 25.

SANITARY.

August 21. HEATH TOWN.—Laying about 200 yards of 9 in. sewer and the construction of manholes, etc., in Cannock Road, for the Urban District Council. Drawings may be seen, and copies of the specification and quantities obtained at the office of the engineers, Berrington, Son, and Watney, Bank Buildings, Wolverhampton, on payment of one guinea, which will be returned upon the receipt of a bona fide tender. Sealed tenders, endorsed "Tender for Sewerage," must be delivered before noon on August 21, to J. W. E. Kirk, solicitor, clerk to the Council, Lichfield Street, Wolverhampton.

August 21. SKIPTON.—Construction of about 3,900 lineal yds. of 12 in., 9 in., 8 in., and 6 in. earthenware pipe sewers, with manholes, etc., also sewage tanks, continuous filters, pumping station, cast-iron rising main, and other works, for the Rural District Council. Drawings and specification may be seen, and form of tender with quantities obtained, at the offices of the engineer, H. A. Johnson, M.Inst.C.E., 15, The Exchange, Bradford; also at the offices of the council's surveyor, A. Rodwell, Gargrave Road, Skipton, on payment of a deposit of two guineas, which will only be returned on a bona fide tender being sent in in accordance with the specification. Sealed tenders to be sent to M. R. Knowles, clerk to the Council, Skipton, on or before August 21.

August 24. HALIFAX.—Construction of about 1,400 yds. of 15 in. and 12 in. diameter earthenware pipe sewers in Moor End Road, Mount Tabor Road, and Heath Hill Road, for the Corporation. Plans and specifications may be seen, and forms of tender obtained on application to James Lord, M.I.C.E., borough engineer, Town Hall, Halifax, upon payment of the sum of £1, which will be returned on receipt of a bona fide tender. Tenders, endorsed "Mount Tabor Sewers," must be sent to Keighley Walton, town clerk, on or before August 24. Fair wages clause.

August 24. TRING. — Execution of all work involved by the connection of house drains to the new system of sewerage in the town of Tring, on the basis of a schedule of prices, for the U.D.C. Specifications and schedules may be obtained at the offices of the engineers, Willcox and Raikes, of 63, Temple Row, Birmingham, on payment of a deposit of two guineas, which will be refunded on receipt of a bona fide tender and the return of all documents Sealed tenders, with schedule of prices filled in, in detail, on the form supplied, and endorsed "Tring, House Connections," must be delivered to A. W. Vaisey, clerk to the Urban District Council, Tring, Herts., not later than noon on August 24.

August 27. SURBITON.—Construction of main drainage, for the Urban District Council (subject to the sanction of the L.G.B.). The drawings, specification, bills of quantities and forms of tender may be inspected at the offices of the engineer, C. Nicholson Lailey, M.I.C.E., 53, Victoria Street, Westminster, between 10 a.m. and 5 p.m. (Saturdays excepted), until August 25. Tenders, sealed and endorsed "Surbiton Main Drainage," are to be addressed to F. J. Bell, deputy clerk, Surbiton Urban District Council Offices, Ewell Road, Surbiton, and delivered there before 6 p.m.

MISCELLANEOUS.

August 31. SHEFFIELD.—Foundations for new boiler, ashes and dust chambers, pipe trenches, retaining walls, etc., for the Electric Light Committee. Plans, specification, bill of quantities, form of tender, and general conditions of contract may be obtained from the engineer on making a deposit of one guinea for each set, which will be returned on receipt of a bona fide tender. Any person or firm sending in a tender will be required to add a schedule to such tender, stating the names of the various classes of labour which he or they intends or intend to employ, together with the places where such labour will be employed. Tenders, sealed and endorsed "Contract No. 54," to be delivered to S. E. Fedden, general manager and engineer, Corporation Electric Supply Department, Commercial Street, Sheffield, not later than 10 o'clock a.m. on August 31. Acceptance will be subject to the sanction of the Local Government Board for borrowing the necessary capital for the performance of the work. Fair wages clause.

September 1. LEATHERHEAD.—Supplying the undermentioned materials and labour for the year ending 30th September, 1909, for the Urban District Council:—Flints, team labour, provender, stoneware pipes, cement, disinfectants, ironmongery, smith's work, granite (Guernsey and Quenast), oil, steam rolling and scarifying, artificial paving. Specification and forms of tender can be obtained at the office of J. E. Smales, surveyor, Council Offices, Leatherhead. Tenders to be submitted, under cover, addressed to the clerk, Urban District Council, Council Offices, Leatherhead, on or before 5 p.m., September 1, endorsed "Tender for ——."

September 8. LONDON.—(a) Supply and delivery of 200,000 stoneware cable-ducts; (b) Laying of stoneware cable-ducts; (c) supply, delivery and erection of high and low tension switchgear; (d) supply, delivery and erection of six 500 kw., and one 150 kw. motor generators; (e) supply, delivery and erection at the Camden Town sub-station of one overhead travelling hand crane; (f) supply and delivery of low tension cables, cable boxes, etc., required for the wiring and fitting for electric lighting and power purposes of the electricity generating-station at East Greenwich and the central car repair depot, Woolwich Road, S.E.; and (g) wiring and fiting for electric lighting of the central car repair depot, Woolwich Road, S.E., for the L.C.C. Specifications, bills of quantities, forms of tender, etc., may be obtained from the clerk of the Council, at the County Hall, Spring Gardens, S.W., upon payment of the sum of £2 for each separate specification, etc. This amount will be returned to the tenderer, provided he shall have sent in a bona fide tender and not have withdrawn the same. Full particulars of the work may be obtained on application at the County Hall. Tenders must be upon the official forms, and the printed instructions contained therein must be strictly complied with. Each tender is to be delivered at the County Hall, in a sealed cover, addressed to the Clerk of the London County Council, Spring Gardens, S.W., and marked "Tender for Ducts," "Tender for Laying Stoneware Ducts," "Tender for Switchgear," "Tender for Motor Generators," "Tender for Crane," "Tender for Wiring Material" or "Tender for Wiring Car Repair Depot," as the case may be. No tender will be received after 11 a.m. on September 8. Fair wages clause.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

A competent architectural assistant (24) desires appointment, permanent or temporary; good designer, accurate draughtsman; constructional details, specifications, quantities, moderate salary.—Box 4484, BUILDERS' JOURNAL Office.

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECTS' Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4456

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Junr., 5 years' London experience, neat draughtsman; good colourist, details.—Box 4480, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4408

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4481 BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (27), first-class artistic draughtsman, travelling studentship winner, 11 years' experience; perspectives, quantities, etc.; moderate salary.—Scott, 28, Cromwell Terrace, Halifax. 450c

ASSISTANT A.R.I.B.A. (29), thirteen years' London Provincial experience; testimonials, references, working drawings, details, specifications, supervision perspectives, office work; well up in management; salary 2 guineas.—Apply A., 31, Cotswold Road, Westcliff-on-Sea, Essex. 4512

ARCHITECT'S Junior Assistant, good draughtsman, 6½ years experience, working drawings, details, perspectives, surveying, specifications; assist quantities; mod. sal. for experience in good office.—"H.," 53, Hartwood Road, Southport. 4489

ARCHITECT'S Junior Assistant; disengaged; (21); 4½ years' experience; neat draughtsman and colourist; details; specifications; surveying; assist with quantities.—Box No. 4474, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (24), desires engagement; over seven years' varied experience; neat and expeditious draughtsman; honours construction and architecture certificates; excellent references; moderate salary.—W. E. K., 34, Wingate Road, Hammersmith. 4417

ARCHITECT'S and surveyor's assistant; seven years' country experience, working drawings, details, specification, surveying, levelling, school work a speciality; entire charge of contracts, 32s.; month's free services.—Box 4408, BUILDERS' JOURNAL Office.

ARCHITECT-SURVEYOR'S assistant requires situation at once. Three building construction certificates, and Prelim. R.I.B.A.; articled to A.M.I.C.E. and M.S.A.; good all-round experience. Age 24.—Box 4492, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (33), disengaged; 14 years' experience in good offices; first-class testimonials, and references; can take charge; specimens sent; salary £2. — Box 4491, BUILDERS' JOURNAL Office.

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—knowledge of gas-engine; good refs.—T. S., 4, York Terrace, King's Road, Herne Bay. 4450

ARCHITECT and surveyor's assistant (24); eight years' experience; working drawings, details, design, surveying, specifications, quantities; student R.I.B.A., moderate salary.—Box 4495, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S assistant disengaged, 21 years' experience, comprising office routine, plans, specifications, quantities, outside supervision; measuring-up, levelling and surveying; good references; abstainer—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4494

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (24), seeks situation; 7 years' London experience. P.C. jobbing wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4404

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 4455

JUNIOR Draughtsman (19), desires re-engagement; assist generally; good refs.; town and country; shorthand; probationer; R.I.B.A. — C. Weston, The Laurels, Rotherfield, Tunbridge Wells 4376

JUNIOR Assistant (20) requires situation in surveyor's or builder's office, 3 years' experience with London surveyor; can assist in abstracting, working up, variations, etc.; willing worker.—W. Cooke, 102, Faraday Road, Wimbledon, S.W. 4333

MACHINIST seeks permanency; work spindle, planer, tenoner, morticer, dovetailer, sharpen saws, make cutters, take charge of small plant; country job preferred. — Machinist, 39, Cathnor Road, Shepherd's Bush, W. 4504

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

PLUMBER, gas, hot water, lead-laying and sanitary, wants job, or constancy; town or country. —S. W., c/o Editor, Box 4510, BUILDERS' JOURNAL Office.

SANITARY work wanted by practical man, 16 years' experience, iron or earthenware, capable to take charge, or would give estimate for good work; good references; age 40; abstainer.—Box 4499, BUILDERS' JOURNAL Office.

SHOP Foreman of joiners seeks re-engagement experienced, machinery, abstainer; reference; 12 years last situation; age 40.—T. R., 19, Second Avenue, Hendon, London, N.W. 4488

THOROUGHLY competent builder's book-keeper and general assistant requires engagement, 12 years' experience in London with builders and shopfitters; good reasons for leaving present berth; excellent references Age 32.—Apply Box 4414, BUILDERS' JOURNAL Office.

TO Property Owners.—Situation wanted on an estate or tenement property by a reliable man, aged 40, with a thorough practical experience of all repairs; capable of taking sole charge; distance no object.—Box 4503, BUILDERS' JOURNAL Office.

YOUNG Engineer (married), four years' Canadian experience, general engineering and concrete work (reinforced); returning to England, requires appointment; references from Can. Pack Railway Apply T. B., 2, Grange Road, Ealing. 4500

YOUTH (age 18) requires situation in builder's or surveyor's office. Desirous of learning estimating. Three years' previous experience.—Apply W. B., 8, Medley Road, West Hampstead, N.W. 444

YOUTH seeks situation with architect or builder good tracer, well up in p.c. and office work; excellent references.—J., 164, Wellesley Road, Ilford Essex. 448

Appointments Vacant.

EXPERIENCED representative wanted by well known firm of lock manufacturers; must have influential connection amongst leading architects and contractors in London district; state salary required and full particulars of experience. — Box 4427, BUILDERS' JOURNAL Office.

TRAVELLER wanted, with established connection amongst architects, builders, contractors, decorators, etc., to sell our Artificial Marble, on salary and Commission; must have exceptional reference as to ability. Apply by letter only, giving full particulars, and stating terms required, The Fassi Marble Company, Ltd., 46, Cannon Street, London E.C. 444

WANTED, for a permanency in the office of an old established firm of surveyors in the city, a youth of good appearance and education, with previous office experience, who can write a good hand quick and accurate.—Apply, in own handwriting with copies of testimonials, stating salary asked to Box 4457, BUILDERS' JOURNAL Office.

Business Wanted.

WANTED, a jobbing builder's business in London suburbs preferred. Apply, stating all particulars to Box 4415, BUILDERS' JOURNAL Office.

Businesses for Sale.

FOR Sale, a good old building business, in town of 10,000, at about £2,500, most of which could remain at 5 per cent. to good men; the business would suit joiner, bricklayer and painter; up-to-date shop and machinery.—Applicants for extended payment terms, must state amount of capital, age and class of work used to; good references indispensable.—Box 4452, BUILDERS' JOURNAL Office.

JOBBING builder and decorators' business Suffolk; old-established; freehold house and premises for sale.—Box No. 4475. BUILDERS' JOURNAL Office.

Partnerships & Practices

AN Architect and Surveyor practising in Essex anxious to collaborate or enter into partnership with another architect practising within easy distance of Chelmsford. — Apply "Essex," Box 4508, BUILDERS' JOURNAL Office.

Dissolution of Partnership

MR. A. E. TUTTE, architect and surveyor, having dissolved partnership with Mr. Cook (Cook & Tutte) and closed the offices at 394, Commercial Road, Portsmouth, has opened offices at 91, London Road, Portsmouth. 4

August 26, 1908. Volume 28, No. 707

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Architect and Client.

Two questions in our "Enquiries Answered" columns bring to mind the very anomalous position occupied by the architect before the law. One correspondent raises the old, old question about the legal possession of plans; another has, unfortunately, discharged the functions of an architect without previously entering into a definite agreement with his client, and he is now apprehensive about his title to his fees—which, by the way, are less than half what they ought to be. In such circumstances it is not easy to give comforting advice. Before the law, the architect is a pariah—he has no standing and no rights. Reading over an old judgment recently we perceived underlying the learned judge's remarks a train of thought that might be rendered thus:—"Here is this man, calls himself an architect, and claims fees—£300! For what? Did he erect the building? Did he supply the materials of which it was built? Did he supervise the putting together of those materials? Well, he came and looked at the work now and then. What else did he do? Made a few lines on a piece of paper—I could do that myself. Says he is paid for his abilities as an artist. But even an artist puts the colours on the canvas or carves his figure out of the marble. This man's work is about equivalent to palmistry; but as architecture is not declared illegal, and the defendant was fool enough to employ him, he must pay something. How much? Five per cent.? Oh, no! Say, seventy-five pounds, and no order as to costs." That is not an exaggerated interpretation of the kind of judgment that has been given in our courts when an architect has had the audacity to sue for his fees. The Royal Institute scale is binding on no one but the members. Judges in the High Courts have stated quite emphatically that they did not intend to be bound by it, or even to consider it. The bricklayers' trade union may stipulate for a certain wage to their members, and the requisition will be listened to with respect; but no judge would entertain for a moment the opinion of architects, as a body, concerning the correct remuneration to be paid to one of their number. Clearly, the architects are self-interested and therefore biassed; but of the bricklayers' trade union no such suspicion can be entertained! Even in the case of the possession of plans, the same feeling runs. An architect's skill as an artist is too intangible to be paid for; it is his plans that the client must have. They are material, they can be seen, felt, handled, and reused, when necessary, without the payment of further fees. That is the law—for architects—and so it is likely to remain unless the R.I.B.A. bestirs itself to obtain for its disciples equitable treatment, to say nothing of proper recognition and respect.

The Builder's Ungenial Critics.

Adaptation to environment is not a conspicuous characteristic of modern building. It was recently remarked by a writer in these pages that "the charm of the English village"—and of course the observation would admit of a far more extensive purview—depends greatly upon the fact that its old buildings are indigenous; they are almost entirely the product of the soil upon which they stand, and hence they harmonise beautifully with their surroundings. Modern country houses seldom comply with this essential condition of æsthetic charm. They are apt to present the appearance of having been "dumped" from foreign parts. As a matter of fact, nearly all their units of construction have travelled many miles by railway. Hence the incongruous and intrusive appearance of the White City at Shepherd's Bush, and hence the impossibility that any Garden City can ever fully satisfy the eye of the artist. Buildings that do not spring from the soil must always lack "the grace of congruity," in spite of picturesque design, and in defiance of the softening effects of the great age which, it may be conceded, their soundness of construction will enable them to reach. We claim no originality for these statements. They are current commonplaces, and have been very much in evidence during the present holiday season. Moreover, while admitting the facts, we cannot pretend to deplore them overmuch. This is surely one of the many cases in which sentiment must yield to expediency. It is a common experience that the country cottage that is loveliest to look at is the worst to live in. While heavenly fair to outward seeming, the hovel may be within a veritable inferno of disease and discomfort, its atmosphere may be stifling, and its lack of sanitation utterly barbarous, its ravishing thatch may teem with the germs of a dozen deadly diseases, and may catch fire by spontaneous combustion; and a logical conclusion to the indigenous building theory would be the production, in some districts, of the picturesque but primitive mud and turf hut. Visual gratification is not the whole duty of the modern builder. He is not bound to be picturesque, but he is under many obligations to be practical. He is largely controlled by considerations of cost, and is governed in almost every operation by the enforcement of by-laws that prescribe or restrict size, form, or materials—any or all of them. He may not, hampered and harassed, and necessarily hard-headed and prosaic, as he is, succeed in charming the supersensitive eye of the amateur of æsthetics; but he is bound to produce a dwelling that will pass the test of the sanitary inspector, that, on the whole, is a healthy, comfortable and convenient home, and that, to the normal eye of the average person, is, in most cases, by no means hideous to look upon. He thus ministers to a solid satisfaction of the mind, and can therefore afford to regard with equanimity the abuse heaped upon him and all his works by those exquisite and lofty idealists who, at this season of the year, are allowed to fill the columns of the daily newspapers with cheap copy and cheaper sentimentality.

A Lady Critic of Country Cottages.

The feminine point of view as to the planning and internal arrangement of a dwelling has been often ably represented, and has no doubt afforded architects many a useful hint, as well as much searching of heart. It is obviously a matter upon which we are bound to defer to the ladies, even when we are reluctantly compelled to deny ourselves the pleasure of complying with their requests; for who should know the housewife's needs so well as she herself? "A Woman," writing in a northern contemporary, makes some very palpable hits with respect to the "domestic interiors" at the North of England Model Cottage Exhibition at Walker-on-Tyne. The model cottages there (of which, by the way, we show a few designs on pages 140 and 141 of the present issue), "A Woman" declares, repeat, in many instances, "old-fashioned, clumsy methods of doing things." She does not like the common form of copper or furnace-pan into which the water has to be laboriously poured, and from which the suds must be as tediously baled out. She suggests for the filling a conduit or pipe, and for the emptying a plug. This is doubtless very good doctrine; but, as usual, the difficulty arises in the attempt to apply it. The sinks excited the critic's "unholy derision." They are so small that she regarded them as

mere toys. She admires the exhibition committee's insistence on having a bath in every cottage, but, holding that the ideal position for a bath is on the bedroom floor, she objects to its being placed "in the scullery, sometimes close to the back door, or by an unplastered brick wall, in such positions as make one shiver for the bather in winter!" She further contends that a bath placed in a scullery should be accessible from the passage or hall, so that it may be reached without passing through the living-room. Then, as a matter of course, the critic complains about the storage accommodation, thus confirming the architect's impression that women are insatiable as to cupboards and wardrobes. This lady particularly demands a bicycle cupboard. Also she deprecates the absence of lobbies. "In some of the roomiest and most attractive cottages there is practically no lobby worth speaking of. You simply open the door, and a step brings you to the foot of the stair or to the door of the living room. "This is so sudden!" as other ladies are understood to have remarked in somewhat different circumstances. "There is not even room to bestow a wet umbrella, and one wonders how the doormat is to be placed." She bans the tiny panes shown in some of the upper sashes. They may be very pretty to look at, but they are very tiresome to clean. Finally, she condemns venetian blinds as dust-traps. She thinks that in order to secure these reforms, "what is needed is a lady architect, . . or, failing that, an architect who is married and not above taking his wife's advice about things that she knows better than he does." Surely these are desperate alternatives. We are credibly informed that in these hard times many architects are too poor to marry; and that a woman's ideal equipment for a cottage would cost about twice as much as the rearing of the structure.

London Building Act Amendments.

It was unofficially announced, last Thursday, that the Building Act Committee of the London County Council have decided to recommend to Parliament, next session, an amendment of the Building Acts, by which in the case of buildings constructed by reinforced concrete lower minimums of wall-thickness will be sanctioned. This somewhat tardy recognition of the obvious fact that walls constructed of reinforced concrete need not, to ensure stability, be nearly so thick as those of brick and stone, is mere justice, and comes as a welcome relief from an intolerable burden to practitioners of the modern system of building, whose operations have been hitherto greatly thwarted and hampered by absurdly inapplicable restrictions; and, by stamping the new system with the hall-mark of official sanction, it will remove the last lingering doubts of hesitating capitalists, and give an immediate impetus to building. Readers of this journal need not be reminded that modern enterprise in the building of huge business premises is hampered by other antiquated regulations that ought to disappear if the revision of the Acts is to be at all adequate to modern conditions. There is, for instance, the rather galling insistence on the division into comparatively small apartments of business premises in which large rooms are essential. It is to be hoped that this matter, and other details of importance, will receive due attention in the revision; the draft of which is awaited with keen interest.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Aug. 31	PARISH CHURCH AT BISHOPSWEARMOUTH.—Limited to Sunderland architects. Conditions from H. E. Hinckley, 68, Cleveland Road, Sunderland. Deposit one guinea.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 7	BOAT SHELTER, INVERNESS. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
Oct. 31	*COUNTY HIGH SCHOOL FOR GIRLS' ROMFORD.—Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
No date.	SITE-PLAN FOR COTTAGE EXHIBITION, SWANSEA, 1909. Gold, silver, and bronze medals, together with sums of £20, £15, and £10. Particulars from Henry R. Aldridge, Secretary to Exhibition, 7, Gower Street, Swansea.
No date.	*COUNCIL CHAMBERS AT BELLSHILL, BOTHWELL. To cost £2,000. Site plan and conditions from Robert Anderson, Parish Council Offices, Bellshill. Deposit one guinea.

** These competitions have been unfavourably reported upon by Correspondents.*

Unfair Competitions.

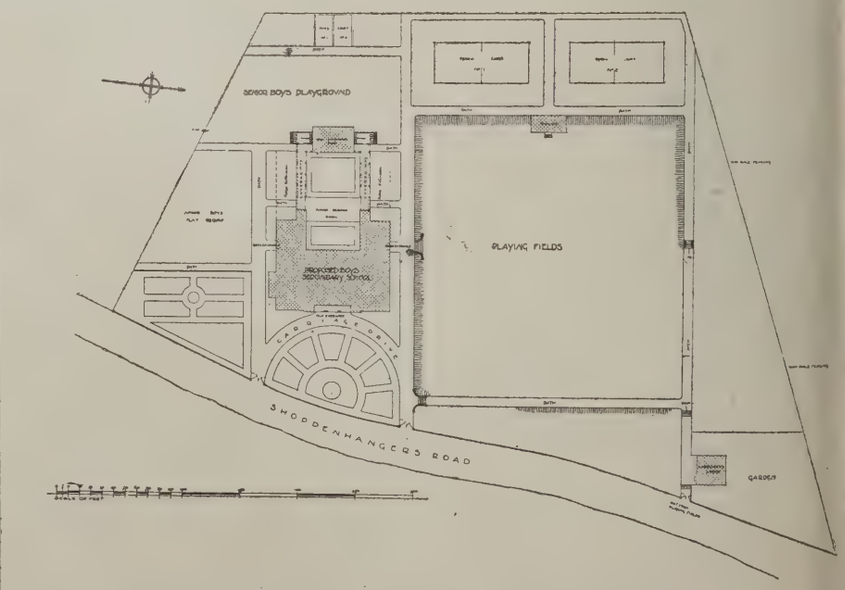
A Glasgow Correspondent writes as follows:—

I see from the columns of your valuable paper that you take up a strong position on the conduct of architectural competitions. May I, therefore, suggest that in your weekly list of competitions open you only include such as issue reasonable conditions and give no countenance or free advertisement to those who seek to take unfair advantage of the architectural profession. It would probably save a good deal of correspondence and annoyance to your readers who generally have to lodge a deposit in sending for some conditions of competition which are only fit for th waste paper basket. For instance, yo mention in your last two issues the Bells hill Competition, for which no architec with respect for his profession will com pete. On inquiry, you will find that th conditions in connection therewith pro vide for a fee to the successful architec of 3½ per cent. on the total probable cos £2,000. The above percentage is to cove beyond all ordinary services three sets c plans. No premiums are to be awarde in competition, and the only suggestion c an assessor refers to one who will repo on the "estimates," which seem to be th principal consideration. Plans, includin enlarged details, are to be submitted b September 1st, within about three week of first notice, while, of course, there the usual £1 deposit to lodge before or can see the conditions. It is to be hope that architects will bestir themselves, an do something by way of protesting again and exposing competition methods an conditions such as the above, and by a means abstain from encouraging same b competing.

[Our correspondent will see that we hav adopted his suggestion so far as to st in our list those competitions that hav been unfavourably reported upon b correspondents. More than that we ca hardly be expected to do. There is, u fortunately, no way by which we ca obtain information earlier than o readers as to the conditions of any com petition announced in our column Though we apply for a copy of the co ditions in such competition, we a seldom favoured with it, and we a dependent, therefore, on information r ceived from intending competitors. is hardly necessary to say that it usually the promoters of unfair comp titions that are most chary of forwar ing a copy of the particulars and cond tions. We shall be pleased to give pu licity to complaints respecting any com petition, but our correspondents mu send also the printed conditions, as proof that their statements are we grounded. These will be returned i mediately after perusal.]

Secondary School, Cleckheaton.

In the architects' competition in desig for the new secondary school at Clec



SECONDARY SCHOOL FOR BOYS. MAIDENHEAD DESIGN PLACED SECOND. BLOCK PLAN.

heaton, it is reported that 64 sets of plans have been sent in. The services of an expert assessor have been engaged, with whose advice the committee will make their selection.

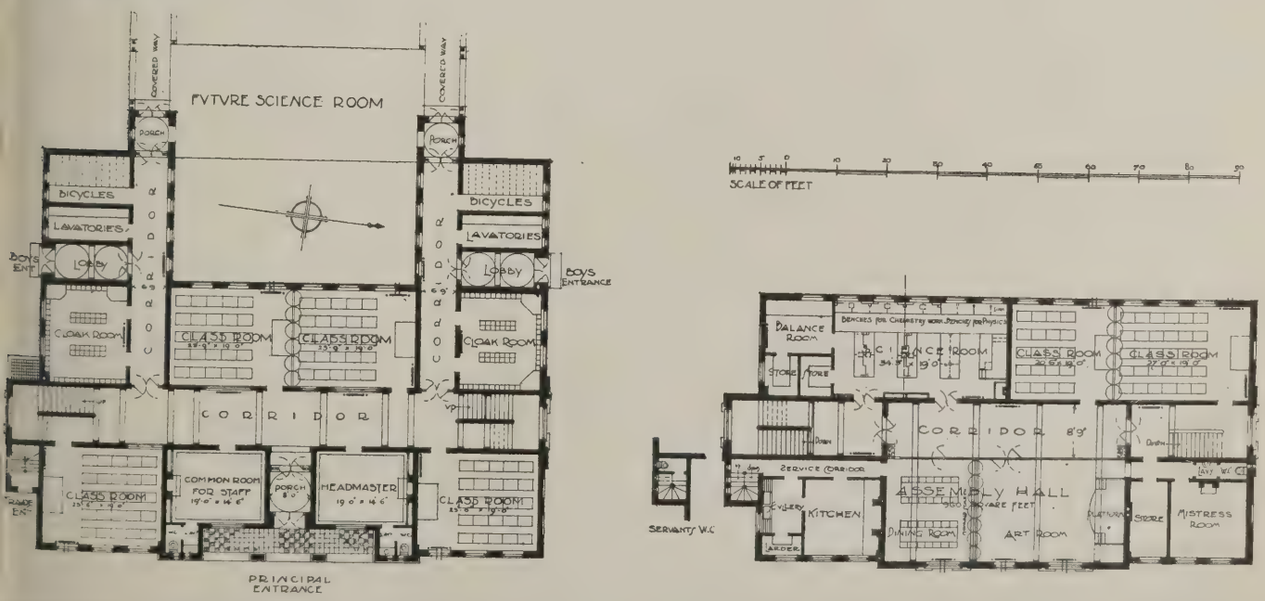
Convalescent Home, Worthing.

A design submitted by Mr. E. L. Lunn, of Guildford, has been selected for the Royal Surrey County Hospital Convalescent Home at Worthing. Six designs were received, and the selection appears to have been made by the Hospital Committee without professional assistance.

Workhouse Extension, Dudley.

Mr. C. E. Bateman, F.R.I.B.A., of Birmingham, the assessor in the above competition, has delivered his report. The first place is awarded to Design No. 25, submitted by Messrs. Nicol and Nicol, of King's Court, 117, Colmore Row, Birmingham, and special mention is accorded to the authors of designs Nos. 22, 23, 28, 26, and 31. The assessor recommends the successful design for erection.





COMPETITION FOR A SECONDARY SCHOOL FOR BOYS, MAIDENHEAD. DESIGN PLACED SECOND. WALLIS AND BOWDEN, ARCHITECTS.

This design was placed second out of 145 designs submitted. The assembly hall is situated on the first floor, and is so arranged that it can be used as an art room (with north light) and a dining room at the same time, each room having direct separate access; it is also planned so that it can be enlarged on special occasions by folding up the partition dividing it from the corridor adjoining. The dining-room is served direct from the kitchen adjoining, and the mistresses' room can be used as a retiring room from the stage. Separate entrances have been provided for the senior and junior boys, each having cloak, lavatory, and bicycle accommodation. Special attention was paid to the future extension, which can be easily obtained on the ground floor, without interfering with the light to any of the class-rooms or the corridors. The estimated cost is £5,075.

Proposed New Works.

L.G. Board enquiries into proposed expenditure by public bodies have been recently held with regard to the following works:—

Water supply works and plant: Acton U.D.C., £572; Billinge U.D.C. £12,000, including construction of two reservoirs to hold 8,000,000 and 144,000 gallons respectively (August 26); Oswaldtwistle U.D.C., £4,010 (August 25); Hexham R.D.C., £1,200 for Corbridge (August 25); Danby R.D.C., £300 for Ainthorpe, £200 for Castleton (August 25); Gas undertakings and plant: Oswaldtwistle U.D.C., £2,530 (August 25). Bridge construction and widening: Sunderland B.C., £2,010 (August 25). Sewerage, drainage, and sewage disposal works and plant: St. Mellon's R.D.C., £5,500 for Rogerstone (August 28), Northallerton U.D.C., £8,950 (August 27); Hatfield R.D.C., £5,000 (August 26); Acton U.D.C., £5,000 (August 25); Halifax B.C., £9,000 (August 26); Whitchurch U.D.C., £160 (August 27); Swansea R.D.C., £13,000 for Sketty (August 25); Llandaff and Dinas Powis R.D.C., £6,841 for Llandaff (August 26); Oswaldtwistle U.D.C., £4,880 (August 25). Street improvements, new roads, public parks, and pleasure grounds: Oswaldtwistle U.D.C., £4,000 and £3,300 (August 25); Flixton R.D.C., £867 (August 25). Various: Sunderland B.C., £3,809 for public baths and washhouses (August 26); Llantrisant P.C., £3,500 for burial ground (August 27); Acton U.D.C., £19,100 for public offices (August 25); Sunderland U.D.C., £1,288 for underground conveniences (August 26); St. Pancras B.C., increase in housing scheme (August 24).

A conference of chairmen and vice-chairmen of committees of Sunderland Corporation, convened recently for the purpose of dealing with the unemployment of the district, decided to recommend the further extension southward of the sea wall at Roker, and to obtain estimates for the construction of two salt water baths at Roker—one (for men) to be 110ft. by 30ft., and the second (for women and children) 70ft. by 20ft.

For the work of constructing the new central public library for Walthamstow, towards the cost of which Mr. Andrew Carnegie has given £10,000, Mr. J. Williams Dunford is architect.

An assembly hall is to be erected at Horsham, at the estimated cost of £2,750.

The Hampshire County Council offices at Winchester are to be enlarged, and the Surveyor is to prepare detailed plans and estimates for the work, and lay them before the November meeting of the Council. Mr. T. G. Jackson, R.A., or some other eminent architect, is to be consulted as architectural advisor.

A report on the condition of the church at Natland, Kendal, prepared by Messrs. Austin and Paley, of Lancaster, states that the fabric is nearly beyond repair, and the erection of a new church, at a cost of £4,500, recommended. As £3,000 has been already subscribed by two donors jointly, the parishioners have decided to make early application for a faculty.

For the construction of a new lock at Portsmouth Dockyard, the tender of Messrs. Morrison and Mason, of Glasgow, has been accepted; £940,000 is to be spent on structural works, entrance caissons, etc., and £60,000 on machinery. The lock is to accommodate a ship 850ft. long, but including the caisson and outer works the total length will be 921ft. A 110-ton crane will be erected near by. The lock has been designed, and the plans and specifications have been prepared, by the Naval Works Department at Portsmouth.

Stockport has accepted Mr. Andrew Carnegie's offer of £10,000 towards the cost of constructing a free library.

The Boys' Charity School, Sheffield, has been conducted, since 1810, in a building overlooking the parish churchyard. For some years the trustees have been anxious to erect a more suitable building on their freehold field in Psalter Lane, and now that a lady has given £4,500 for this purpose, the project will no doubt soon materialise.

A municipal building scheme that will probably be placed before Dunfermline Town Council next month provides for the erection of fifty cheap houses for workmen. A sketch plant outlining the scheme has been prepared by Mr. A. W. Bell, the burgh engineer.

Chichester's ancient Guildhall, in Priory Park, is to be thoroughly repaired in accordance with specifications that have been prepared by Mr. Prior. The amount to be spent on the work depends on the sum that can be raised by public subscription. The money in hand is about £560.

A Garden City or Model Village at Totley Rise, near Sheffield, is proposed, and a preliminary prospectus has been issued.

Correspondence.

Romsey Abbey.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Your leader in last week's issue of THE BUILDERS' JOURNAL, concerning Romsey Abbey, reveals a state of things which should cause us shame. So simple a proposal as the erection of a new porch is gravely stated to be "greatly disturbing the minds of the lovers of ancient buildings," and the inference is plain that the opponents of the scheme consider that in all England no architect can be found capable of carrying out a structure on even so modest a scale as this, and joining it on to the older work. This is a confession of ineptitude resulting from that pernicious doctrine that what is old can never be surpassed. Curiously enough, these good people forget that nearly every great church in Europe took centuries to build, and contains specimens of the style of each successive period. Westminster Abbey was commenced by Edward the Confessor, and finished 700 years later by Wren—each century adding its quotum and taking no heed of what had gone before.

The mediæval builders were progressive in their art, and considered all that preceded their own development of it as obsolete and crude. Hence we find Norman chancels in hundreds of cases replaced by Early English ones, and so it was in the centuries which followed. But to-day we have been taught that we can do nothing worthy to be placed within a thousand miles of the work of our forefathers.

Romsey Abbey may or may not need a new porch. The point is essentially a practical one, and if there is a necessity for it, it is difficult to see why it should not be put up. And why should we stay our hand because there are no plans or data to guide us as to the design of the structure which it is supposed formerly stood there? A like dilemma did not prevent Inigo Jones from adding a Classic portico to Old St. Paul's, and it is certainly not on record that the then Chancellor "wisely decided to defer judgment . . . and in the meantime fortify himself with the opinion of experts!" And ye Inigo Jones holds a very sacred place among the disciples of this school—merely one must suppose, because he has been dead these 250 years.—Yours truly,

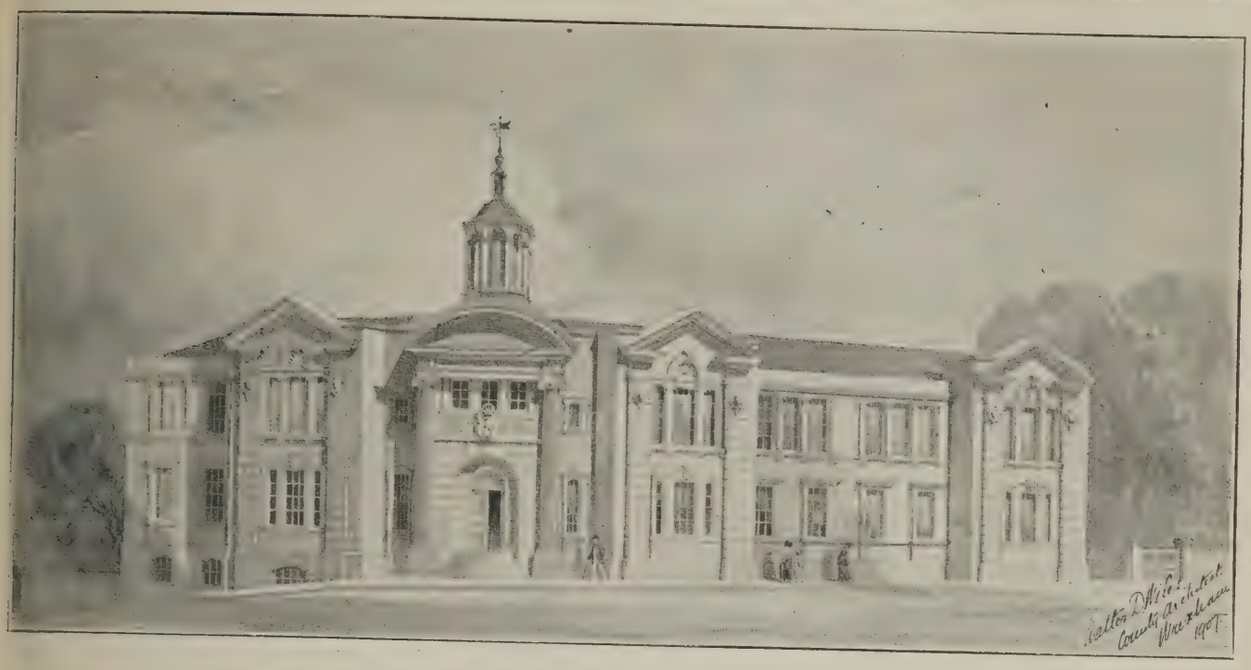
FREDK. CHATTERTON.

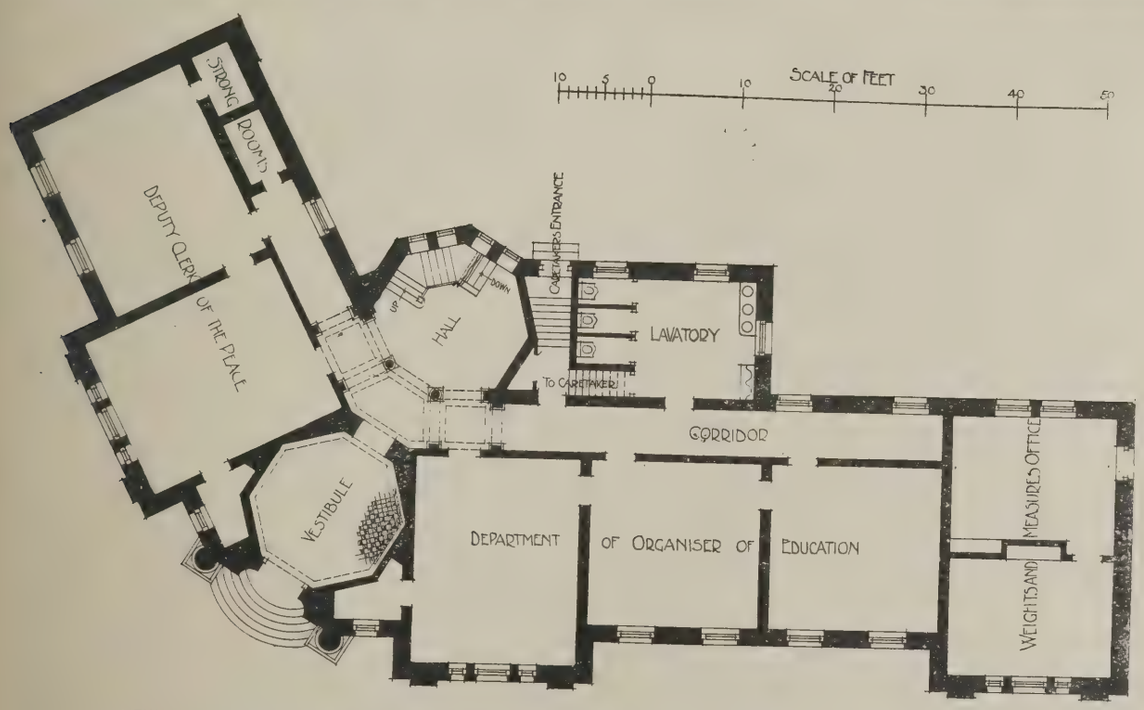
[Our correspondent has read more into our leader than we intended it to convey and we submit that our remarks were perfectly innocent of even the germs of the heresies developed in his somewhat strained inferences. Certainly we have very robust belief in the skill and taste of modern architects, and we think that our correspondent might have been more just to our point of view if he had exercised upon the following passage his extraordinary powers of inference: "Sentimentality is apt to run riot against every attempt, wise or foolish, at restoration." Surely he might have deduced from this that we are not to be classed among the extremists, but are disposed to adopt a judicial attitude, and to treat each case as "wise or foolish"—or neither, according to its particular merits.]

NEW COUNTY OFFICES, RUTHIN.

These offices, which are now in course of erection by the Denbighshire County Council to meet the requirements of the Education officials of the county, are being built from the designs and under the supervision of their county architect and surveyor, Mr. Walter D. Wiles, on a site presented by the Ruthin Town Council who have also placed their local limestone quarry at the disposal of the County Council. The building comprises, in the basement, storage rooms, heating chamber, etc. On the ground floor is a octagon vestibule, 16ft. in diameter, with the main staircase beyond, both panelled and fitted up in Austrian oak, and having polished granite columns. The rooms on this floor are for the use of the Deputy Clerk of the peace, and the Organiser of Education. Attached to this floor is lavatory accommodation for the use of the whole staff. On this floor level, but not communicating, are the Weights and Measures offices for the western part of the county. On the first floor, over the main staircase, is a small colonnade of polished granite columns, and the rooms are for the use of the Clerk of the Peace and Education staff. Four strong-rooms for the various departments, and a caretaker's residence, are provided. In the construction local limestone facings, with dressings of Runcorn stone, have been adopted. The main entrance is flanked on each side with polished emerald pearl granite columns 22ft. high. The steps are of Idle stone and the roofs covered with green slates. The general contractor for the work is Mr. William Hopkins, builder, of Birmingham. The heating, which is on the low-pressure system, is by Messrs. Dilworth and Carr, of Preston. All the floors are of reinforced concrete, by Messrs. Homan and Rodgers, of Manchester.

THE FORMAL RESIGNATION OF THE BRADFORD CITY ARCHITECT, Mr. F. E. P. Edwards, was read at a meeting of the Finance Sub-Committee of the Bradford Corporation on August 21st, and was accepted with an expression of regret at the loss of his services. Mr. Edwards states in his letter that he is to be allowed by the Sheffield Corporation to visit Bradford as often as he may deem it necessary until the Town Hall extension has been completed.





NEW COUNTY OFFICES, RUTHIN. WALTER D. WILES, COUNTY ARCHITECT. (*See opposite page.*)

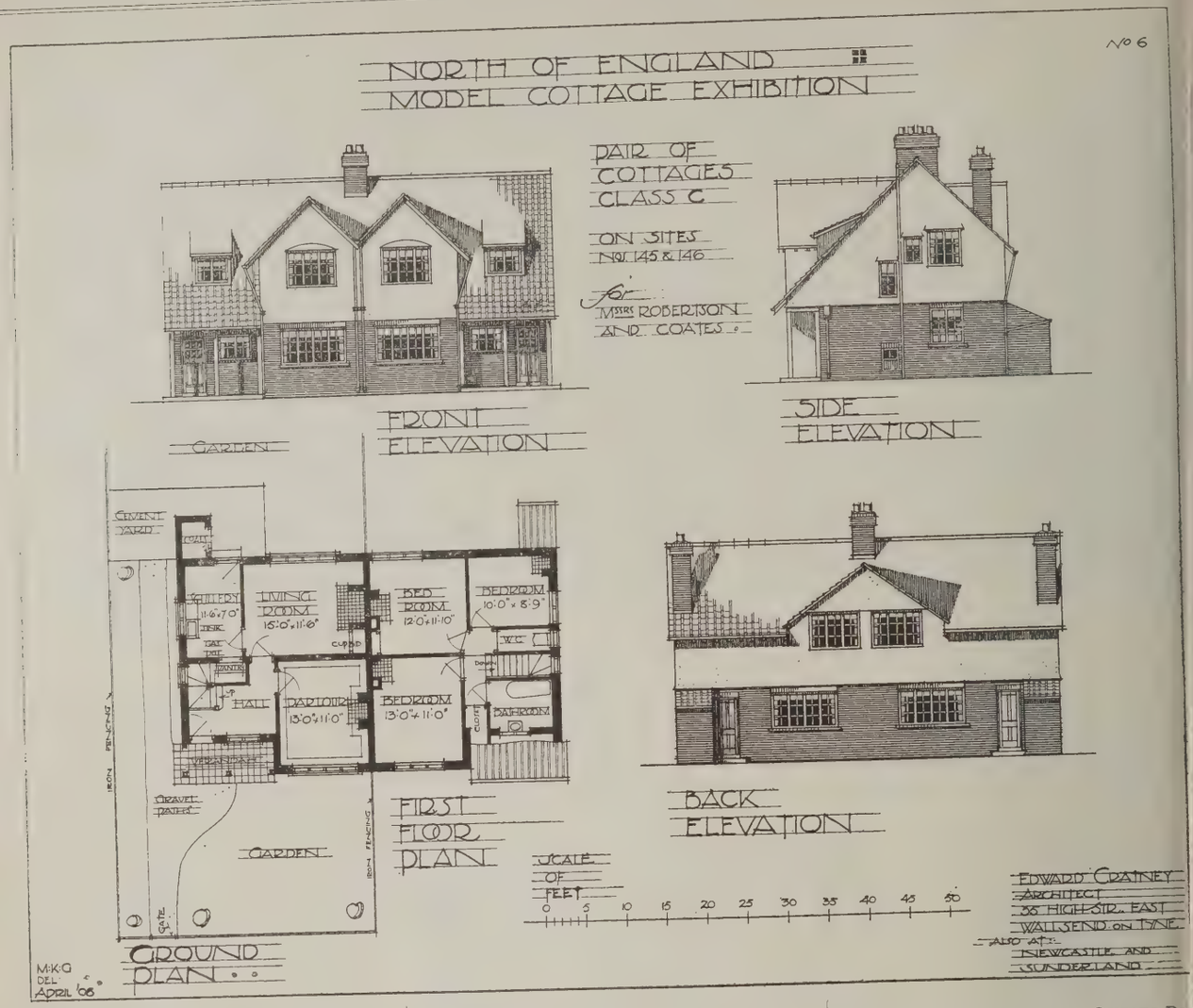
Buildings in Progress.

dditions to St. Andrew's Parish rch, North Berwick, have been built m designs by Messrs. Henry and Mac-aan, of Edinburgh, and have cost rly £3,000. They include a new ch, in the tympanum of which is a re of St. Andrew carved by Mr. W. nie Rhind, R.S.A., while a tower 18ft. are on plan is 93ft. high. The style arly English.

he interior of the parish church of ston-in-Gordano has been carefully re-ed, under the direction of Mr. F. Bligh d, F.R.I.B.A., of Bristol. The carved bbean pulpit, which had been painted has been cleaned and oiled and restored to its original purity, a framed modern dado round the walls has been removed, and the masonry pointed to correspond with the other work. The interior arch of the south porch has been repaired, and the adjoining piscina uncovered and cleaned. The Sanctus bell has been repaired and rehung, and the masonry carrying it has been restored. In preparing to lay red encaustic tiling in the nave, the slabs of two small altar tables were found beneath the old stone floor. They are of polished stone, incised with five crosses, and decorated with scroll-work of blue fresco.

The New Hippodrome at Middlesbrough, which was opened on August 15, will hold 3,000 persons. It is built of red brick, with buff terra-cotta dressings. Mr. G. F. Ward, of Birmingham, is the architect, and Messrs. J. Parkinson and Son, of Blackpool and Newcastle, are the builders.

The Temple Church, London, E.C., which will be re-opened in October, is being rather extensively repaired internally. The altar, which was erected in 1682, and reconstructed in 1840, is being raised 2ft. from the ground, as also is the reredos. The latter shows carving by Grinling Gibbons. A new communion-rail of Purbeck marble is being erected. This will be quite innocent of decoration, to be in keeping with the columns of the same material supporting the inner circle of the church roof. The east window is also being repaired.



Torrington's new hospital, of which the foundation-stone has just been laid, is estimated to cost £1,190. It will comprise only two wards, one for males and the other for females, and each ward will contain two beds. The building will be of local stone, with brick facings. Mr. W. C. Medland is the architect, and Messrs. Charles Heard and Son, of Torrington, are the builders.

The Parish Church of St. Cuthbert, North Meols, Southport, is to be renovated and extended at an estimated cost of about £2,500. The present building was erected in 1730, but the foundation dates from Norman times. The architect is Mr. Isaac Taylor, F.R.I.B.A., of Manchester, and the contract is in the hands of Mr. J. Pilkington, of St. Helens.

A new Wesleyan Methodist chapel at Pateley Bridge, Yorks, of which the foundation-stone has just been laid, has been designed in the Decorated style, by Messrs. W. J. Morley and Sons, of Bradford and London. The contracts are let to various local tradesmen, and the total cost is estimated at £2,500.

The architect for the new Benedictine Abbey to be built at Dulwich is Mr. J. N. Comper, and it is stated that the work is to begin almost immediately.

Westminster Roman Catholic Cathedral is undergoing improvements to the interior in view of the coming Eucharistic congress. The workmen engaged include a number of Italians, who are employed in the decoration of the great galleries.

Notes and News.

BARGAINS IN BRICKS may now be effected in the Peterborough district, where, it is reported, a certain class of brick, much in demand at 28s. per thousand a couple of years ago, is now going a-begging at 8s. per thousand. Millions of bricks are in stock, yards are being closed, and plant dismantled.

* * *

ROYAL SANITARY INSTITUTE LECTURES to be given at the Parkes Museum, Margaret Street, W., during the forthcoming session, which begins on October 7th, include three by Mr. H. D. Searles Wood, F.R.I.B.A., on sanitary building construction and planning, and soil and local physical conditions, and four by Mr. John Edward Worth, M.Inst.C.E., district engineer to the London County Council, on sewerage, sewage disposal, scavenging, and the disposal of house refuse. Single lectures will be given as follows: Mr. Henry Adams, M.Inst.C.E., on calculations, measurements, and plans and sections; Mr. J. Osborne Smith, F.R.I.B.A., on ventilating, warming, and lighting; Mr. J. Wright Clarke on the details of plumbers' work; and Mr. W. C. Tyndale, M.Inst.C.E., on house drainage. There are also the usual lectures on elementary statics, on physics, chemistry, and meteorology, on sanitary law, and on the duties of sanitary inspectors.

THE REBUILDING OF THE QUEBEC BR is being undertaken by the Cana Government. A board of three emi engineers will be appointed to pre plans and superintend the construct

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ERRATUM.—By an unfortunate graphical error, the address of M Richard Crittall and Co. was given in announcement of last week as " Wardour Street. Messrs. Crittall asked us to state that their address i 197, Wardour Street.

* * *

WEIGHT OF CRUSHED STONE.—A ence to any engineer's hand-book wil the weights of a unit volume of v kinds of stone, but the allowance made for the voids in a volume of cr stone is generally a matter of discr Prof. Ira O. Baker, of the Univers Illinois, has lately conducted a ser experiments for the purpose of asce ing the proportion of voids in cr stone of various sizes, and the resul thus summarised:—The mean coef by which to multiply the weight cubic foot of solid limestone to obta weight of a cubic yard of crushed stone is as follows:—For ½-in. scree 15.5; for ½-in. to 2-in. stone, 14.6; fo to 3-in. stone, 15.2. For trap-ro corresponding coefficients are as fo —For ½-in. screenings, 14.6; for ½ 1½-in. stone, 13.5; for 1½-in. to 3-in. 13.9. Copies of this bulletin may tained gratis from Urbana, Illinois

ARCHITECT'S PROTEST AGAINST EDUCATION COMMITTEE.—Mr. Edward Holmes, architect, of Birmingham, has addressed a letter to the President of the Board of Education, in which he complains that, in his opinion, he has been treated unfairly by the King's Norton and Northfield Urban District Council, and its Education Committee, in denying him certain official information necessary to the statement of his case to the Board, in his proposed application for an inquiry into his dismissal "without just cause or reason, as the Council's and the Education Committee's appointed board's architect for the erection of the Cotteridge Council School buildings."

* * *

THE NOTABLE BUILDINGS AND BEAUTIFUL SCENERY OF TUNBRIDGE WELLS are most attractively represented in an excellent guide-book which has been prepared by Mr. W. H. Watts. The buildings illustrated include the remains of Bayham Abbey; the more or less remarkable castles of Tonbridge, Hever, Brambletye, and Penshurst; and several churches, old and new. The district, besides being rich in historical interest, is notoriously one of England's most admired beauty spots, and, both in letterpress and in pictures, Mr. Watts has made excellent use of his abundant opportunities. A special "Walks and Drives" supplement is contributed by Mr. F. Roberts. The book is published, price 6d., by Photocrom Co., Ltd., for the Tunbridge Wells Tradesmen's Association.

* * *

A tunnel more than a mile in length, said to be the longest in existence for use by municipal electric surface car lines, has just been opened for operation by the Genoa Street Railway Company. It connects Genoa with the adjacent large commune of Rivarolo. The constructive works were begun on June 1st, 1905. The boring was accomplished by 900 workmen, partly by hand, by electrical machines, and by compressed air machines.

* * *

TO PRESERVE THE STONEWORK OF WESTMINSTER ABBEY, a liquid is being sprayed over it, with the object of preventing further decay. The nature of this liquid is not stated, but it may be remembered that the late Sir George Gilbert Scott sought to harden the decayed internal surfaces by the application of shellac dissolved in spirits of wine. The western and northern side of the Great Cloister, which is now the scene of the spraying process, were built about 1380 by Abbot Littlington.

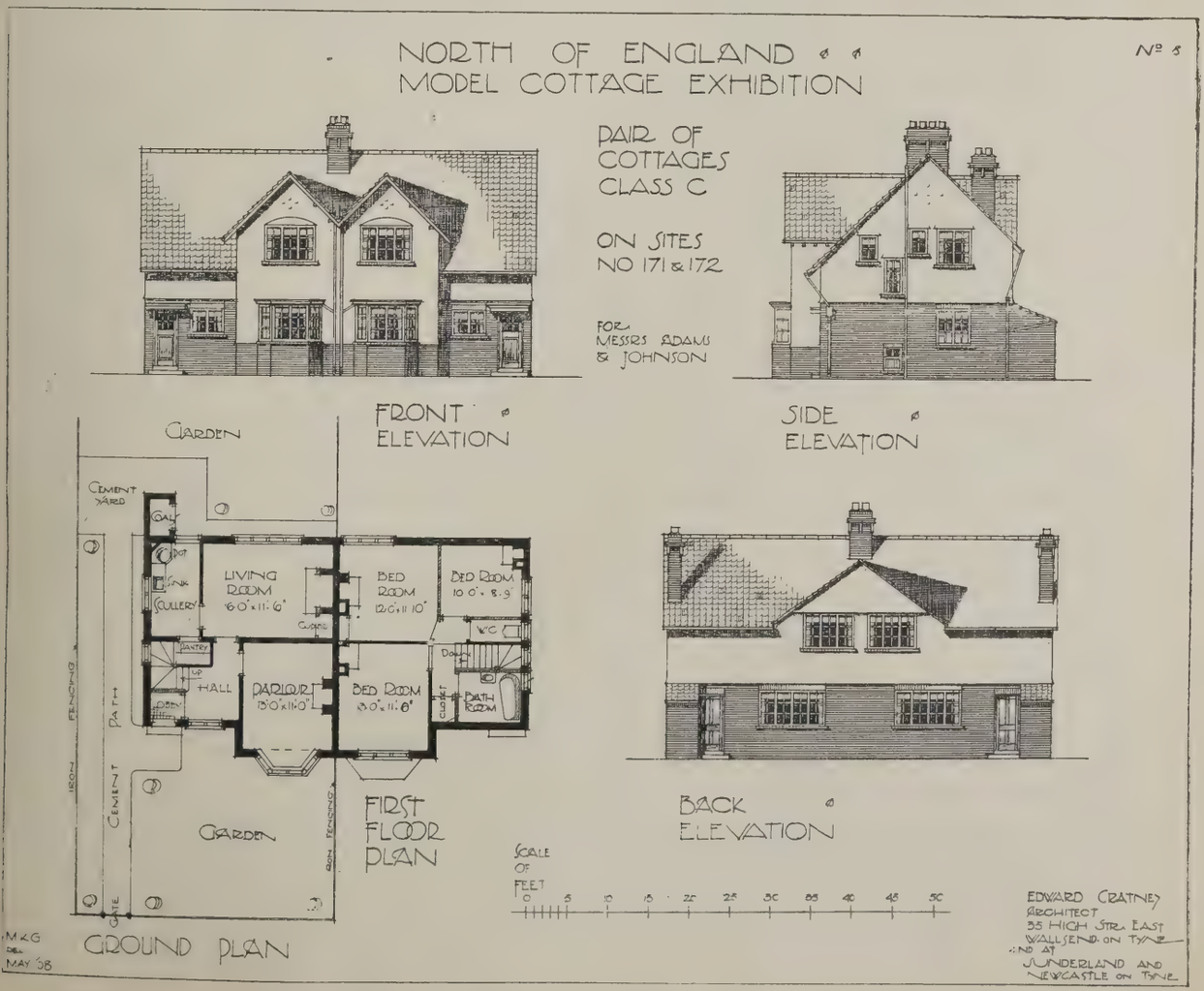
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MIDLAND COUNTIES BUILDING TRADES EXHIBITION.—Competitions for students and apprentices are to be held in connection with this exhibition, which, as announced in our advertising pages, will be held at Bingley Hall, Birmingham, October 12th to 21st. A committee of architects have been responsible for the arrangement of the syllabus, and for the successful competitor a handsome certificate has been designed in line by Mr. Sidney H. Meteyard, of the Birmingham School of Arts. The entries for these competitions close on August 31st.

Obituary.

DEATH OF MR. H. H. STANNUS, F.R.I.B.A.

We regret to announce the death, at Hindhead, Surrey, of Mr. Hugh Hutton Stannus, F.R.I.B.A. A.R.C.A. Mr. Stannus was born at Sheffield, and studied at the local school of art. For some years he was lecturer on architecture and applied art at the Royal College of Art, South Kensington. He was also an attractive writer on art subjects, as well as a prolific lecturer and speaker. Noted for his devotion to Alfred Stevens, he wrote the life of that eminent sculptor, and was commissioned to superintend the completion of the Wellington memorial in St. Paul's Cathedral, which Stevens left unfinished. He was an active and a distinguished member of the Royal Institute of British Architects, of which he became Ashpitel Prizeman in 1873, Institute Medallist for Essays in 1877, Associate in 1880, and Fellow in 1887.



Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

Qualifying as Civil Engineer.

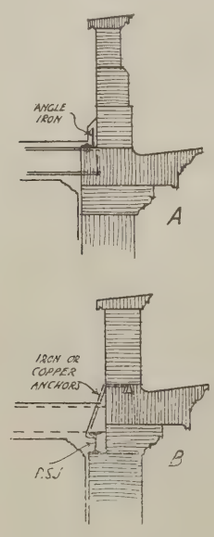
BRISTOL.—G.H. writes: "Could you give me any information as to examinations to enable me to qualify as a civil engineer? I am anxious to take up studies in that direction?"

The aim of all aspirants in civil engineering should be to obtain the Associate Membership of the Institution of Civil Engineers. This would be of material advantage in any branch of civil engineering; but the examination is a very severe one, and requires great proficiency in mathematics. Particulars can be obtained from the secretary, Dr. Tudsbery, at the Institution of Civil Engineers, Great George Street, Westminster. If our correspondent desires to specialise in municipal engineering, he might study for the examination of the Incorporated Association of Municipal and County Engineers, which could be taken as a prelude to the other. Apply to Mr. Thomas Cole, secretary of the Association, 11, Victoria Street, Westminster. It is very desirable that "G.H." should obtain practical experience on engineering works, or that he should be apprenticed to a civil engineer.

Projecting Cornice.

PORTSMOUTH.—"PROVINCIAL" writes: "What is the London method for making safe the heavy cornices now in vogue? It seems nothing to have a cornice projecting 3ft. from an 18in. wall."

Cornices in London are not allowed to project more than 2ft. 6ins. over the public way, and must be weighted or tied down to the satisfaction of the district surveyor. The example shown in your sketch (not reproduced) would not appear



to be in need of any further security than that which is afforded by the parapet wall, or blocking course, shown, as it seems quite stable when worked out statically, as a cantilever. If the parapet were lighter, some additional means of tailing-down might be desirable, such as a section of steel joist or angle bolted to the ends of floor joists, as sketch A; or anchor ties might be fitted to a joist fixed at a lower level, as sketch B. There is no stereotyped method. G.

Stone Preservation.

EDINBURGH.—"W." writes:—"Some time ago I noticed that important experiments had been made by Professor Church, and that an elaborate report had been prepared by him on the subject of the preservation of stone. Can you direct me where this report can be obtained, and, if possible, advise as to the best approved preservative for free-stones?"

We believe this report was prepared for Parliament in connection with the preservation of the stone in the fabric of the Palace of Westminster. It can be obtained from Messrs. Eyre and Spottiswoode, Ltd., Government Sales Offices, New Street Square, London, E.C., or other Government publishers. We believe Professor Church recommends baryta water. At Westminster Abbey Professor Lethaby is using limewash—with satisfactory results.

Property in Sketch-plans.

NEWCASTLE-ON-TYNE. — "A.B.C." writes:—"I have prepared sketch-plans of business premises for clients in a distant town. After a lapse of some weeks, they inform me that they have decided to modify their original proposals, and to engage a local architect to act for them, and ask for my account. Can I legally demand the return of my sketch-plans?"

You cannot legally demand any plans or drawings from a client. A lawyer charges for verbal advice—and, very often, bad advice—which may cost his client hundreds of pounds if followed. But our lawyers and judges have held that an architect, in the absence of an agreement is not to be paid for his advice, but for the bits of paper upon which he sketches his ideas for the information of other people instrumental in the erection of a building. So your clients can retain your sketch-plans as proof that they have not been defrauded of their money. And if you have to sue for your fees, the learned judge will decide how much these pieces of paper are worth. Your skill, experience, or position in the profession have no part in this assessment.

Drainage of Country Houses.

SOUTHEND-ON-SEA. — "STONEWALL" writes:—"Will you advise me how to obtain information with respect to systems for the disposal of drainage from isolated country houses."

"The Drainage of Town and County Houses," by G. A. T. Middleton, A.R.I.B.A., 4s. 6d. post free from this office, has a chapter on disposal works; but there is no work devoted solely to this subject, and probably there will be none until the Royal Commission on Sewage Disposal issues its long-awaited report on artificial purification works.

Scale of Architects' Fees.

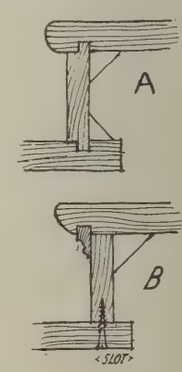
MANCHESTER.—"A.B." writes:—"I am a clerk of works, and was instructed to prepare plans for a pair of semi-detached houses estimated to cost £650. Additions by the owner will bring the cost to £700. It was necessary for me to prepare three sets of plans on tracing cloth, prepare the specification, and take off quantities. In addition, I issued eight sets of quantities, produced tenders, and wrote out acceptances, etc. I paid about twenty-five visits to the building to supervise the work, and prepared all details necessary for joiners, masons, etc. The work commenced in March, and is now nearly finished. A few weeks ago I sent in my account for £20 to cover all the above. My client seems to doubt my integrity. The job is prefectly satisfactory, and has his approval; but he thinks the account too large. Is the account too large for the work done? As my client doubts my integrity, I thought it better if another surveyor were employed to measure up the work. In that case, who would pay his fee?"

We do not consider that the charge is nearly enough. If "A.B." had charged according to the scale of the Royal Institute of British Architects (which we are strongly of opinion should be adhered to by everyone acting as an architect), his fee would be more than double that mentioned. In the absence of any agreement between "A.B." and his client, he must get what he can. If he sues for his charges, he may get £20 or 20 pence, according to the county-court judge's wisdom on the matter of architects' fees, though we think, in view of his low charges, he could hardly be awarded less than £20. If "A.B." employs another surveyor to measure up without the explicit consent of his client, the fee would have to be paid by "A.B."

Treads and Risers.

LETCHWORTH.—"J. C." writes:—"A few days ago I saw treads and risers fixed as sketch (A). I have never seen similar construction of treads and risers before. Will you kindly give me your opinion of it."

The construction is wasteful and bad. It is courting disaster to fix joiner's work in so rigid a manner, leaving no play for the movement caused by expansion



and contraction. If each complete step is put together in the usual way (as sketch B), and the bottom edge of the riser is fixed to the next tread below, only by screws working in slots in the back edge of the tread, it will be free to move slightly. Otherwise, the treads may crack in shrinking, or may draw the risers with them and break them away from the blocks.

Varieties of Mastics.

NEWCASTLE-ON-TYNE. — A.R. writes: "(1) Wherein does joiners' oil mastic differ from glaziers' oil putty? (2) What is the composition of slaters' mastic? (3) What is usually understood by 'mastic' in laying wood-block floors?"

Glaziers' oil putty consists merely of whiting ground in raw linseed oil; the various mastics are composed of a variety of substances, such as litharge, red lead resin, boiled oil, etc., which are mixed with fine sand, powdered brick, whiting etc. Another class of mastics have glu

for a base, and the composition varies considerably in different parts of ground slate and fine sand, with about 25 per cent. of litharge. These should be thoroughly mixed while dry, and then worked with, to a putty-like consistency, in boiled linseed oil—a little black or blue may be added if necessary to match the colour of the particular slate it is intended to repair. The following is a recipe for a waterproof mastic which is suitable for laying wood-block floors; but here, again, there are no definite formulæ: Mix together one part of red lead and six parts each of whiting and fine sand. When these are thoroughly mixed, work up to a putty or mastic with boiled oil. More whiting and less sand can be used if desired. A good mastic for general use can be made by mixing equal quantities of wood ashes, quicklime and pulverised brick, and working up in boiled oil as before mentioned. What is known as "Scotch mastic" is made on practically the same principle as the foregoing: Mix thoroughly fourteen parts of pulverised sandstone with three parts of whiting and one of litharge. Then amalgamate with linseed oil one part of boiled and two parts of raw. It will be observed that in each case sand, lime, or its equivalent is mixed with a strong drying agent, such as red lead, litharge, and boiled oil. The following is a favourite recipe which produces what is known as "London Mastic": Sift together 30 parts of pulverised stone or hard brick, ten parts of silver sand, and three parts of litharge. Then make these into a mastic by thoroughly incorporating with pure linseed oil—boiled and raw, half and half.

J.

Strength of Floor.

PAISLEY.—G. E. writes: "What should be the maximum distributed safe load, on a floor of a bonded store comprising 12in. by 6in. wood beam, with 11in. by 3in. joists at 18in. centres, supported on 6in. cast-iron columns?"

Say 9ft. spans for beam, $\frac{12 \times 12^2}{9}$ = 192 cwts., 192 × 1½ for continuous beam, = 288 cwts. gross, $\frac{20{\cdot}5}{2} \times 9 = 92{\cdot}25$ sq. ft. $\frac{288}{92{\cdot}25} = 3$ cwts. per ft. super. Say 10 ft. span for joists, $\frac{3 \times 11^2}{10} = 36$ cwts. gross, $\frac{36}{10 \times 1{\cdot}5} = 2{\cdot}4$ cwts. per ft. super. Therefore the maximum safe load on floor is 2½ cwts. per ft. super.

HENRY ADAMS.



CLYDE NAVIGATION TRUST'S BUILDING EXTENSION. FRANK BURNET, F.S.I., ARCHITECT.

The new portion of the Clyde Navigation Trust's premises in the Broomielaw, Glasgow, occupies the corner site between Robertson Street and the main Harbour thoroughfare. The Trustees' Hall, which occupies the second floor under the Dome, is circular in shape, and provides seating accommodation for more than 100 persons. The illustration is reproduced by courtesy of the *Glasgow News*.

A NEW WINCH FOR BUILDERS.

By the use of Stacey's hand-power winch, which we illustrate, material can be raised or lowered continuously to the scaffold. The apparatus can be made with reversible gearing for fast, medium, or slow supplies, and can be worked either by one or by two men, according to the load to be raised. Builders and others who are concerned in the raising and lowering of materials and goods, will be glad to



know that these winches have been approved by many members of the trade, by sewer contractors, merchants and others. In the illustration the apparatus is seen some 80ft. from the ground, on the roof of Bourne and Hollingsworth's extension in Berners Street, London. The winch here seen was fast-geared, and raised the whole of the concrete for the floors and the materials for the roof. When required for lowering material, as in sewer and well work, or lowering into barges, the winch is fitted with a brake. A building recently erected with the aid of these winches was the Round Tower of the Irish Village at the Franco-British Exhibition, which earned the makers a testimonal for facilitating the works.

The winch is fitted with two fenced and sprocketed malleable iron wheels, and strong pitched chain (the breaking strain of which is two tons), and with a 30in. heavy cast-iron fly-wheel and cased handle, and can be supplied with or without a brake, as required. The wooden drum is 2ft. 6in. long, 10in. in diameter, and will take about 75ft. of 11in. rope, 94ft. of ¾in. rope, or 150ft. of ½in. flexible wire rope. The bearings of the driving spindle are made movable, and are adjusted with two set-screw bolts, in the iron-frame of the winch, for regulating the pitch chain.

Messrs. G. Stacey and Co., of 66, Lorrimore Road, Walworth, London, E.C., are the makers.

RUSSIA'S TIMBER TRADE.

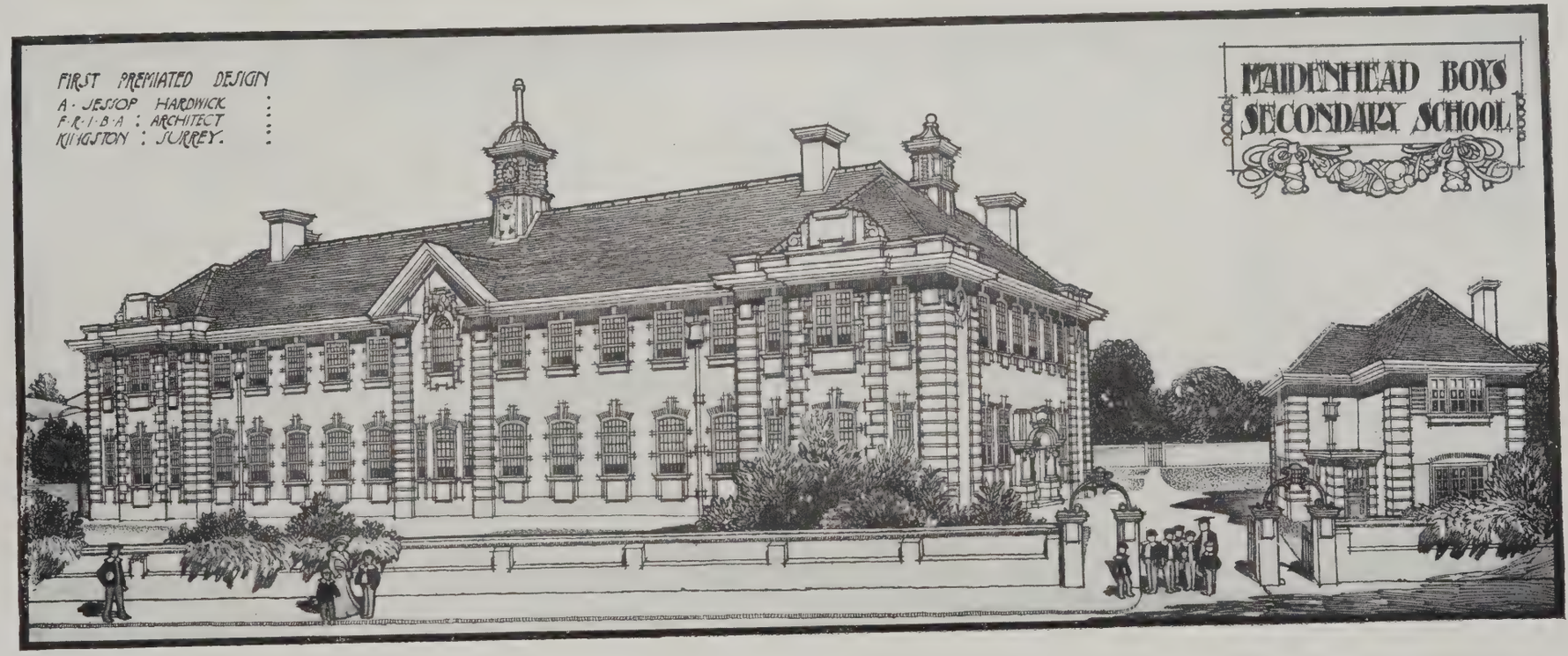
A review of the timber trade of Russia for the first six months of this year shows a falling-off from last year. Russia does a timber business with all the chief countries of Europe and supplies even some countries, which are themselves rich in timber, such as Sweden and Norway. The following descriptions of timber all have a market in England, Germany, France, Belgium, and Holland—viz., deals, beams, sleepers, staves, poles, pit-props, wood for the production of cellulose, matches, and even firewood. Germany and England are the principal customers for Russian timber, and in 1907 they took quantities to the value of 38,400,000 roubles (£4,080,000) and 38,300,000 roubles (£4,069,000) respectively. The former takes principally beams and round wood. Deals form a relatively small proportion of her purchases, while deals, battens, and boards form the major portion of England's purchases, and amounted in 1907 to the value of 30,500,000 roubles (£3,241,000) out of the total noted above. Deals, etc., also form a large proportion of the exports to other countries; but these take a considerable quantity besides of squared beams and round wood. Business this year was very restricted with Germany, where the building trade was exceptionally dull. There were also considerable balances left over from last year. Prices this year as compared with last were lower by 15 to 20 per cent. Pine beams, which were worth 1.45 marks per cubic foot, are now sold at 1.20 marks, and scarcely find buyers. The situation is, of course, a serious one for the Russian timber merchants, for the timber has to be prepared a long time ahead. Business is better in the higher classes of goods used for joinery. Sleepers are in considerable demand, and prices are firm. The demand for oak sleepers has been particularly strong since the beginning of the year, and oak planks and staves likewise command good prices. Although there has been a larger export of timber to England than in the corresponding period of last year, the total value is in favour of 1907. The prices compare very unfavourably with those of 1907, and more so still with those of 1906. Pit-props are not included under this observation.

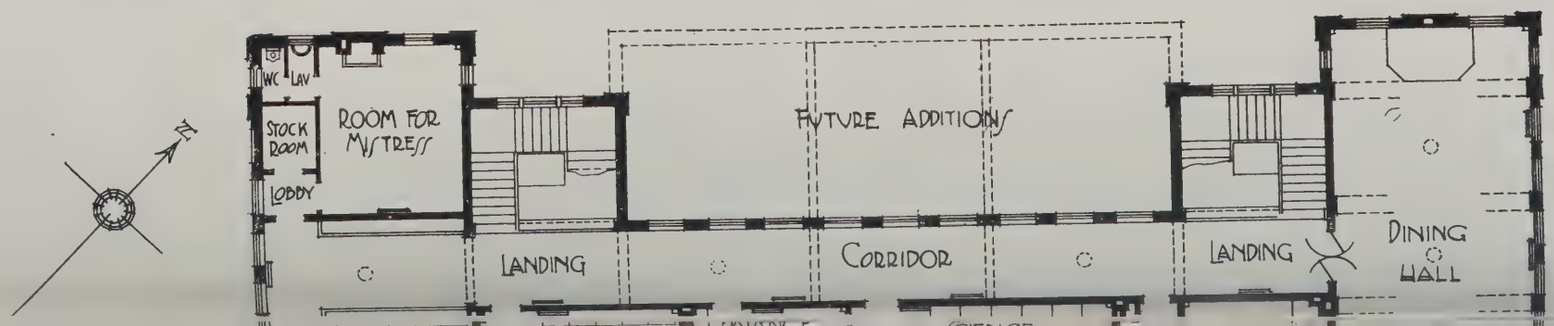
Our Plate.

This design for the Maidenhead Secondary School for Boys was awarded the first premium in open competition, in which 145 designs were submitted to the assessor, Mr. R. S. Wornum, F.R.I.B.A. The school is to be erected on a site of four acres, and provides for 150 places. The placing on the site formed an important point in the competition, owing to the position and irregularity of the land. The plan is arranged so that further additions could be easily and economically added to without disturbing the working of the school, or interfering with the general scheme of design. The walls are to be faced with local red bricks in two shades, and the roofs tiled with local red tiles. The centre feature of the main front will be in stone. The architect is Mr. A. Jessop Hardwick, F.R.I.B.A., of Kingston-on-Thames.



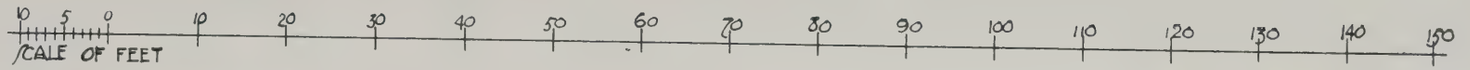
SECONDARY SCHOOL, MAIDENHEAD. FIRST PREMIATED DESIGN: BLOCK PLAN.
A. JESSOP HARDWICK, F.R.I.B.A., ARCHITECT. (See Centre-plate.)

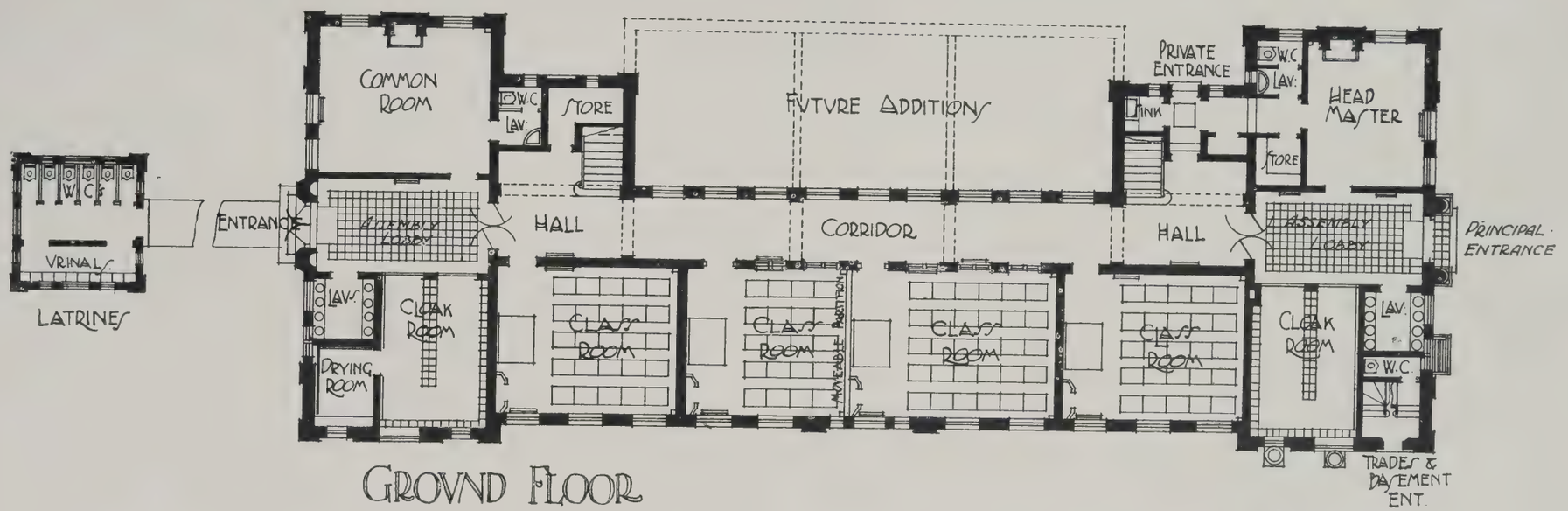

FIRST PREMIATED DESIGN
A · JESSOP HARDWICK
F·R·I·B·A : ARCHITECT
KINGSTON : SURREY.
MAIDENHEAD BOYS SECONDARY SCHOOL


WC
LAV
STOCK ROOM
LOBBY
ROOM FOR MISTRESS
FUTURE ADDITIONS
LANDING
CORRIDOR
LANDING
DINING HALL

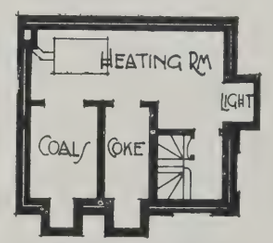


FIRST FLOOR





GROUND FLOOR



BASEMENT

FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY).

Recent Fires in Notable Country Houses.

Within the last few weeks a considerable number of serious fires have occurred in important private residences, notably in Lord Brassey's house at Normanhurst, Sussex. Without going into technical details, it may be useful to enumerate the following points of interest:—

The fire at Lord Brassey's mansion near Battle was noticed just after noon, when a little smoke was observed to be issuing from the upper portion of the house. An alarm was at once given, and there was no delay in telegraphing for brigades from the neighbouring towns. Two steam fire engines from Hastings, and manuals from Bexhill, Battle, and Normanhurst arrived, and 200 lads of the Church Lads' Brigade, who were camping in the vicinity, lent their aid. The fire burnt for about three hours, but, owing to the assistance available, the greater part of the valuable contents of the mansion were saved. There was a private fire brigade, as well as a special water-tank, in the house, the men being regularly drilled; but, unfortunately, something went wrong at the critical moment, otherwise the outbreak would have been more quickly subdued.

A second big country-house fire was that of Burley-on-the-Hill, one of the finest houses in Rutland, and it had been only recently renovated. The fire was first discovered at about one o'clock in the morning. It was a considerable time before assistance could arrive on the scene, and it was not until the Stamford brigade arrived with a steam engine that any determined attempt to subdue the flames could be made. In this case the damage was much more serious than at Normanhurst, the fine old building being burnt out, with the exception of one wing.

Cowfold Lodge, near Horsham, has also been completely burnt, and during the present year there has been a heavy roll of mansions destroyed by fire, many of them containing treasured antiquities and other articles of value.

Colonial Conflagrations.

The disaster which has overtaken British Columbia, and resulted in the destruction of a large number of villages, and even some small townships, by fire, is one that gives occasion for reflection as to the limited means at our disposal to prevent conflagrations of this type; and it is almost necessary to confess that beyond well-organised manual labour on entrenchments and earthworks, no means are available for preventing fires of this kind from destroying townships; and even entrenchments and earthworks frequently turn out to be labour wasted, if there has not been ample time available to do the work very thoroughly. It is, of course, needless to say that a long drought has much to do with the occurrence of such fires, and that a small spark may soon get well alight. Sparks, thrown down by careless persons, or scattered by passing locomotives, are not the only cause. It should be remembered that there is a fiery wind in Canada, just as there is in Switzerland, known as the "föhn," which blows with great violence. It is a very dry, dust-containing, one might almost say a gaseous wind, travelling at great speed, and its character is so well known that the Swiss laws compel inhabitants to put out all fires and lights if they receive warning of the approach of such a hurricane of wind. The "föhns," as known to those who take a technical interest in the subject, usually occur at intervals of about twelve years, and they are generally stated to have occurred round about the years '47, '59, '71, '83, '95, and '07, but whether this is mere coincidence or a regular sequence, is a matter of doubt. At all events, we are afraid that human limitations are such that, given the hurricane wind known as the "föhn," and that the "föhn" has once taken fire, little or nothing can be done to stop the destruction it initiates.

The Building Acts.

We observe, with considerable interest, that the London County Council, at its last meeting previous to the holidays, decided to take steps towards the consolidation and amendment of the London Building Acts. The matter has been before the Council for several years, but no decisive step has so far been taken, and we welcome the effort to obtain amended and simplified legislation. The London Building Act of 1894, which in many respects is nothing but a modification of the Building Act of 1851, is complex and antiquated to a degree; and to us it would seem that an entirely fresh code, framed to meet modern requirements, would be more beneficial to London than what at the most will be merely a tinkering of the 1851 regulations. Anyone who recollects the changes in construction in requirements since 1851 will realise how entirely hopeless it is to endeavour to modernise regulations that were framed to meet the necessities of those remote times. But if the Council cannot take the step of entirely reframing the Building Code of the metropolis—and we, of course, realise that it would be a difficult task—they would at least do well to overhaul thoroughly and bring up to date many of the present clauses, which are as ridiculous as they are antiquated. Most ridiculous of all are, we think, the clauses that require the external walls to be of a given thickness, no matter whether they carry weight or not, so that a mere screen has to be as heavily built as a wall that carries floors. Ridiculous to a degree is also a code which, whilst giving every possible attention to matters relating to external and party walls, seems entirely to overlook all question of divisional walls, internal columns, and the like, with the result that we find buildings of excellent exterior and most lamentable interior construction. Reinforced concrete, of course, was not with us in 1894, but steel-framed buildings were; and whilst the Parliament of the day did not properly consider steel-framed buildings, it is to be hoped that no similar mistake will be made next year with respect to steel-frame and reinforced concrete construction. It is obvious that properly protected steel-frame structures, in which all metalwork is, in the first place, correctly designed, and, in the second place, well protected by concrete, are useful economically, hygienically, and from the fire point of view, and the same can be said for reinforced concrete structures, with additional emphasis on the score of economy. It seems extraordinary that the building owners of the metropolis should not be able to avail themselves properly of the facilities offered by steel-framing and by reinforced concrete construction, and it is to be hoped that the new Building Act will allow these forms of construction to become freely available, of course with due regard to the precautions necessary to ensure fire resistance. What these precautions are, we need not detail at this point; but, speaking roughly, 2ins. of concrete of suitable aggregate should cover all metalwork, and it should be insisted that the Portland cement used should comply with the British Standard Specification. We shall not at the moment deal more fully with the points in the Building Act which we believe to require amendment from the fire point of view, but we would suggest at this stage that those in authority at Spring Gardens should invite suggestions from the various technical societies and bodies concerned, so that the views of these corporations could be made known at the earliest possible moment, and consequently much of the tedious argumentation between learned counsel in House of Commons committee-rooms would be avoided. It is this argumentation of learned counsel, and the compromises arrived at by the committees, that so often lead to complex and unworkable building codes. The clauses are perhaps drafted drastically, but probably they are drafted clearly; the amendments too often lead to confusion of purpose, and not necessarily to any less drastic reading.

THE LATE MR. JAMES SHEPPARD.

The Relations between Architects and Insurance Surveyors.

In our Obituary notices of August 12 we referred briefly to the death of Mr. James Sheppard, the chief surveyor to one of our leading insurance companies, whom we also had the pleasure of numbering among our occasional contributors; and we think we should take this opportunity to refer not only to Mr. Sheppard's lamented death, but to some of the aspects of insurance surveying as so admirably practised by him, this being a matter of some importance to architects and insurance surveyors generally.

Mr. James Sheppard stood for all that is best in the profession of insurance surveying, and whilst fulfilling his duty in a most successful manner in naming the rates of insurance to be granted on certain risks, and also most ably arriving at values in the case of loss by fire, he was always inclined to advise the insured as to how the premises could be

improved in order to reduce the insurance rate. Mr. Sheppard's view of profitable insurance was always in the direction of reducing the risk of fire, and of having the premises fully insured at the lowest rate obtainable on well-constructed and well-maintained premises rather than having buildings of a dangerous character under-insured at high rates.

His views also were generally most equitable as to what an improvement meant from a fire point of view; and if the building owner went to some expense in dividing up his risk, and generally improving the fire-resisting character of his premises, there was no one more ready than Mr. Sheppard to make an equitable reduction for the diminished risk.

The general tendency of an insurance surveyor is, as is well known, simply "to take risks as he finds them," to "name a rate," and to care little or nothing as to the general policy of fire-insurance profits, or for the improvement of premises with respect to fire risks. In a way, the majority of insurance surveyors are highly-trained appraisers, who, in accordance with given tariffs, by rule of thumb, or by conventional and arbitrary forms of practice, arrive at the rate upon which they think a building should be insured, and thereupon leave it to their managers to fix the rate according to their report. It is indeed the exception to find in their reports any recommendations as to how the premises could be improved and the fire risk reduced. Further, the attitude they generally take up as against the building owner, and more particularly as against the architect or engineer, is one that has long been a scandal. It is rare indeed to find an insurance surveyor helpful—although he is quite able to be most helpful—to the architect by suggesting to him in the early stages of the preparation of plans how matters would be looked upon from the fire point of view, and what a certain expenditure on improvements might mean in the way of reduced rating.

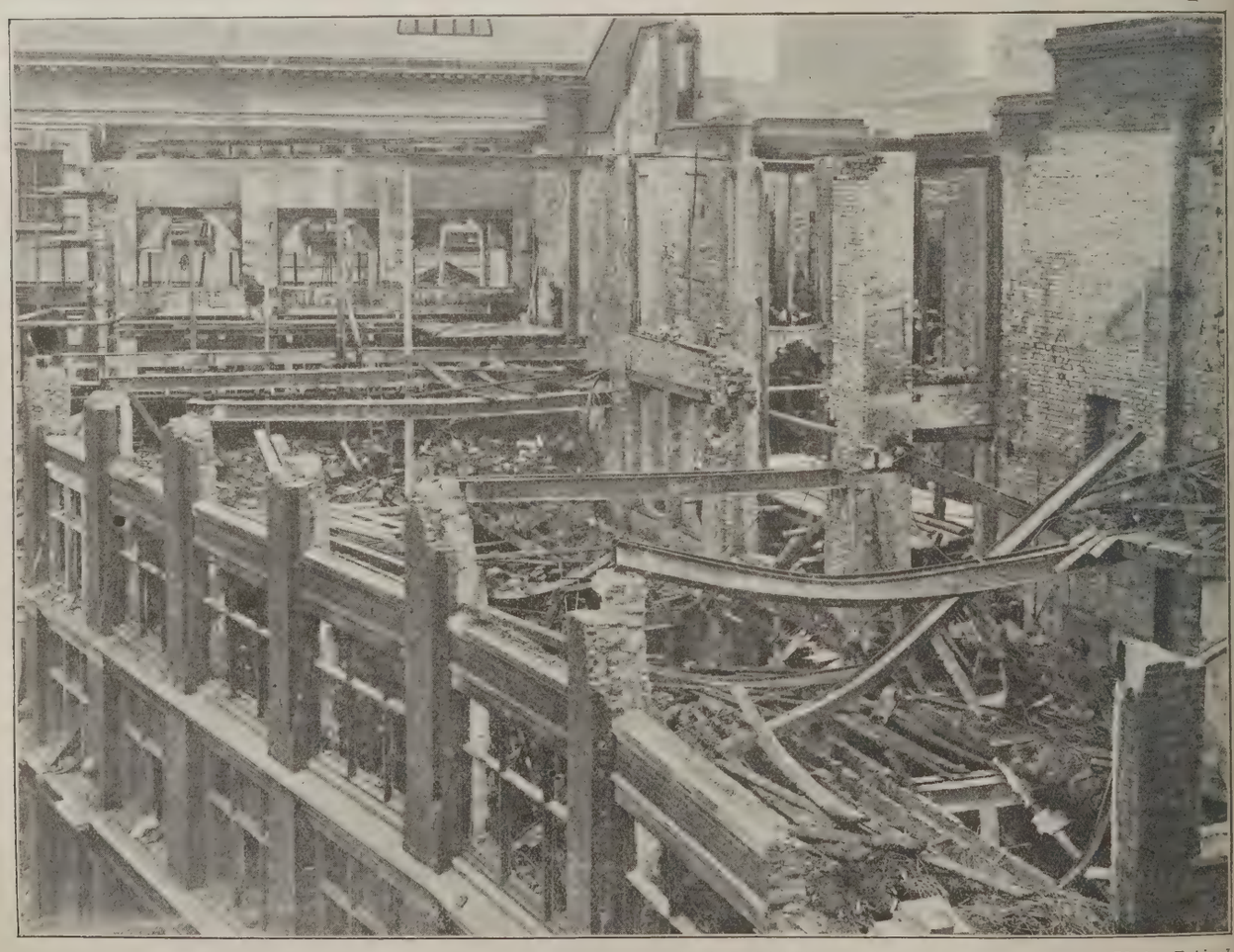
The orthodox policy of the insurance surveyor is simply to tell the architect, "Oh, *you* build the building, and when it is finished and installed *we* will quote a rate." On the other hand, the insurance surveyor of superior intelligence will go into the whole matter with the architect, and it will often be found that for a comparatively small additional expenditure a very much safer building, from the fire point of view, can be erected, and a reduced rate obtained from his insurance office.

We doubt whether, before we commenced publishing in these columns some of the more general fire-office rules, architects realised that such rules were even in existence. Were it not for the fact that the so-called tariffs were marked "confidential," we should also long ago have published the rules that govern specific hazards and risks; for we consider that an entirely unnecessary secrecy obtains among insurance men in respect to these "special risks."

In the case of Mr. Sheppard, his work in the direction of obtaining better fire risks for his company was, of course, greatly facilitated by his extraordinary knowledge of building construction; and we can truly say that there are few architects in large practice who had a more detailed knowledge of building matters. He was a veritable encyclopædia on all materials in their geological and chemical aspects, and on all methods of building practice, British, Continental, and American. The result was that, instead of being looked at askance by the members of the technical professions, as is the case with the majority of insurance surveyors, he was regarded not only as an equal professionally and as a friend, but as a leading authority on the subject under discussion; and his pronouncements on such questions as concrete and reinforced concrete, or on steel-frame buildings in particular, are to-day recognised as authoritative decisions, and they are quoted with equal respect at home, in the Colonies, and the United States.

No man was better fitted to occupy the position of chief arbiter of the country's building policy, from a general economic as well as from a fire point of view, than Mr. Sheppard, and his many friends (both architects and engineers) often regretted that he was not the official adviser of one of our great public departments rather than an officer of a private insurance company.

It would, indeed, be well for the in-



GENERAL VIEW OF FIRE AT OLD BAILEY. *Photo: Topical.*
(Note unprotected Girders and Stanchions.)



THE OLD BAILEY FIRE.
The Flank Wall falling into Fleet Lane.

surance surveyors of Great Britain if they were to study somewhat closely the reasons for Mr. Sheppard's authoritative influence, popularity, and success; for there can be no doubt that, if his reasoning were more closely followed, not only would the standing of insurance surveyors be generally improved, but the insurance companies represented by them would be materially benefited; for co-operation between the insurance surveyor, the architect, and the engineer would lead to improved fire prevention; whilst, on the other hand, the antagonistic spirit that unfortunately prevails at the moment very often leads to an opposite result. How often do we hear an architect crowing over the fact that the insurance surveyor did not happen to "see" something which he wished to hide from him, and how often, also, do we hear of the insurance surveyor telling his colleagues how the architect, by some slight flaw, just missed getting a specific rate, and thus got into hot water with his client!

This, again, brings us to a point about which it would perhaps be well to speak quite clearly. We have often come across cases where the insurance surveyor has gone behind the back of the architect with the specific view of pointing out how, if Mr. Architect had done so-and-so, they would have been able to do so-and-so in the matter of the insurance rate; and we have often heard of cases where the architect and client have had a very serious disagreement over matters of this kind.

Such paltriness is, of course, indefensible, and can only be explained by the desire of some of the least suitable surveyors to air their importance before the building employer. But whatever the reason may be, such conduct does not tend to promote good feeling between the architect and the insurance surveyor.

It would lead us too far to enumerate the many writings of Mr. Sheppard, the last of which, we believe, were the papers he read before the London Insurance Institute and the Cardiff Insurance Institute. He was a prolific writer and contributor to the technical Press, and was rather addicted to controversy. To posterity, however, he will probably go down as one of the great leaders of research in the different forms of general building construction. There was no test, no enquiry, and no piece of research work in England with which he was not in some way or other connected during the last fifteen or twenty years. Most remarkable, of course, was his assiduity in all matters of fire tests, and in the many tests conducted by the British Fire Prevention Committee he served as a member of the sub-committees in charge of the majority of them, and in many cases as the directing member who undertook the hard work of keeping the records and drafting the reports.

Mr. Sheppard was a member of the executive of the British Fire Prevention Committee for some ten years, and was probably one of the most regular attendants at its meetings. He acted as chairman of the International Fire Library, which position entailed upon him a considerable amount of work; and latterly he was a member of the Special Commission on Concrete Aggregates. It was very typical of Mr. Sheppard's interest in matters of construction that he was one of the founders of the recently-formed Concrete Institute.

THE FIRE IN OLD BAILEY.

The fire which recently occurred in Old Bailey has the peculiarity of being, to a certain degree, a repetition of a serious one that occurred some fifteen or sixteen years back on the same site. The more recent fire was again a very dangerous one, having special regard to the locality and the character of the structures involved, which comprised Nos. 49, 50, and 50a, Old Bailey. The fire, too, had apparently obtained a very substantial start over the Sunday and August Bank Holiday, for the moment it was noticed it was already of an extent that made it extremely dangerous. Fortunately, however, the fire brigade was able to concentrate with that rapidity which has of late distinguished them to quite a remarkable degree, and the result was that what might have been a serious conflagration was limited to the buildings named.

What struck us in connection with this fire is the fact that a structure so recently built should have been of such unsatisfactory construction from a fire point of view. Unprotected steelwork, unprotected columns in particular, were features that might have been expected in a building fifty years old, but assuredly not in a structure erected at a time when architects and engineers had already commenced to realise the necessity of protecting their metal-work; and here we have a further instance of the urgent necessity for amending the London Building Act, so as to compel owners to give structures of this kind proper protection in the interior, over which there is little or no control at the present time.

The usual fire inquest, which is perhaps being convened in the City of London with inconvenient frequency of late, was held, although the fire had no elements of mystery or technical value. As usual, nothing of importance resulted from the inquest, except the academical suggestion from the jury advising the general adoption of automatic fire alarms, a recommendation which we are sure the patentees of various automatic fire alarms on the market will fully appreciate. We, of course, fully concur that automatic fire alarms, when reliable and when well maintained, are to be strongly recommended for certain classes of premises, but we cannot concur in the generalities of this eminently lay jury. For special risks we would go so far as to say that an automatic fire-alarm system should be compulsory, always provided that the maintenance of the appliances is carefully controlled; but we certainly do not think that such an installation is absolutely necessary in the average city office, or in structures of



Photo : Topical.

THE BURLEY-ON-THE-HILL FIRE: GENERAL VIEW FROM THE TERRACE.



BURLEY-ON-THE-HILL: THE DRAWING-ROOM AFTER THE FIRE.



Photo : Topical

BURLEY-ON-THE-HILL: INTERIOR AFTER THE FIRE.

an ordinary type in the metropolis, and we believe the jury's recommendation would have had much greater weight if they had limited their advice to stating that "printers' risks," or "stationers' risks," would be reduced by the adoption of efficiently-maintained and properly controlled automatic fire alarms. Mere vague generalising is but seldom translated into definite action.

One consideration that has lately very much struck us in connection with the fire inquests in the City, has also an obvious bearing on fire inquests held in other parts of the country. We hold that the City is fortunate in having such an able coroner as Dr. Waldo, who takes a keen interest in the fire question; but we think that, no matter how able the lay coroner may happen to be, he should have the assistance of technical advisers. As a precedent, we may point to the example of the Admiralty Courts, where naval officers, or officers of the mercantile marine, are available for the benefit of the Court.

Coroners holding inquests on fires should certainly receive such expert assistance as they may require from a fire brigade officer, and from a building surveyor conversant with the subject of fire prevention; and it might be desirable for the coroner to hold a consultation with these assessors with a view to ascertaining whether or not a public inquest was really necessary. Inquests would then be limited to really important issues, and would be in much less danger of becoming a matter of mere perfunctory routine. For, to put it quite plainly, these too frequent inquests, when there is really nothing of importance to inquire about, are likely to become a nuisance to all concerned. Fire inquests are wanted where there is a possibility of incendiarism, where life has been at risk, and where technical problems of importance demand inquiry. But to hold inquests in respect to fires of quite normal and featureless character is mere waste of time and energy.

SOME AMERICAN FIRE TESTS.

In our issue of July 1st we presented some interesting photographs of official fire tests undertaken in the United States of America with various building materials, but we were unable to present any official commentary on the subject, as the detailed report had not then been issued. On further enquiry we hear that there will be some delay in the issue of this detailed report, but that in the meantime a commentary has found its way into the American press, which gives some idea of the objects in view when these tests were undertaken, and also the personal view of Mr. Smith, a well-known authority in America on questions of fire prevention, as to the result of the tests so far as they have gone.

Perhaps we should add that the series is not yet complete, and is being repeated; but, nevertheless, we think that the American version of these tests should be of interest to our readers, especially if they refer back to page 15 of our issue of July 1st. The American semi-official memorandum, which we have seen, reads as follows:—

"The recent conflagration in the United States, with their terrible loss of life and property, have added much significance to the fire tests of building materials that have been conducted recently by the United States Geological Survey on behalf of the Government.

"The Federal Government, owner of buildings valued at more than half-a-billion dollars, and spending twenty million dollars every year for new structures throughout the country, conducted these tests in order that its architects and engineers may have definite information concerning the fire-resisting qualities of the different materials of construction, to the end that the Government's buildings may be properly safeguarded from within and without.

"The Government engineers have long contended that, with present methods of construction, a conflagration, resulting in the destruction of millions of dollars' worth of property and the sacrifice of human life is possible in every city of any size in the country. Their position has been proved in a tragic manner by the Baltimore fire, the fire following the earthquake in San Francisco, and that in Chelsea.

"It is the belief of the engineers that these great fires are unnecessary and can be prevented by the erection of proper fireproof buildings. The Government does not insure its buildings against loss by fire, but bends its energies towards making the structures fireproof. A small fraction of what would be paid to insurance companies in premiums is being spent in finding out the materials that are best adapted to resist fire.

"The first of a series of elaborate tests have just been completed by the Structural Materials Laboratories of the Geological Survey, under the direction of Richard L. Humphrey, engineer-in-charge. The tests were conducted at the Fire Underwriters' Laboratories in Chicago, and were made possible by the co-operation of the National Board of Fire Underwriters and the National Fire Protection Association. Thirty panels of various building

materials, including concrete building blocks, common, hydraulic-pressed, and sand-lime brick; concrete of gravel, cinder, limestone, and granite; glazed building and partition terra-cotta tile; sandstone, granite and marble building stone, were tested. The materials were subjected to the direct application of heat for two hours, and were then immediately quenched with water. An effort was made to obtain a maximum temperature of 1,700 degrees Fahr. within half-an-hour after starting the tests, and to maintain this temperature as nearly as possible constant through the succeeding half-hours.

"The building materials were placed in a sliding panel which, when arranged for the fire tests, formed one side of the furnace. In the furnace, gas-flames were forced by a blast of air against one side of the panel. After two hours, the panel was brought from the furnace, and the water turned on from a hose with a pressure of 50-lbs. to the square inch.

"The conditions under which these tests were made were unusually severe, and as none of the materials passed perfectly it proved a good test for comparative purposes. The temperatures used would hardly be reached in an ordinary fire, but might be in a conflagration.

"'While these tests are not conclusive, being but the beginning of a general line of investigation,' said Director Smith, of the Geological Survey, 'they bring out a number of important facts. The brick panels probably withstood the tests better than any other materials. There were two lots of common brick tested—one was an unused, recently manufactured brick, and the other a brick that had been in an engine foundation for some years. The latter seemed to withstand the test the better. Fifty per cent. of the new bricks were split, while 60 to 70 per cent. of the old bricks were not damaged. The bricks at the back of the panel were entirely unaffected. The hydraulic-pressed brick stood the test better than any other material. No damage was apparent whatever after the firing and before the water was applied; and although a number of the bricks cracked, 70 per cent. of them were found to be sound after quenching. There was apparently little difference in the strength of the bricks before and after firing. The natural building stones behaved the worst of all the material tested. The almost complete destruction of these stones precludes any comparison between them. The sandstone panel entirely collapsed soon after the test was started.

"The testing engineers report that it was difficult to determine whether the concrete made of limestone, granite, gravel, or cinders sustained the least damage. Their surfaces were all rather badly pitted by the fire and washed away by the stream of water. The test was unfair to cinder concrete, as the sample of cinder was very poor, containing a large percentage of unburned coal which ignited and left the surface of the concrete badly pitted. The granite concrete probably behaved the best. The damage in no case extended very far into the concrete—probably not more than 1½ins. The evidence shows that even at this depth the temperature was comparatively low. The rapid heating of the face of the concrete while the back remained cool caused the concrete to crack vertically for some distance back from the face. The cracking of the concrete can be avoided, it is believed, by using metal reinforcement, which would distribute the effect of the expansion.

"The tests also brought out clearly the low rate at which the heat travels through concrete. This is one of the desirable qualities in materials intended for fire-proofing purposes.

"Linen tags which were placed in the hollow concrete blocks when they were moulded were found to be undamaged after the fire test. In many instances the hollow blocks split after being subjected to the fire and water test. It was noticeable that the richer the mortars used in these blocks the less they were affected by the test. The mortars mixed with the greatest percentage of water gave the best results. The wetter, richer mixtures in these tests stood out apparently undamaged in contrast with the damaged faces of the leaner dryer blocks. It is apparent that one of the causes of weakness in the hollow cement building blocks is in the weakness of the concrete due to a too dry and thin mixture, which, coupled with the thinness of the webs—the thin pieces connecting the walls of the blocks to give strength—provides insufficient strength to resist the rapid expansion of the face of the block under test. By making the webs thicker they can be made to stand the fire test satisfactorily."



FIRE AT THE ROYAL OPERA-HOUSE, BERLIN.

The cross shows the point at which the fire originated.

THE BERLIN OPERA HOUSE FIRE.

We have previously referred to this fire, which was made the subject of many sensational paragraphs in the daily press, but which, as a matter of fact, was a very small matter, as will be seen from the accompanying photographic illustration, which indicates the full extent of the fire. The cross marked on the illustration shows the position at which the fire broke out; and in these days, when the question of the fire resistance of materials is being so largely discussed, it is interesting to observe that, although the fire spread along the timbering, the result has been only a superficial charring, which can be plainly seen from the illustration.

More extraordinary, however, than any question relating to the actual fire is the fact that a roof of this description should have been allowed to exist over an opera house which, we are told, has had the special attention of the public authorities at Berlin, and even the personal interest of the German Emperor, who subsidises the royal opera at Berlin. In the case of a similar building situated in London, the L.C.C. would long since have directed that the soffit of the timbering and boarding should be protected in some manner by a non-combustible material, so that the woodwork would not immediately flame. Probably the Council would have suggested protection by asbestos slabs or by plastering; but, at any rate, some effort would have been made to give so much woodwork a protective covering of some sort.

It is, of course, impossible, with an old building, to require entire reconstruction, or even to require alterations of an all too considerable extent; but the least that can be done is to protect highly inflammable surfaces, and this, we believe, has now been generally achieved in all the older London theatres: and even where such protective measures have not been required, the spaces are no longer allowed to be used for storage purposes, and have generally been closed up by doors. As a matter of fact, one would say that the Berlin opera house requires to be entirely rebuilt; but this might also be said with equal truth of many opera houses of more than 100 years' standing. Our whole ideas on opera-house and theatre construction are so different from what they were at the beginning of the last century. The photographic view we present, by-the-bye, is one of somewhat unique interest, as it is but seldom that a detailed photograph of this description is available to the public.

PARIS THEATRE REGULATIONS.

New theatre regulations in Paris, which have just been issued by M. Lepine, the Prefect of Police, include provisions for the abundant ventilation of the premises between performances, including the dressing-rooms, and elaborate precautions to be taken against fire, with rules as to the width between rows of seats, etc.; but it does not appear from the published summary that the practice of allowing people to sit in the gangways is to be discontinued. If it appears that the new fire regulations are in any way noteworthy, we shall give due attention to them in a future issue.

FIRES IN COUNTRY HOUSES.

The fact that recently several well-known country houses have been the scenes of serious fires has led to a considerable discussion on the subject of protection from fire in buildings of this description. There cannot be the least doubt that the risk of fires in country houses is considerable, and if the large number of small fires that occur in such buildings were known—that is, fires that are put out by the home staff, and, no notable member of the House of Lords or the House of Commons having assisted, are not advertised in the daily press—it would certainly seem that greater care should be taken to obviate such ever-present dangers. The large majority of country houses of the type we have in mind were erected long before the time when the question of fire protection was seriously considered; and the most elementary rules regarding building construction as practised to-day often entirely neglected. But, entirely apart from the structural hazard of the building as originally erected, there has been the additional risk of numerous alterations, reconstructions, and redecorations frequently undertaken without skilled supervision, and too often leading to the accentuation of the dangers we have in mind. We have seen cracked flues covered with valuable tapestry fixed to a canvas backing; we know of boiler pipes hidden behind upholstery in which the wool stuffing was of a somewhat oily nature; in fact, we have come across every possible form of negligence in the work of alteration and redecoration in places of this type. Next we have the fact that the methods of illumination have been changed from the original lamps or candles to, say, gas in the first instance, and latterly to electric light; and in many instances the electric installation in particular has been carried out by unskilled hands. It is true that occasionally a first-class electrical engineer is commissioned to prepare the lighting scheme; but as a rule the work is put into the hands of a contractor without supervision, and too frequently the contractor is careless of the fire risk. The very most he does is to pass the fire office rules, and there are even contractors who spare no effort to throw dust in the eyes of the insurance surveyor. Apart altogether from original structural errors, the errors of alteration and redecoration, the errors of illumination, all the possible additional risks to be met with in a factory or warehouse, hazard can occasionally be observed in a country house. The kitchen is sometimes turned into a veritable bakehouse, and, as a matter of fact, baking appliances are installed which do not receive proper supervision. The so-called lamp-room becomes a veritable oil store; the hot-water system becomes a specific danger, owing to special heating being required at high temperatures after a long period of disuse; the hot-water service is strained to an extraordinary degree, when the house is in use, by large demands for baths on the occasion of shooting parties. Smoking seems to be carried on all over the house now-a-days, and the ash-tray and match are just as common in the lady's boudoir as they are in the servants' boot-house. Altogether, an old country house conducted on up-to-date lines has about as many fire hazards as a badly conducted factory. In the circumstances, indeed, it is remarkable that the insurance companies, which do not fail to wring every possible penny out of an industrial fire hazard, have generally put such a low rate of insurance on the country house, and to our knowledge some of the worst structures of this kind stand to-day on what is known as the "half-crown rate." The country house would not be such a matter of importance as a fire risk were it not also that in many cases the building is an archæological monument of considerable national value, and that quite apart from any question of loss to the owner the destruction of an historic country house is a national loss of no small moment. It should thus be the endeavour of every architect in touch with old country houses to use his influence to obtain a remedy for some of these fire hazards. As a matter of fact, however, it is difficult to obtain these remedies, for many reasons, not the least being the absence of skilled advice. The architect, with few exceptions, does not take that interest in fire protection that is desirable. He is apt to lean too heavily upon the so-called fire engineer or engine-maker, whose sole interest is rather to instal hydrants and hand pumps or sprinklers, than to go to the root of the matter, which is that of fire prevention and the division of fire risks.

HEIGHT OF BUILDINGS IN RELATION TO FIRE RISKS.

One of the most difficult of the problems that the New York Building Code Revision Commission are trying to solve is that of limiting the height of buildings. It is true that in London we are not confronted with the same difficulty. Nevertheless, the subject presents many points of interest for those who aim at a broad survey of the whole subject of fire risks. The position of the New York underwriters in the matter is conceded by progressive architects and business men to be reasonable, but the question as to what the limit of height shall be seems almost unanswerable, for various reasons arising from personal interests.

Mr. Ernest Flagg, the architect of the Singer Building, offered a solution that was novel and also worthy of consideration. "Evidently the old plan of limiting the height of buildings to secure light and air will not avail in New York to-day," he said, "for we will never consent to place that limit low enough to do any good. We must seek a new method, and I believe the one I suggest will do the work.

"To meet present conditions we must place our buildings on end, so to speak, like teeth on a harrow, and separate them sufficiently to let sunlight and air in between. In other words, build a city of towers. I advocate the following plan: (1) No limitation at all on the area which can be covered to a height equal to once and a half the width of the street, but in no case to a greater height than one hundred feet. For if the limit of height is not too great, there is no necessity to limit the area covered. People always have, and of necessity will leave, enough land vacant to light the interior in all buildings except those for the poor. It is only when buildings are abnormally high that the courts become too small.

"(2) No limitation at all to the additional height to which buildings or parts of buildings can be carried covering an area equal to one-quarter of the area of the plot on which they are built. For if only one-quarter of the land is built on to a great height, it makes no great difference what the height maybe. There will be plenty of space vacant to let in sufficient light. Practical considerations of economy and engineering will afford all the curb necessary.

"(3) A restriction against building higher than the first-mentioned limit within a distance of the building line equal to the combined width of the sidewalk and area of the street on which the building faces. The high part of the building should be kept back from the building line, both to preserve the uniformity of height for the facades, and to insure sufficient light for the street.

"(4) A requirement that all facades which are carried above the first mentioned limit of height must be treated architecturally. For as the high part or tower would be seen from all sides, all sides of it should be attractive to look at.

"(5) A provision that the right to build above the first mentioned limit of height shall be negotiable in favour of adjoining land. This provision is made because some people may not want to build above the height established for the facades; others may want to build high on more than 25 per cent. of their land; therefore, one may wish to sell, and another may wish to buy, this right. Land having parted with its right to go high in favour of adjoining land would, of course, be always restricted to the height established for the street facades. As matters stand at present, an owner may find his land built up on three sides to any height, his light pre-empted, and his property rendered practically useless Were the proposed plan in operation, his rights would be protected. Adjoining owners could only build high on one-quarter of their property, and do him comparatively little harm, unless they bought the rights of adjoining land, in which case the owner selling would receive compensation for the damage done him.

"(6) A requirement that no wood whatever, either for the building or its equipment, should be used above the first mentioned limit of height.

"Danger from fire is one great objection to high buildings. If a district is closely built up with high buildings, fire in the upper part of one may spread to others and create a general conflagration far beyond the reach of the fire department. If only one-quarter of the land could be covered by high buildings, they would be sufficiently separated to prevent such a catastrophe, even if they were not fireproof. Few people realise to what a great extent wood is used in most of our so-called fireproof buildings. Double floors, sleepers, doorbucks, window frames, doors, sash and trim, to say nothing of furniture, etc., require an immense quantity. No wonder they burn. It is perfectly practicable to build without wood, and certainly no wood should be used in any part of a building which is above the convenient reach of the fire department.

"The plan I propose is simple; it would work automatically. It would, I believe, rid us of all the evils with which we are threatened by the present unrestricted multiplication of high buildings.

"The Singer Building is not a complete illustration of what I propose, because the low part of that building is far higher than the limit of height here proposed, but in other respects it may serve as a sample. The high part occupies even less than one-quarter of the area of the plot; it interferes with no adjoining property; it depends on its own land for its light; it presents an ornamented facade to every point of view; it stands well back from the street line so as not to mar the facade, and no wood whatever has been used in its construction. It is what all tall buildings ought to be—really fireproof."



Photo: Topical.

FIRE AT A PIANO FACTORY, KING'S PLACE, CAMDEN TOWN.

Some 400 Pianos were destroyed with the building, which, as may be seen, had no fire-resisting floors.

A FIRE EXTINGUISHER FATALITY.

At the Paddington Coroner's Court, on August 19th, Mr. W. Schroder held an inquest on the body of William Bowen, aged 46, of Dartmoor Street, Notting Hill, caretaker at the Elysée Art Galleries, Queen's Road, Bayswater, whose death was caused by the explosion of a patent fire-extinguisher while it was being tested. Mr. F. G. Oliveri, the proprietor of the galleries, said that on the preceding Saturday he directed Bowen to light a fire, so that he could test the extinguisher. The witness played on the flames for about half a minute. The extinguisher had got practically exhausted, when Bowen took it from him, and it exploded almost immediately, throwing the man violently to the ground. He died in a few minutes. The witness bought the extinguisher from the London agents of the Continental Chemical Fire Extinguishing Company, a firm which no longer existed. A doctor said that Bowen was severely injured, his collar-bone, chest bone, and wrist bones being fractured, and his windpipe mangled, and he had internal injuries also. Death was due to shock following these injuries. The manager of a firm who supply recharges for fire extinguishers said that, according to the circulars of the manufacturers of this extinguisher, it had been made to withstand a pressure of 144lb. to the square inch, but in his opinion nothing less than 250lb. was safe. The inspector of explosives for the London County Council said the extinguisher was of extremely frail construction. The wire gauze covering the entrance to the tube was coated with rust, which greatly increased the pressure, and caused the explosion. The jury returned a verdict of "Accidental death," and added a condemnation of the extinguisher, but the coroner refused to accept the rider in the absence of the parties concerned.

GREAT FIRE IN CONSTANTINOPLE.

A Reuter's cablegram from Constantinople, dated August 23rd, announced that there was then raging a great fire in the Stambul quarter of Constantinople. It had then been burning for six hours, being fanned by a strong wind. It was estimated that more than 1,500 houses and shops had been burned. The wind was then subsiding, but, in spite of the efforts of the fire brigades, the conflagration was still raging. In this lamentable fire, many interesting examples of Moslem architecture must have perished. Possibly the rebuilding may see the introduction of modern fire-resisting methods, and of Western ideas generally. Constantinople's great fire, disastrous though it may appear for the moment, may, in accordance with many precedents, result in great ultimate gains of sanitation and safety.

TIMBER FAMINE AND FIRE RESISTANCE.

"The Coming Timber Famine" has, during the past week or so, formed the subject of a good deal of correspondence in the "Times" and elsewhere, and on August 18th the "Times" published a leading article headed "The World's Supply of Timber." The discussion has been for the most part rather pointless and unilluminating. The pessimism that pervades it is largely discounted by the observation made by a Hampstead correspondent. He points out, with reference to Mr. Angus Cameron's prophecy of a timber famine that is to become acute twenty-five or thirty years hence, that the use of wood in up-to-date building is decreasing rapidly. "In the modern good-class building, fire-resisting and more lasting materials have taken its place in every way, and with the exception of doors and floor-finishings (for the latter there are many successful substitutes on the market) the wood employed is practically nil." This is a good point, and it gains force from the changed attitude of the London County Council with regard to improved methods of construction, these methods, of course, having direct reference to fire-resistance. But, so far as we have seen, nobody seems, in the course of the discussion, to have taken note of the enormous consumption of timber involved in its use for railway sleepers. Until this extravagant practice is stopped by the adoption of some form that reinforced concrete experts may be able to suggest, reafforestation, with its requirement of about forty years for maturity, does not appear to have much chance of staving off the threatened dearth. If, however, fire-resisting construction continues to develop on the present lines, the prospect of famine is much more gloomy for the timber merchant than for the builder, who, indeed, does not seem to be greatly scared, nor even mildly excited by the prediction of a shortage of wood that may or may not be experienced some thirty years hence. Moreover, what is for the moment the chief anxiety of the timber merchant is the falling-off in the demand. On the whole, the discussion seems to be rather ill-timed, but is, perhaps, a good enough topic for the silly season.

Views and Reviews.

Decoration and Diffidence.

The author of this very useful manual need not have been so meekly apologetic to architects for daring to provide them with trustworthy information on a subject on which they could hardly pretend to possess minutely accurate technical knowledge. "He ventures to hope that while architects rightly object very strongly to be in any way dictated to by a tradesman as to how work shall be done after the contract is signed and while the work is in progress, they will not take exception to an earnest effort being made by a practical man to throw light on a subject which is, at the best, but imperfectly understood, and is withal exceedingly intricate and comprehensive." Apparently, the author does not see that, in making this too deferential approach, he comes near to suggesting that the average architect is a blend of Sir Oracle and Caius Martius Coriolanus—too loftily contemptuous to listen to meaner men, and entirely disdainful of the old tag, *Experto crede*. Architects, however, will be glad to have this book, which, so far as we can see, affords excellent guidance as to the choice of the methods and materials of decorators' work.

Specifications for Decorators' Work. A Guide to Architects, Engineers, Property Owners, Estate Agents, House Painters, and others. By Fredk. Scott-Mitchell, Lecturer on Decoration to the City and Guilds of London Institute, etc. London: The Trade Papers Publishing Co., Ltd.

Brickwork and Masonry.

Some time ago the authors of "Mitchell's Building Construction" re-issued the chapters from that work dealing with most of the aspects of brickwork and masonry. They interpreted the title of the volume in a very wide sense, presumably because students of brickwork and masonry would be interested in allied subjects, such as drain-laying, excavation, etc., but we do not consider it quite wise to have branched out into so many side issues, for, surely, if the student of brickwork and masonry buys a book on his own particular subject, he may expect it to be confined to that subject. If he wished to obtain information on allied subjects of building construction he would, in our view, consult a book on building construction. We cannot quite understand either why brickwork and masonry should have been associated. We know the former is a kind of masonry, and, in fact, that in the United States both subjects are called by the general term "Masonry," but they are really things apart, and we certainly do not expect a bricklayer to be a mason, or vice versa. A book dealing with these special branches of building construction

must appeal generally to craftsmen, and therefore the mason does not want to have his text-book padded with information on brickwork, nor the bricklayer his book largely concerned with masonry. There is need for a good deal of extended information on each subject, but the authors have in great part reprinted the matter from their book on "Building Construction." Thus it is that while in the latter the information was very properly condensed, for a book dealing with the subject in detail the information which the authors provide is far too scanty. In short, we consider they have not taken sufficient trouble in the compilation of this volume. In a book dealing with brickwork one might expect considerable information on bricks and brickmaking. Ornamental brickwork might also be included, and terra-cotta is a subject that comes within the bricklayer's scope. In the same way, in a book on masonry there is a call for an extended treatment of the subject of stones and quarrying. The craftsmanship has been sadly neglected in this volume. We note that a chapter has been included on reinforced concrete construction in which the report of the R.I.B.A. Committee has been incorporated. We really do not see how this can be legitimately called either brickwork or masonry; it is quite specialist work. Furthermore, the authors have not dealt with the subject at all satisfactorily. There is, of course, much useful information in the book on various subjects, and we are sorry to be unable to accord it less qualified praise.

"Brickwork and Masonry." By Charles F. Mitchell, assisted by George A. Mitchell. Second edition. London: B. T. Batsford, 94, High Holborn, W.C. Price 7s. 6d. nett.

Cementing and Plastering.

The author of the "Cement Workers' and Plasterers' Edition of 'The Building Mechanics' Ready Reference," states that it is intended for the use of the "ordinary mechanic or worker in cement and concrete." If he is justified of his confidence in the belief that the mechanics of his country are sufficiently numerous and sufficiently enthusiastic to create a satisfactory demand for this manual, then the "ordinary mechanic or worker in cement" of America must be of a very different type from his congener of our own country. Not that our man is less intelligent, but that he has probably less initiative than the American, and, being accustomed to implicit obedience to orders, is by no means studious of what is rather loosely termed the "literature" of the subject. Much of the information contained in the book is reduced to tabular form; and in this country such a comprehensive "ready reference" book will probably be found serviceable by those who have the control or superintendence of cementing and plastering work, and possibly by here and there a "mechanic" ambitious of promotion.

The Building Mechanics' Ready Reference. Cement Workers' and Plasterers' Edition. By H. G. Richey, Superintendent of Construction, U.S. Public Buildings; 16mo, vi. by 458 pages, 193 figures. Morocco, 6s. 6d. net. New York: John Wiley and Sons. London: Chapman and Hall, Ltd.

Homeland Handbooks.

We have received two more of the excellent series of handbooks issued by the Homeland Association, of 15, Bedford Street, Strand. These are the fourth edition of the handbook on "Minehead, Porlock, and Dunster," vol. 18 of the series, and "Dover and Its Surroundings," a first issue of vol. 71 of the series.

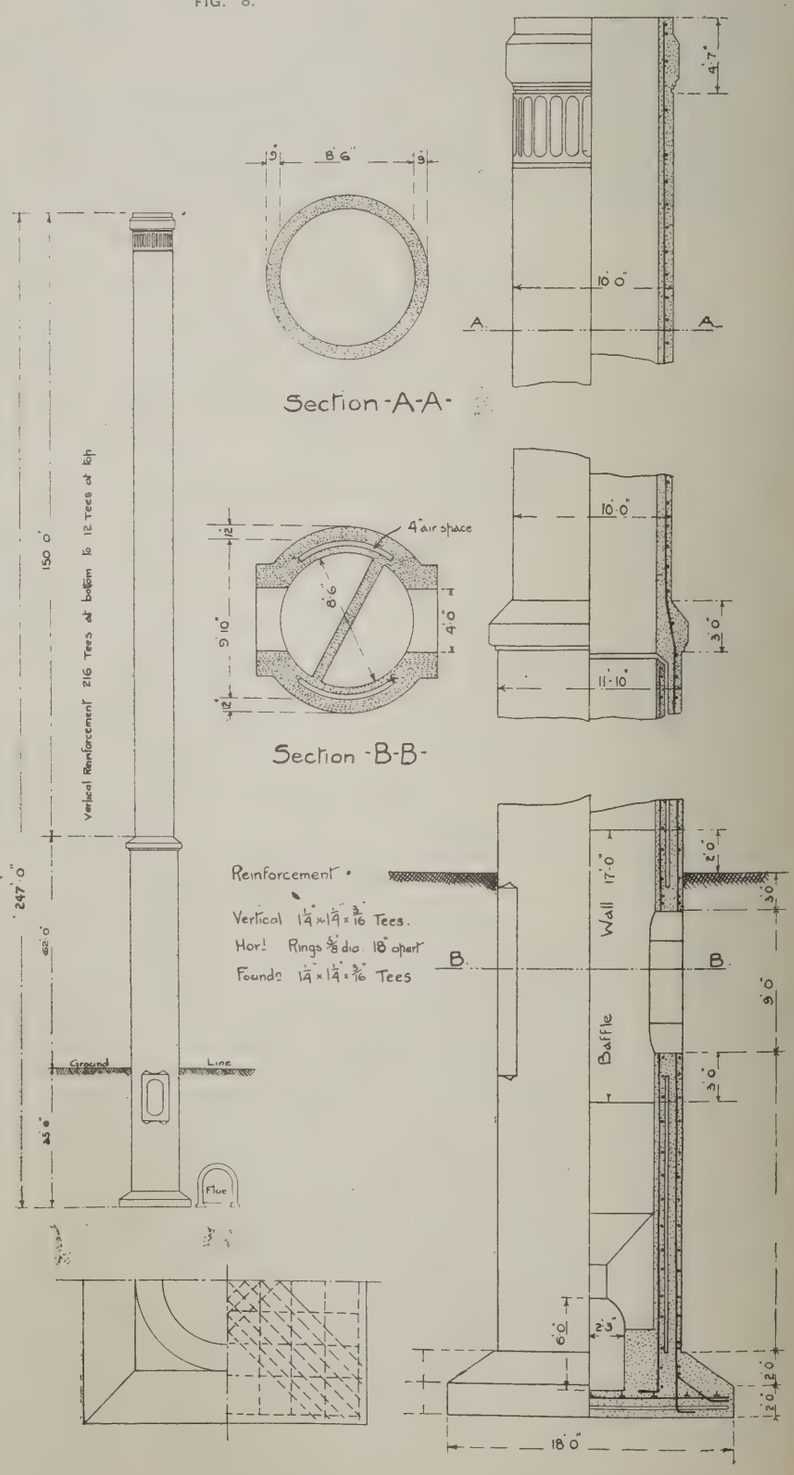
MODERN PRACTICE IN TALL CHIMNEY CONSTRUCTION.

By Hector St. G. Robinson.

(Continued from page 112, No. 705, and concluded.)

An interesting example of this class of chimney is shown in Fig. 8. This chimney was built by the Weber Company for the Associated Portland Cement Manufacturers, Ltd., and is situated at their Bevans Works at Northfleet. This is a typical example of the class of chimney built by the Weber Company. The total height of the chimney is 247 ft., 35ft. of which is below ground level, the inside diameter being 8ft. 3ins. throughout. The outside shell up to the offset is 12ins. thick, the inside lining 4ins. thick, with a ventilated air space of 4ins. between the lining and shell; the outer diameter of this portion being 11ft. 10ins. above the offset, the single shell having a uniform thickness of 9ins. The vertical reinforcement consists of 1½in. by 1¼in. by 3-16in. Tee-bars, the horizontal reinforcement being round rods ⅝in. diameter spaced at 18in. centres. There are 216 vertical bars in the outside shell, commencing at the base and running up for a distance of 50ft., from which point they

FIG. 8.



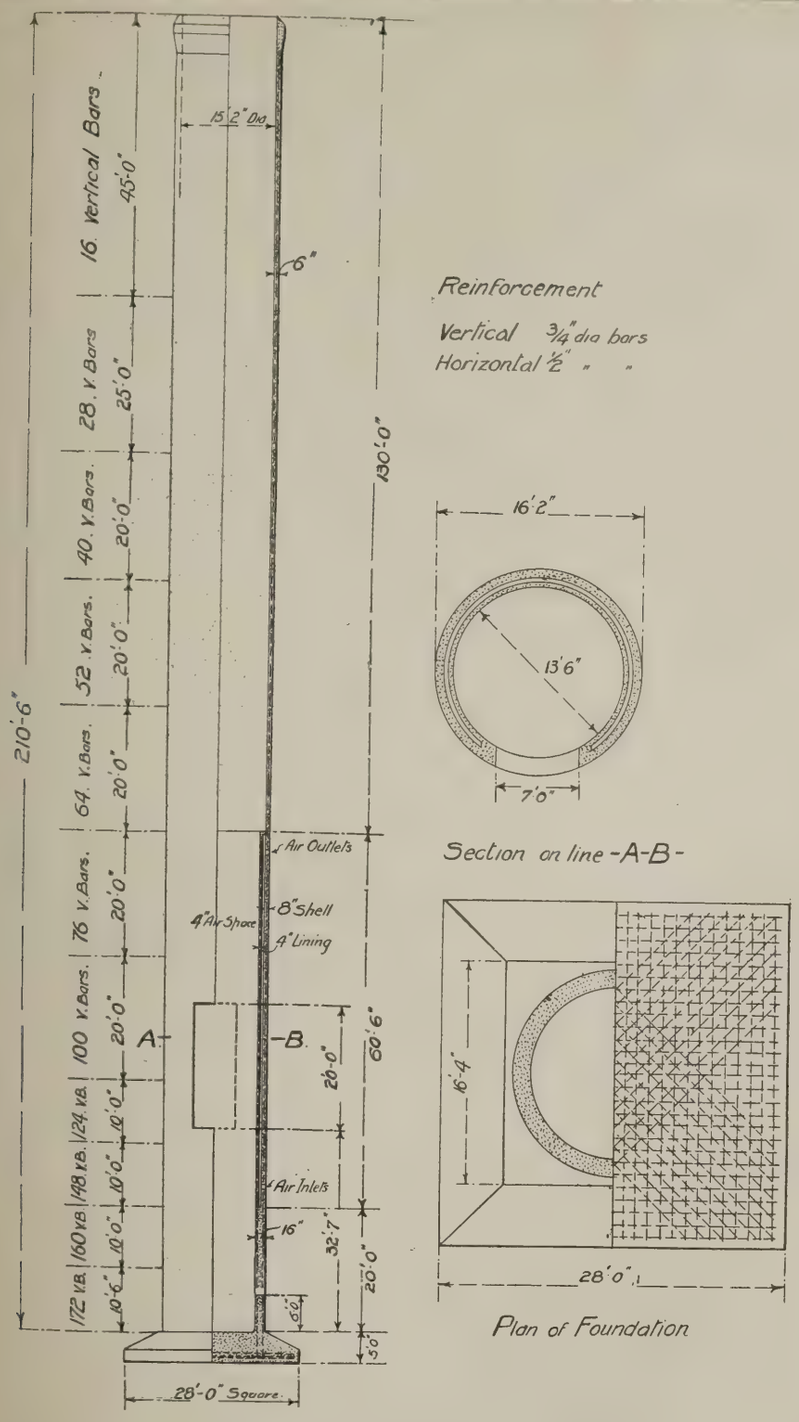


FIG. 9.

are reduced in number every 10ft., until in the last 67ft. from the top only 12 bars are used. In chimneys of this type great care should be exercised in constructing the battered offset. Owing to complication of the form-work at this point, considerable delay is frequently caused, with the result that planes of separation and soft spots in the concrete are likely to occur. At this point also the outside shell first receives the hot gases, the thermal stresses being considerable. It can be claimed for this type, however, that the flue is of uniform diameter throughout, and the area of chimney exposed to the wind is a minimum. A chimney with the outside shell of uniform diameter is illustrated in detail in Fig. 9. This example was designed and executed by the American branch of the Alphons Custodis Chimney Construction Company for the Edison Electric Illuminating Company in Brooklyn, N.Y. The total height above the ground is 210ft. 6ins., the diameter of flue being 13ft. 6ins. in the lined portion and 15ft. 2ins. in the unlined portion. Owing to the boiler flue entering the chimney fairly high up, the first 20ft. of the chimney are in the form of a solid shell 1ft. 4ins. thick, from which point the lining commences. The shell in the lined portion is 8ins. thick, both the lining and the air space being 4ins., the top portion of the shell being 6ins. thick.

The vertical reinforcement in this case consists of ¾in. diameter round steel bars, the spacing being shown on the illustration, the horizontal rings being ½in. diameter round steel bars. This type of chimney avoids the complication of the battered offset, and the slight increase in the diameter of the flue is too small to have any appreciable effect on the draught. The area presented to the wind is slightly increased, but the moment of resistance is also increased, due to increased diameter.

Reinforced Concrete and Tile Chimneys. Reinforced concrete and tile chimneys are of a type that distinguish themselves from others of the reinforced concrete class. They are known in America as the Weiderholt type. A typical example is shown in Fig. 10. The construction employs burnt clay tiles of a peculiar shape, the tile blocks being laid in the wall with vertical joints broken or staggered as in ordinary brickwork, and serve both as centering or framework for the concrete, and as a hard and durable facing material. The space between the inner and outer plates of the tile contains the reinforcing steel and the concrete. This portion, of course, is like the shell of an ordinary reinforced concrete chimney, except that it is intersected by the lines of vertical webs, and can be designed in a similar manner. As there is usually no inner concrete lining to this class of chimney, it is customary to protect the shell for some height with asbestos. A firebrick lining could, however, be adopted if required. In the example given the vertical bars are of square twisted steel, the horizontal bars being of the "Indented" type. Anchor rods project up 4ft. to 5ft. above the foundation block into the chimney wall as an additional security. The concrete filling is usually composed of 1 part of Portland cement to 3 parts of clean river sand.

These chimneys should not be built too quickly, as, owing to the impervious nature of the tile used, the concrete will take some time to arrive at its full strength, especially if a "wet" mixture is used. A point that requires consideration in all classes of concrete chimneys is the speed of erection; if this is too slow planes of separation between the old and the new concrete are liable to develop, while on the other hand if the progress is too rapid, the "green" concrete structure may be subjected to the full force of the wind with probably disastrous results. It is a very good precaution, in any case, to give ample laps to all the bars, or fix the ends together by mechanical means.

THE AGITATION AGAINST OFFICIAL ARCHITECTS.

That the agitation against the appointment of Government and civic architects is not confined to this country is apparent from the following particulars which we cull from our Australian contemporary "Building":—The New South Wales Institute of Architects sent a deputation on July 15th to wait upon the Minister for Works, and ventilate a professional grievance that is fairly common throughout Australia. It is the monopoly that the Government holds in the architecture of public buildings. In some States, Queensland, for instance, it is not so pronounced. In no other country do we find large public buildings, such as our National Library, the new Parliament Houses, the Registrar-General's Offices, withheld from public competition. The system of public competition has been found to work most satisfactorily in England, and other great centres. It is the only true system whereby the best results are obtained. As a

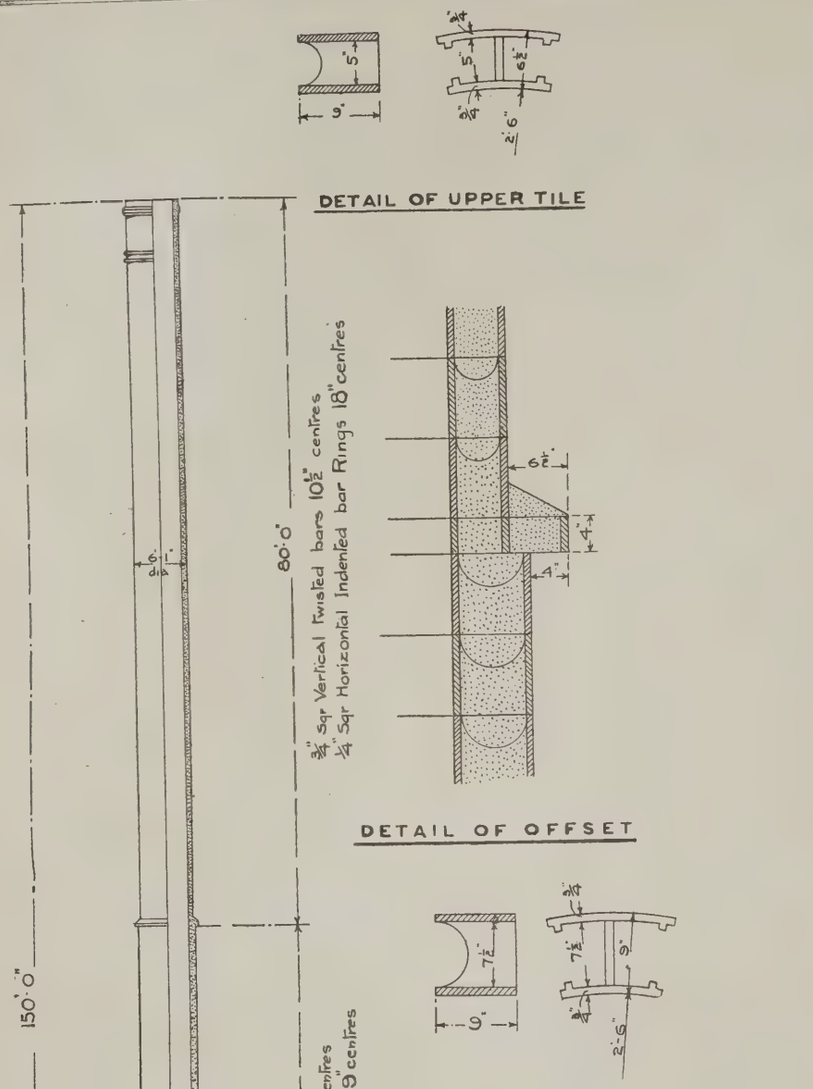


FIG. 10.—MODERN PRACTICE IN TALL CHIMNEY CONSTRUCTION, *See previous page.*

graphic illustration, take the great competition for the London County Council Hall, which brought to public notice undoubted talent in a young man who otherwise would never have had the opportunity of obtaining recognition of his ability. This question must be considered by every Government for granting fair opportunity for the best development of its native talent. There is a mistaken notion that it is desired to do away with the position of Government architects. It should be remembered that the adoption of a proper competitive system will still necessitate the retention of the services of an architect possessing the attainments of the existing Government architect, as in England, where the Government architect is retained to advise and observe that the accepted competitive design is carried out in all its details. There is, however, one point that stands out clearly in all the agitation, and that is the high esteem universally held for the present Government Architect, Mr. W. L. Vernon, F.R.I.B.A., whose high capabilities have never been questioned.

Bankruptcies.

Beach, Chas., builder, 50, Argyle Avenue, Whitton Park, Hounslow. Adj. Aug. 12.

Beckett, Joseph Fountain, builder, contractor, and undertaker, Upwell, Isle of Ely. 1st meeting, O.R.'s, Norwich, Aug. 22. P.E., C.C., King's Lynn, Aug. 20. Adj., Aug. 10.

Broadbank, Caleb Geo., house decorator, 5, Park Road, and Wellesley Road, Ashford. R.O., Aug. 14. Adj., Aug. 14.

Cowap, Joseph, plumber and decorator, 645, Oldham Road, Newton Heath, Manchester. R.O., Aug. 14. 1st meeting, O.R.'s, Manchester, Aug. 26. at 3.30. P.E., C.C., Manchester, Sept. 18, at 10. Adj., Aug. 14.

Daw, Ada Cecilia (widow, trading as H. L. Daw), retailer of wallpapers and house-decorating materials, 108, Commercial Street, Newport. R.O., Aug. 15. Adj. same day.

Dyett, Herbert Chas., builder, 4, South View Road, Shirley, Southampton, and High Street, Woolston. R.O., Aug. 13. 1st meeting, Midland Bank Chambers, High Street, Southampton, Aug. 26, at 11.30. P.E., C.C., Southampton, Oct. 28, at 12. Adj., Aug. 13.

Eardley, Bertram Cooper, plumber, Moorland Road, Burslem. R.O., July 31. 1st meeting, O.R.'s, Newcastle, Aug. 26, at 3.30. P.E., Town Hall, Hanley, Aug. 26, at 11. Adj., Aug. 14.

Foulkes, Hy. Cresswell, builder, 149 and 150, Finsbury Pavement House, E.C. Adj., Aug. 14.

Hibbs, Geo., contractor, 13, Clarence Villas, Connaught Road, Margate. R.O., Aug. 10. 1st meeting, O.R.'s, Canterbury, Aug. 27, at 11. P.E., Guildhall, Canterbury, same day at 10. Adj., Aug. 11.

Javens, Jas. Joseph, late joiner and builder, lodging at Park Road, Carlton. R.O., Aug. 13. Adj., same day.

Mackenzie, Tom, builder and contractor, Workington Road, and Gravel Street, Maryport. R.O., Aug. 10. 1st meeting, C.C., Cockermouth, Aug. 24. P.E., same.

Nicholls, Jno. Wood, and Harry Beaumont James (partners in the firm of Nicholls and James), builders, Whyteleafe, Upper Caterham. Adj., Aug. 10.

Robbins, Thos., jobbing builder and painter, 11, Bordesley Green Road, Birmingham. R.O., Aug. 15. Adj., same day.

Strevens, Edmund Joseph (described in R.O. as E. J. Strevens), architect and surveyor, 292, Camberwell New Road. Adj., Aug. 10.

Tinson, Eli, builder, 169, Warwick Road and Shaftesbury Road, Kensington. R.O., Aug. 10. 1st meeting, Bankruptcy Court, Aug. 24. P.E., same Sept. 29, at 11.30. Adj., Aug. 10.

Warne, Jno. Wm., builder and contractor, Albert Inn, Albert Street and Tennyson Avenue, King's Lynn. 1st meeting, O.R.'s, Norwich, Aug. 22. P.E., C.C., King's Lynn, Aug. 20. Adj., Aug. 13.

Watkins, Thomas, plumber, 14, Gower Street, Swansea. 1st meeting, O.R.'s, Swansea, Aug. 25. P.E., Town Hall, Swansea, Sept. 25, at 11.30.

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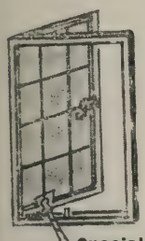
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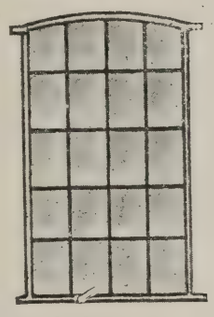
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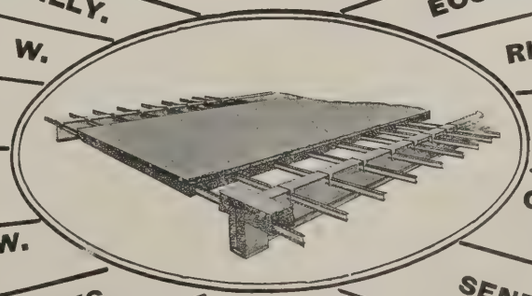
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Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aberdare.—For additions to the vicarage, for the Rev. C. A. H. Green, M.A. Mr. John W. Rodger, 14, High Street, Cardiff, architect. Quantities by architect:—

	£	s.	d.
J. Morgan and Son, Aberdare	828	12	0
D. Rees, Trecynon, Aberdare	787	7	6
Blacker Bros., Cardiff	740	3	6
Hatherley and Co., Black Rock, near Abergavenny	737	16	5
T. W. Davies, Mountain Ash	728	9	6
E. J. Staples, Cardiff	703	10	0
G. Hallett,* 43, Partridge Road, Cardiff	703	0	0

*Accepted.

Ashorne (Warwick).—Accepted for alterations and additions to Ashorne House, near Warwick, for Mrs. Bouch. Mr. C. M. C. Armstrong, architect, Warwick.

G. F. Smith and Sons, Leamington, £578.

Beckenham.—For the erection of a corrugated iron building to be used as a school, for the Urban District Council. Mr. J. A. Angell, engineer and surveyor:—

	£
Humphreys, Limited, Knightsbridge	2817
Norton Bros., and Co., Ilford	2,800
Ginger, Lee, and Co., Longsight	2,974
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Hawkins and Co., Westminster	2,225
British Iron Buildings Co., Ashford, Middlesex	2,192
W. Harbrow,* Bermondsey	1,949

*Accepted.

Cardiff.—Accepted for constructing masonry wall and works of road widening opposite Nazareth House, in North Road, for the Corporation.

C. Davies, Cardiff, £1,004 17s. 2d.

Chelsfield.—Accepted for erection of Chelsfield Green Street Green (Mixed) School, for the Kent Education Committee.

W. Owen and Son, Farnborough, £1,454 10s.

Cheltenham.—For alterations and additions at 89, High Street, Cheltenham, for the Gloucester Co-operative Society. Mr. Thomas Malvern, 21, Winchcombe Street, Cheltenham, architect:—

	£	s.	d.
W. T. Nicolls, Gloucester	875	0	0
A. Wilson	845	0	0
A. Middleton	805	18	0
P. C. Cousins, Gloucester	790	10	0
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G. Loveday	740	15	0
Collins and Godfrey,* Tewkesbury	697	0	0
Cornock and Perrey	685	0	0
Mealing and Co. (withdrawn)	597	5	0

Rest of Cheltenham.

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Crewe.—For the construction of a southern outfall sewer, for the town council.

G. Mackay and Sons,* Edinburgh, £6,083 2s.

Lowest of 25 tenders received; highest £12,152 1s. 11d.

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Cwmaman (Aberdare).—For erecting a new schoolroom to accommodate 200, with vestries, etc., for the trustees of the English Baptist Church. Mr. J. Llewellin Smith, Aberdare, architect:—

	£	s.	d.
Phillips and Davies	900	10	0
Jones Bros.	737	10	0
A. John	732	16	6
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J. Jones	680	0	0

Finchley. — Accepted for extension to engine-room building, for the Urban District Council. Mr. Edward Calvert, electrical engineer.

A. E. Faulks, Loughborough, £964 1s. 8d.

Goole.—For the erection of joint hospital:—

Whole work.

	£	s.	d.
Eastwood and Sons, Warsop	8,135	0	0
W. Wade and Co., Leeds	7,957	1	0
Moss and Sons, Loughborough	7,650	0	0
W. Nicholson and Sons, Leeds	7,500	0	0
Pattinson and Sons, Ruskington	7,428	0	0
F. Shepherd and Co., York	7,399	13	6
Jackson and Dimberline, Goole	7,255	0	0
S. R. and T. Kelsey, Goole	6,575	0	0
Jackson and Oates, Goole	6,477	0	0
J. Walker,* Goole	6,375	17	6

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	£	s.	d.
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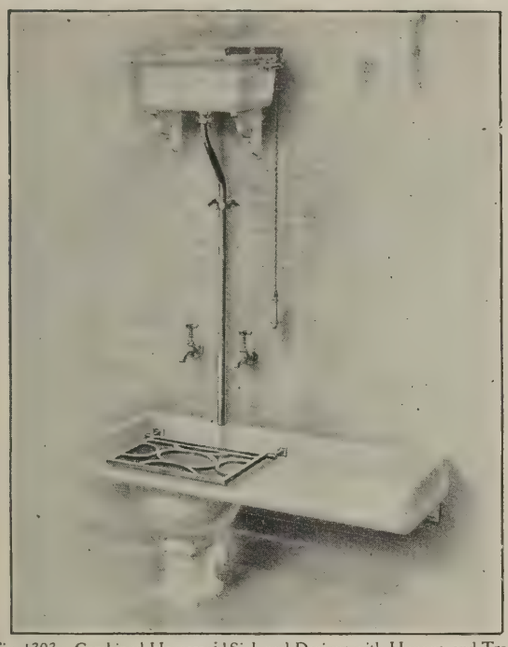


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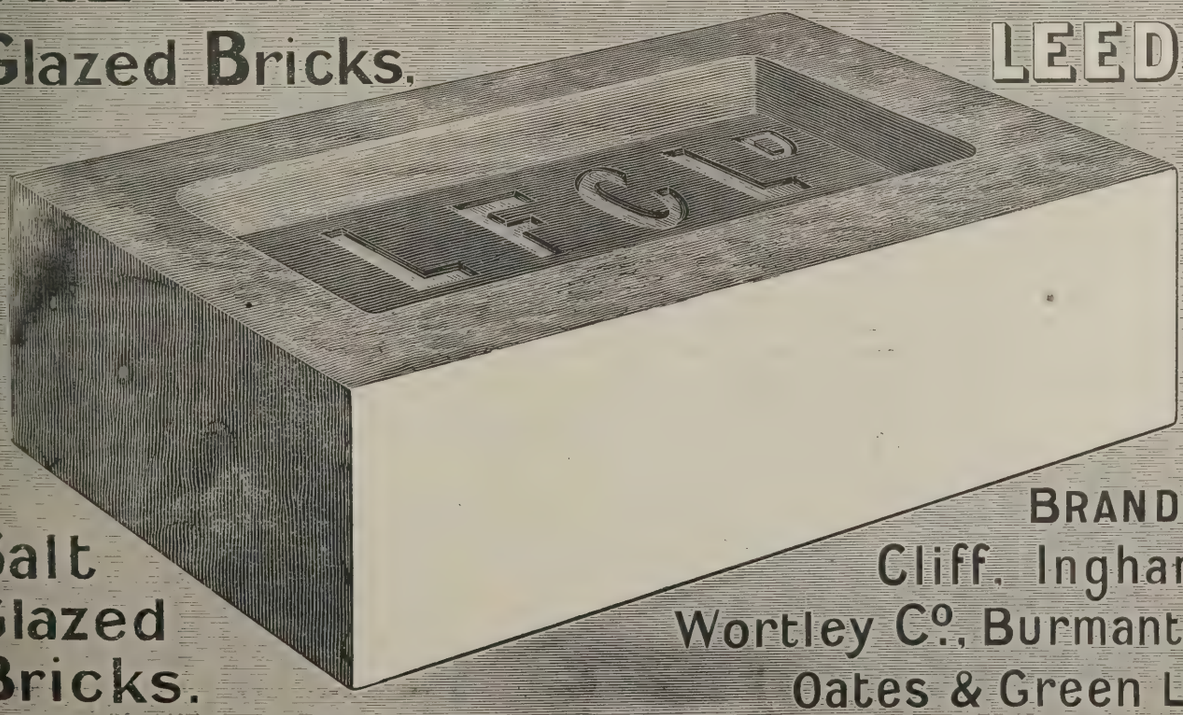
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Maesteg (Glamorgan).—For the erection of Roman Catholic Mixed and Infants' School at Maesteg. E. Whitfield Burnett, St. Michael's Road, Maesteg, architect. Quantities by architect:—
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Newton Abbot (Devon).—For erecting additional wards at the joint hospital, for the Isolation Hospital Committee. Mr. S. Segar, Union Street, Newton Abbot, architect.
L. Bearne, Newton Abbot, £1,231 19s. 9d.

Northwood (Middlesex).—For the construction of 1,148 yards of pipe sewer for foul and surface water, raising roadway, together with manholes and other appurtenant work, at Sharp's Lane, Ruislip, for the Ruislip-Northwood Urban District Council. Mr. W. Louis Carr, surveyor:—
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Ollerton (Notts.)—For supplying, excavating for, laying, and jointing of about 2½ miles of 4in. and 3 in. cast-iron mains, valves, hydrants, etc., the erection of small brick service reservoir, and all works in relation thereto, at Ollerton, Notts., for the Southwell Rural District Council. Messrs. Sands and Walker, Milton Chambers, Nottingham, engineers:—
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H. Shardlow, Nottingham ... 1,517 6 0
C. Chamberlain, Leicester ... 1,500 0 0
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T. Smart, Nottingham ... 1,448 11 5
J. Bradley, Mansfield 1,440 16 4
R. C. Brebner and Co., Edinburgh 1,420 0 0
F. Smith and Son, Grimsby ... 1,396 8 11
H. Ashley,* Mansfield 1,390 2 0
*Accepted.

Ramsbottom (Lancs.).—Accepted for alterations to bacterial filters at sewage disposal works, Summerseat (Contract No. 19), for the Urban District Council. Messrs. J. Diggle and Son, Hind Hill Street, Heywood, Lancs., and at Westminster, engineers.
S. Johnson and Sons, Pendleton, Manchester, £1,893.

Romford.—For erecting the new boardroom, offices and receiving ward, for the Guardians. Mr. H. Harrington, A.R.I.B.A., 65, Bishopsgate Street Without, architect. Quantities by Mr. H. W. Simpson, surveyor, Caxton House, Westminster:—
Nightingale, London £13,270
Abbotts and Charlton, Acton ... 13,004
E. and R. H. Davey, Southend ... 12,725
Hawkey and Oldham, Mile End ... 12,323
Spencer, Santo and Co., Kensington 12,261
Clemens Bros. East Ham 12,234
T. Webster, East Dulwich 12,147
J. Cracknell, Peterborough 12,071
Chessum and Sons, London 11,997
J. W. Jerram, East Ham 11,986
Coxhead, Leytonstone 11,975
F. and A. Willmott, Ilford 11,943
Pattinson and Sons, Westminster... 11,936
W. J. Fryer and Co., Paddington ... 11,886
Pavitt and Sons, Aveley 11,623
W. Lawrence and Sons, Waltham Cross 11,623
Dowsing and Davis, Romford ... 11,533
Hammond and Sons, Romford ... 11,521
Myall and Upson, Ilford 11,486
*Accepted.

Late News.

(*See also p. xxviii.*)

A residence for the French Ambassador at Washington, U.S.A., is being designed by M. Berner, Member of the Institute.

Renfrew's new high school, which was opened recently, has a total floor area of 3,000 sq. ft., with class-room accommodation for 780 pupils, and was designed by Mr. John Arthur, of Glasgow.

A Baptist church for Pendleton, for which Messrs. Cook and Son, of Manchester, have prepared the designs, is to provide accommodation for 450 persons, and is estimated to cost £2,500.

A new parish hall at Treharris will hold 205 persons on the ground floor, and the same number in the basement, and has cost about £1,440 to build. Mr. W. Dowdeswell prepared the plans and supervised the work.

Heating contracts have been secured by Messrs. J. F. Phillips and Son, of Richmond Buildings, Brighton, and 21, Old Queen Street, Westminster, for the Royal Portsmouth Hospital, Portsea; new secondary schools at Chichester; and new elementary schools at Ramsgate. Messrs. Phillips, who install Barker's patent cable system of vacuum hot-water heating, have recently completed the heating of new Council schools at Cowes, Isle of Wight, at Union Church and Institute, Brighton; and at the Standard Tablet Company's Factory, Hove.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

August 27. HUDDERSFIELD.—Erection of a two-storey warehouse at Longroyd Mills, Thornton Road. Plans may be seen and bills of quantities obtained at the office of J. Berry, architect and surveyor, 3, Market Place, Huddersfield. Tenders, free of charge, must be sent to the architect by August 27.

August 27. PORT TALBOT (WALES).—Erection of new premises, for the Taibach and Port Talbot Co-operative Society. Plans and specifications to be seen on the premises. Tenders must be delivered by August 27 to the committee, sealed and endorsed "Tenders." A deposit of £1 1s., to be returned if tender not accepted.

August 27. BANGOR.—Erection and completion of a museum at the rear of the free library, Bangor, for the museum and general purposes committee. Drawings, specifications and conditions may be seen at the surveyor's office. Tenders, addressed to John Gill, A.M.Inst.C.E., city surveyor, city surveyor's office, Bangor, and marked "Museum," to be delivered not later than 5 p.m. on August 27.

August 27. FARNWORTH, LANCS.—Erection of destructor building, approach road, and extension of electricity works in Albert Road, for the Urban District Council. Drawings may be seen and specifications, quantities, and forms of tender obtained at the offices of the engineer, W. J. Lomax, A.M.I.C.E., 11, Fold Street, Bolton, on a deposit of a cheque for £2, which will be returned on receipt of a bona fide tender. Tenders, sealed and endorsed "Destructor," to be delivered to W. Tyldsley, clerk, Council Offices, Farnworth, by 10 a.m. on August 27.

August 28. MANCHESTER.—Repairs to river wall, Philips Park Cemetery, for the Corporation. Drawing may be seen and specification and form of tender obtained on application at the city surveyor's office, town hall, Manchester, on payment of two guineas, which sum will be returned on the receipt of a bona fide tender. Cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope and addressed to the chairman of the parks, etc., committee, are to be delivered at the city surveyor's office not later than 9.30 a.m. on August 28.

August 28. DARTFORD.—Erection of a playshed and improvements to the ventilation, also for a urinal and removal of gallery at Dartford Heath Street, York Road, and West Hill council schools. Specifications can be seen and further information obtained at the office of Miss M. L. Dixon, 8, Hythe Street, Dartford. Tenders sealed and endorsed must be forwarded to Miss Dixon not later than 4 o'clock on August 28.

August 29. WINTERSLOW.—Erection of Wesleyan schoolroom and classrooms at Winterslow. For view of plans and specifications apply to Sidney J. M. Moody, Fisherton Street, Salisbury, to whom tenders must be sent not later than August 29, marked "Winterslow Schoolroom."

August 29. CHELMSFORD.—Erection of new offices, for the education committee of the Essex County Council, at Chelmsford. Drawings, specification, and conditions of contract may be seen on application to the architect. Applications for the bills of quantities and form of tender must be made to F. Whitmore, architect, 73, Duke Street, Chelmsford, on or before August 29, enclosing a cheque for five pounds, which will be returned on receipt of a bona fide tender. The contractor will be required to give the bond of an approved guarantee society in the sum of £500, for the due performance of the contract.

August 29. ROMSEY.—Erection of an additional building, comprising 5 new wards, nurses' room and offices, also alterations to the present building, for the trustees of the nursing home and cottage hospital. Drawings, specifications, and conditions of contract may be inspected at the offices of James Jenvey, architect and surveyor, Market Place, Romsey. Bills of quantities and forms of tender may be obtained at same address on payment of one guinea, to be returned to those persons who send in a bona fide tender in the forms provided. Sealed tenders, in envelopes to be supplied, must be sent in to the architect on or before August 29.

August 29. ROTHWELL.—Reconstruction of under oven bridge on the Leeds and Barnsdale main road, within the urban district of Rothwell, for the West Riding County Council. The bridge has a span of 16 ft. General conditions, specification, and bill of quantities may be obtained at the office of the surveyor. A deposit of £1 will be required, which will be returned on receipt of a bona fide tender. Cheques, etc., should be forwarded to the West Riding treasurer, at the county hall, Wakefield. Plans may be seen at the office of the West Riding surveyor. Sealed tenders, duly endorsed, to be delivered not later than 10 a.m. on August 29, to F. G. Carpenter, West Riding surveyor, County Hall, Wakefield.

August 31. TONYPANDY.—Erection of business premises in Bridge Street, Tonypandy. Tenders to be delivered to Mrs. Williams, Anchor House, Tonypandy, where plans and specifications may be seen, by August 31, endorsed "Tender."

August 31. METHLICK. — Mason work of buildings, for the trustees of Beaton Hall, Methlick. Plans and specification may be seen with James Cobban, architect, Haddo House; and sealed tenders will be received by him up to 10 o'clock on August 31.

August 31. WREXHAM.—Construction of a new goods yard and sidings at Wrexham, for the directors of the Great Western Railway Co. Plans and specification may be seen, and forms of tender and bills of quantities obtained, at the office of the resident engineer at Birmingham (Snow Hill) Station, between 10 a.m. and 4 p.m. Tenders, marked outside "Tender for Works at Wrexham," must be sent to G. K. Mills, secretary, Paddington Station, London, by August 31.

August 31. CALE GREEN.—Erection of high school for girls, Beech Road, Cale Green, for the Corporation of Stockport. Spalding and Spalding, King Street, Cheapside, London, architects. Persons desirous of tendering for the whole of the works are requested to send their names, together with a deposit of £3 3s., which will be returned on receipt of a bona fide tender, to Arthur Lawton, secretary to education committee, education offices, town hall, Stockport, not later than August 31, after which date bills of quantities will be supplied and the drawings and conditions of contract may be inspected. Fair wages clause.

August 31. MANNINGHAM.—Works of all trades required in the erection of branch library, Carlisle Road, Manningham, for the Bradford Corporation. Drawings and general conditions of contract may be seen, and bills of quantities and form of tender obtained, on application to the city architect, Whitaker Buildings, Brewery Street, Bradford. Sealed and endorsed tenders must be sent to Frederick Stevens, town clerk, Town Hall, Bradford, not later than noon on August 31. The contract will be let subject to the fair contracts clauses of the Corporation, which may be seen at the town clerk's office, and which the accepted contractors will be required to sign.

August 31. STRETFORD.—Extension of buildings at the electricity works, Longford Bridge, Stretford, for the Urban District Council. Bills of quantities, drawings, and other particulars can be obtained on application to Ernest Woodhouse, F.R.I.B.A., 88, Mosley Street, Manchester, on payment of a fee of two guineas, which will be returned on receipt of a bona-fide tender. Tenders in sealed envelopes and endorsed "Tender for Buildings" to be addressed to the chairman of the electricity committee, council offices, Old Trafford, and delivered not later than noon, August 31.

August 31. LITHERLAND.—Construction of stabling, etc., at the council's depot, School Lane; 2, construction of new mortuary, situated on canal side, opposite council's depot, Church Road, for the Urban District Council. Drawings and specifications may be seen and quantities, forms of tender, and all other particulars obtained on application to A. H. Carter, surveyor to the council, public offices, Sefton Road, Litherland, on payment of the sum of £1 1s., which will be returned on receipt of a bona fide tender. Sealed tenders endorsed "Tender for Stables and Mortuary," to be sent to William Kirk and J. W. Allen North, clerks to the council, at or before noon, August 31.

September 1. SALISBURY.—Erection of stables in Friary Lane, for the Urban District Council. Plans and specification can be seen, and bills of quantities with form of tender obtained on application to W. J. Goodwin, A.M.Inst.C.E., city engineer and surveyor, Municipal Offices, Salisbury. Tenders, endorsed "Stabling," must be delivered not later than 3 p.m. on September 1, to Francis Hodding, town clerk, Municipal Offices, Salisbury.

September 1. BIRMINGHAM. — Erection of umbrella roof coverings over platforms at Birmingham (Snow Hill) station, for the Great Western Railway. Plans and specifications may be seen and forms of tender and bills of quantities obtained at the office of the new works' engineer at this station, between the hours of 10 a.m. and 4 p.m. Tenders addressed to G. K. Mills, secretary, Paddington Station, London, and marked outside "Tender for Roof Coverings, Birmingham," will be received by September 1.

September 1. KENNYHILL.—(1) Digger, mason and brick works; (2) carpenter, joiner, glazier, and ironmongery works; (3) slater work; (4) plaster work; (5) plumber, gasfitter and bellhanger works; (6) painter work of three tenements of dwelling-houses to be erected in Cumbernauld Road, Kennyhill, for the Corporation of Glasgow. Plans may be seen and copies of the specification, schedule of quantities, and form of tender obtained on application at the office of the city engineer, 64, Cochrane Street. Tenders, marked "City Improvements Department, Kennyhill Tenements. Tender for ..... Works," to be lodged on or before September 1, with A. W. Myles, town clerk, city chambers, Glasgow.

September 2. KENFIG HILL (WALES).—Erection of a school hall for the English Presbyterian Church at Kenfig Hill. Plans and specification may be seen at the office of Arthur Lloyd Thomas, architect and surveyor, Church Street chambers, Pontypridd. Sealed and endorsed tenders must be sent to Edgar Ware, secretary, Crescent Place, Kenfig Hill, by September 2.

September 2. PECKHAM RYE.—Erecting a wall and executing other work at Peckham Rye, London, S.E., for the Metropolitan Asylums Board. Form of tender, with conditions of contract and specification, may be obtained at the office of the board, Embankment, E.C., on payment of a deposit of £1, which will be returned only on receipt of a bona fide tender. Plan may be seen at the offices of T. W. Aldwinckle and Son, 20, Denman Street, London Bridge, S.E., between 10 a.m. and 4 p.m. (Saturdays 10 a.m. and 1 p.m.). Tenders properly endorsed, and addressed to T. Duncombe Mann, clerk to the board, must be delivered at the office of the board, by noon on September 2.

September 2. CARSHALTON.—Making and fixing joinery fittings at the Southern Hospital, Carshalton, Surrey, for the Metropolitan Asylums Board. Plans, specification, and conditions of contract may be seen at the offices of the architects, Treadwell and Martin, 29a, Charing Cross Road, London, W.C. between 10 a.m. and 4 p.m. (Saturdays 10 a.m. and 1 p.m.). Copy of tender form and bills of quantities may be obtained on and after August 27 at the office of the Board, Embankment, E.C., on payment of a deposit of £5, which will be returned only on receipt of a bona fide tender. Tenders, properly endorsed and addressed, must be delivered at the office of the board by noon, on September 2.

September 3. THURNSCOE.—Excavator, mason, and bricklayer, carpenter and joiner, slater, and plasterer's work required in the erection of 18 houses for proposed garden village at Thurnscoe, for the Barnsley British Co-operative Society, Ltd. Plans and details may be seen and quantities and specification obtained, on application at the office of the architect, on payment of one guinea, which will be returned on receipt of bona fide tender. Tenders, sealed and endorsed "Houses, Garden Village," must be delivered not later than 2 p.m. on September 3, to Ernest W. Dyson, architect and surveyor, 10, Regent Street, Barnsley.

September 4. CHEPSTOW.—Additions to the master's residence at the Chepstow workhouse for the Guardians of the Poor. Plans and specification can be seen at the workhouse offices, or at the office of the architect, John W. Rodger, 14, High Street, Cardiff. Bills of quantities can be obtained on application to the architect. Sealed tenders, endorsed "Master's Apartments," are to be delivered to Fothergill Evans, clerk, Union Offices, Chepstow, Mon., not later than September 4.

September 7. NEWPORT (MON.)—Erection of a new building and adaptation of existing premises in accordance with drawings and specification prepared by the architects, C. E. Compton, M.S.A., and Habershon, Fawckner, and Co., High Street, Newport, for the building committee of the Y.M.C.A. Drawings, specifications, and conditions of contract may be inspected at the office of the architects, and copies of the quantities can be obtained at the office of the quantity surveyor, Charles Miles, Central Chambers, Newport, upon payment of a deposit of two guineas,

returnable upon receipt of a bona fide tender. Sealed and endorsed tenders, on the printed forms supplied, must be received by Geo. W. Rankin, buildings' secretary, at Bronheulog, Church Place, Penarth, Glam., not later than nine a.m., on September 7.

September 9. SHEERNESS.—Erection of hall upon site at corner of High Street, and St. George's Road, Sheerness, for the trustees. Plans and specification may be seen between the usual office hours at the office of the architect, 21, Balmoral Road, Gillingham, Kent, and copy of the bills of quantities obtained upon receipt of fee of 10s. 6d., which will be returned upon receipt of a bona fide tender on lithographed form supplied. Sealed tenders to be addressed to J. Auty, secretary to trustees, 3, Trinity Road, Sheerness not later than noon on September 9, endorsed "Tender for Masonic Hall, Sheerness."

September 9. LONDON, W.—Erection of a block of shops and showrooms at 143-9, Great Portland Street, London, W. Drawings, specification, and conditions of contract may be inspected at the offices of the architects, John W. Simpson and Maxwell Ayrton, 3, Verulam Buildings, Gray's Inn, W.C., from August 24 to Sept. 8, between 10 and 4. Bills of quantities and forms of tender may be obtained at the same address on payment of three guineas. The sums so paid will be returned to those persons who send in tenders on the forms provided in conformity with the conditions. Tenders must be delivered before noon on Sept. 9, addressed to the Owner, Great Portland Street site, care of Messrs. Jubber and Co., 61, Great Portland Street, W., and endorsed "Tender for Shops and Showrooms."

September 9. LETCHWORTH GARDEN CITY.—Erection and completion of a new County Council school at Letchworth Garden City, for the Education Committee of the County Council. Persons desiring to tender for the work may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturday, when they may be seen from 10 a.m. till 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office, on or after the above-mentioned date, upon payment of two guineas, which sum will be returned to the tenderer upon receipt of a bona fide tender and the documents which have been supplied to him. Sealed tenders, endorsed 'Tender for New School, Letchworth," must be delivered to Urban A. Smith, county surveyor, County Surveyor's Office, Hatfield, not later than 5 p.m. on September 9. Such security for the due execution of the works as the council may require must be given by the contractor.

September 12. KILLALOE (Co. Clare).—Erection and completion of a new chapel at Garraunboy, Killaloe, Co. Clare, for the Very Rev. Canon D. Flannery, P.P., and committee. Drawings and specification may be seen at the parish priest's house, Killaloe, or at the office of the architects. Bills of quantities for the use of builders tendering can be had at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick, or with the parish priest. Sealed tenders, endorsed "New Chapel, Garraunboy," accompanied by bills of quantities, must be delivered to the parish priest on or before September 12. Two solvent sureties required for the due performance of the contract.

September 14. HERTFORD.—Erection and completion of a new county record and strong room at Hertford, for the County Council. Persons desiring to tender may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturdays, when they may be seen from 10 a.m. to 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office upon payment of two guineas, which sum will be returned upon receipt of a bona fide tender and the documents which have been supplied. Sealed tenders, endorsed "Tender for New Record and Strong Room, Hertford," must be delivered not later than 5 p.m. on September 14, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Such security for the due execution of the works as the county may require must be given by the contractor.

September 15. OXFORD.—Erection of the new church of St. Stephen, Lonsdale Road, Summertown, Oxford, for the building committee. Plans, specification of works, and conditions of contract may be seen, and form of tender, with bills of quantities obtained, at the office of A. Mardon Mowbray, architect, 117, St. Aldate's Street, Oxford, during office hours, on payment of five guineas, which will be returned on receipt of a bona fide tender. The contractor will be required to enter into a bond, with two responsible sureties, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. Tenders, sealed and endorsed "Summertown New Church" to be delivered not later than noon on September 15, to Rev. C. J. Burrough Summertown Vicarage, Oxford.

September 21. SUTTON COLDFIELD.—Erection of a school to accommodate 200 children in the Green Lanes, Chester Road, for the Corporation. Specification and quantities may be obtained from Crouch, Butler, and Savage, architects, 39, Newhall Street, Birmingham, on deposit of two guineas. Tenders, marked "Green Lanes School," to be delivered on or before September 21, to R. A. Reay Nadin, town clerk, council house, Sutton Coldfield.

No date. ARNOLD.—Erection of a Baptist chapel, Cross Street, Arnold. Builders desirous of tendering are requested to apply to W. H. Higginbottom, architect, Friar Yard, Friar Lane, Nottingham.

No date. WORMINGFORD.—Alterations and additions at the Grove, Wormingford, for T. Eustace Smith, Esq. Plans and specifications may be seen at the office of J. W. Start, F.S.I., architect and chartered surveyor, Colchester.

No date. KINGSTON-BY-SEA.—Erection of new balconies and carrying out of other work at the infirmaries, Kingston-by-Sea, for the Guardians of Steyning Union. Persons desirous of tendering are requested to send their names to Arthur Flowers, clerk to the guardians, union offices, New Shoreham, Sussex, when the plan and specification prepared by the board's architects (Clayton and Black) will be sent to them.

ENGINEERING.

August 28. MANCHESTER.—Work required in boring and lining a deep well, and the supply and erection of pumping plant on land adjoining the Stuart Street generating station, for the electricity committee of the Corporation. Specification and form of tender may be obtained on application to F. E. Hughes, secretary, electricity department, Town Hall, Manchester, on payment of one guinea, which amount will be refunded on receipt of a bona fide tender. Further particulars and information may be obtained from S. L. Pearce, chief electrical engineer, Dickinson Street, Manchester. Tenders, duly endorsed and addressed to the chairman of the electricity committee, must be delivered at the town hall before 10 a.m. on August 28.

August 28. CORK. — Making, supplying, and fixing hot water heating apparatus in city hall, Albert quay, and Carnegie free library, Anglesea Street, Cork, for the Corporation. Plans, specification, and conditions of contract prepared by the city engineer. General conditions, specification of requirements, and plans of buildings can be seen or obtained in the city engineer's office, city hall, from 10 to 4 daily, where tender forms will be issued. Intending contractors when making application for the necessary information must first lodge with the city treasurer the sum of £1, which sum will be returned when a bona fide tender is sent in. All materials to be, where possible, of Irish manufacture. Sealed tenders, endorsed "Tender for Heating City Hall, and Carnegie Library," must be deposited before 2 p.m. on August 28, with F. W. McCarthy, town clerk, City Hall, Cork. Fair wages clause.

September 7. DUBLIN.—Construction of five deviations on the main line of the Tralee and Dingle Light Railway, comprising the removal of about 32,000 cubic yards of earthwork, the erection of 3¼ miles of fencing, the building of a bridge over the river Finglas. The provision of broken stone, and the execution of various other works, for the public works board. Copies of plans and specification may be seen at the secretary's office, or at the offices of the Tralee and Dingle Railway company, Tralee, county Kerry. Copies of the specification will be supplied from the office of public works on payment of £1 1s., which will be refunded on receipt of a bona fide tender. Sealed tenders, addressed to H. Williams, secretary, office of public works, Dublin, will be received up to 10 a.m. on September 7.

September 7. DERBY.—Construction of 6 separator tanks and pump-house, together with all the necessary culverts, pipes, and other works connected therewith. Drawings may be seen and copies of specification and bills of quantities obtained at the office of the engineers, James Mansergh and Sons, 5, Victoria Street, Westminster, on the deposit of cheque or banknote for £5, which will be returned after the receipt of a bona fide tender with the bills of quantities and schedules fully priced out. Sealed tenders, endorsed "Derby Corporation, Sewage Disposal Works Contract No. 7—Tender for Separator Tanks," are to be delivered at or before noon on September 7, to G. Trevelyan Lee, town clerk, town clerk's office, 15, Tenant Street, Derby.

September 15. LEITH.—Execution of the undermentioned works by a utilisation of the materials of the existing unfinished iron bridge over the Caledonian Railway Company's line at Victoria Park, for the Corporation of Leith. (1) Construction of a footbridge on the site of the bridge referred to. (2) Widening of Junction Bridge. All conform to relative plans and specifications to be seen at the surveyor's office. Offers, sealed and marked "Bridge," to be lodged with J. R. Findlay, burgh surveyor, Burgh Surveyor's office, 35, Charlotte Street, Leith, on or before September 15.

IRON AND STEEL.

August 31. MALDON.—Supplying 620 yds, of 6 in. and 4 in. C.I. water-mains, for the Corporation. Specification and form of tender may be obtained from the borough surveyor. Tenders, endorsed "Water-Mains," to be sent to F. H. Bright, town clerk, municipal offices, Maldon, Essex, on or before August 31.

September 5. WAKEFIELD.—Supply of about 20 tons of special cast-iron pipes, for the Corporation. Drawings and specification may be seen, and bills of quantities and form of tender obtained, at the office of C. Clemesha Smith, M.I.C.E., the waterworks engineer, Town Hall, Wakefield. Tenders, under cover, marked "Cast-iron Pipes," must reach W. W. Greenhalgh, town clerk, not later than September 5.

September 8. INDIA OFFICE, WHITEHALL.—Supplying girder bridges, 100 ft. and 40 ft. span, for the India Office. Conditions of contract may be obtained on application to E. Grant Burls, director-general of stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by 2 o'clock p.m. on September 8.

September 8. LONDON.—1. Supply and delivery of the following steel rails, which will form the subject of separate contracts, for the L.C.C.: (a) About 3,600 tons of steel girder tramway track rails and fastenings; and (b) About 1,550 tons of steel slot rails, and about 590 tons of conductor tee rails. (2) Roadwork and platelaying required for the electrification, on the conduit system of traction, of tramways in Wandsworth Road, Lavender Hill, and East Hill, Wandsworth, from Nine Elms Lane to the terminus at East Hill; total length is equivalent to about 6¾ miles of single line. The contractor for the roadwork will be required to use the rails, etc., and the special work for the various junctions and crossovers, which will be provided by the council under other contracts, but all the remaining metal work and other materials will be included in the contract for roadwork. Persons desiring to submit tenders may obtain the specifications, bills of quantities, forms of tender, and other particulars from the chief engineer of the council, Maurice Fitzmaurice, C.M.G., at the County Hall, Spring Gardens, S.W., upon payment of the sum of £2 for each of the two specifications for rails, and £5 for the specification for road-work, etc. These amounts will be returned provided a bona fide tender shall have been sent in and not withdrawn. Full particulars on application at the County Hall before payment of the fee. Tenders should be delivered at the County Hall in a sealed cover, addressed to the Clerk of the London County Council, Spring Gardens, S.W., and marked "Tender for Track Rails," "Tender for Slot Rails and Conductor Tees," and "Tender for Roadwork, etc.," as the case may be. No tender will be received after 11 a.m. on September 8. Fair wages clause.

PAINTING & PLUMBING.

August 27. SURBITON.—Painting the outside and a portion of the interior of the council offices, for the Surbiton U.D.C. Specification and form of tender can be obtained upon personal application to Henry T. Mather, engineer and surveyor, Council Offices, Surbiton, any day during office hours. Tenders, made out on the forms supplied and enclosed and sealed up in official envelopes, must be delivered at the council offices at or before noon on August 27.

August 27. BRADFORD.—Painters' work required at several parks, recreation grounds, and cemeteries, for the Corporation. General conditions of contract may be seen, and specifications and form of tender obtained, on application to the city architect, Whitaker Buildings, Brewery Street, Bradford. Sealed and endorsed tenders must be delivered at the office of Frederick Stevens, town clerk, town hall, Bradford, on or before August 27. Contractors whose tenders are accepted will be required to sign the fair contracts clauses of the Corporation.

August 28. HARROGATE.—Painting several blocks of property. Particulars of J. R. Usher, 26, Dragon Parade, Harrogate. Tenders to be sent to J. Chippindale, on or before August 28.

September 1. LEEDS.—Painting, etc., at section 3 and the nurses' home of the union infirmary, Beckett Street, Leeds. Specification and form of tender may be obtained on application to the clerk to the Guardians, or will be sent on receipt of stamped addressed envelope, and must be received duly filled in not later than noon September 1, by Jas. H. Ford, clerk to the guardians, poor law offices, South Parade, Leeds.

September 2. BRENTWOOD and DARTFORD.—Cleaning and painting works at (i.) High Wood School, Brentwood, Essex; (ii.), small pox hospitals, Dartford, Kent, for the Metropolitan Asylums Board. Conditions of contract and specification prepared by W. T. Hatch M.I.C.E., M.I.Mech.E., engineer-in-chief. Specifications, conditions of contract, and forms of tender may be inspected at the office of the board, Embankment, E.C., and can be obtained upon payment of a deposit of £1 in respect of each institution. The amounts of the deposits will be returned after the receipt of bona fide tenders, and after the specifications have been returned. Tenders, addressed as noted on the form, must be delivered at the office of the board not later than 10 a.m. on September 2.

ROADS AND CARTAGE.

August 27. HARROGATE.—Private street works required in streets off St. Mary's Walk, for the Corporation. Tenders must be submitted not later than 9 a.m. on August 27, to F. Bagshaw, borough engineer and surveyor, at whose office the specification may be seen, and quantities obtained.

August 27. DEWSBURY.—Paving, flagging, etc., of Oastler Street, for the Corporation. Plans, specifications, etc., may be seen and forms of tender obtained, on application to the borough surveyor's office, town hall, Dewsbury. Tenders under sealed cover, endorsed "Private Street Paving," must reach H. Ellis, town clerk, town hall, Dewsbury, not later than August 27.

August 29. INVERBERVIE.—Laying concrete footways, etc., in the burgh of Inverbervie. Plans may be seen of James Andrew, burgh chamberlain, Bervie; and schedule of measurement may be obtained from the burgh surveyor, John Sim, C.E., Montrose, on payment of a fee of 10s. 6d., which will be returned to all bona fide offerers. Sealed offers, marked "Tender for Footways," must be lodged with the burgh chamberlain, not later than August 29.

August 31. EMLEY (near Wakefield).—Steam rolling within the district, for the Emley U.D.C. Price per day to be quoted. Sealed tenders to be sent to F. C. Heath, clerk, on or before August 31.

August 31. COVENTRY.—Paving 7,500 sq. yds. with 4 in. granite cubes and other work in connection therewith, for the Gas Committee of the Corporation. Forms of tender, specification, bill of quantities, and general conditions may be obtained, and drawing may be seen, on application to Fletcher W. Stevenson, engineer and general manager, Gas Works, Coventry, and on payment of one guinea, which will be returned on receipt of bona fide tender. Sealed tenders, addressed to the chairman of the gas committee, Gas Works, Coventry, must be delivered by first post August 31, endorsed "Tender for Paving."

August 31. LYMINGTON.—Supply and delivery (by rail or water) of about 235 tons of either Devonshire granite or basalt, broken to 2 in. gauge, and about 15 tons of granite chippings, broken to ¾ in. gauge, for the Corporation. Samples to be forwarded to F. Hill Parr, borough surveyor, and tenders (without forms), endorsed "Tender for Granite," to be sent to the town clerk not later than noon on Aug. 31. Tenders are also invited for steam rolling, etc., in the borough during the coming season (particulars of which can be obtained upon application to the borough surveyor). Tenders should be sent to J. Davis Rawlins, town clerk, town clerk's office, Lymington, Hants. not later than noon on August 31, endorsed "Tender for Steam Rolling, etc."

August 31. FAVERSHAM.—Supplying 655 tons (more or less) of Guernsey granite or basalt broken to a 2 in. gauge and 60 tons (more or less) of clean ½ in. Guernsey granite or basalt chippings, free from dust, for the Corporation. The material to be delivered on to the Town Wharf, Faversham, in accordance with the rules and regulations of the wharf, or into carts or trucks as may be directed by the borough surveyor. The whole of the material to be delivered in such quantities and at such times not later than December 25, as may be directed by the borough surveyor. Tenders must be accompanied by a sample of each material tendered for. No special forms of tender will be provided. Tenders, in sealed envelopes, endorsed "Road Metal," must be sent not later than noon on August 31 to Allan Tassell, town clerk, Faversham. Should a tender be accepted the person tendering will be required to enter into a contract with the Corporation for its due performance, and also to provide a certified weighbridge note with each cargo delivered.

September 1. MACCLESFIELD.—Workmanship and materials required in scarifying digging out, concreting, and paving gas road, portion of Waters Green, and Sunderland Street, main roads in the borough, for the Corporation. Plans, sections, and specification may be seen and bills of quantities obtained on application to the borough surveyor, at the town hall, upon payment of £2 2s., which will be returned on receipt of a bona fide tender. Sealed tenders (upon the forms supplied) to be delivered before 2 o'clock September 1, to Arthur T. Pattinson, town clerk, town clerk's office, District Bank Buildings, Macclesfield. Fair wages clause.

September 1. STROOD (Rochester).—Making-up, paving, and channelling Bingham Road, Frindsbury, situated partly in the city and partly in the rural district of Strood. Plans and specifications can be seen, and forms of tender obtained, as to that portion within the city at the city surveyor's office, Guildhall, Rochester, during office hours, and to that portion in the rural district of Strood at the office of the district surveyor, L. Randerson, Blendon Villa, Meopham, near Gravesend, between the hours of 9 a.m. and 5 p.m. daily. Sparate tenders, addressed as to the portion within the city to the town clerk, Rochester, and to that portion within the rural district of Strood to the clerk at the Rural District Council's offices, 13a, Gun Lane, Strood, Rochester, must be sent in by September 1.

September 1. SCUNTHORPE.—Supply of all material and execution of the works in laying out new Building Estate, Clayfield Closes, Scunthorpe, in the county of Lincoln. The works involved include the construction of streets and back roads, and kerbing the same, the provision of all sanitary and storm water sewers and manholes, and other works on the basis of a schedule of prices. Specifications and plans may be seen, and schedules with forms of tender obtained, at the office of A. M. Cobban engineer and surveyor, 12, Home Street, Scunthorpe. Sealed tenders are to be sent in on or before September 1, endorsed "Tenders for New Building Estate, Streets and Sewers," addressed to H. M. Hett, Esq., solicitor, 2, Trafford Street, Scunthorpe.

September 3. HOUNSLOW.—Making up Bulstrode Avenue, Hounslow, for the U.D.C. of Heston and Isleworth. Plans and sections may be seen, and specification, bills of quantities, and form of tender obtained from J. G. Carey, engineer and surveyor to the council, Council House, Hounslow, on payment of the sum of two guineas, which will be returned upon receipt of a bona fide tender. Sealed tenders, on the form provided, must reach H. J. Baker, clerk to the council, Council House, Hounslow, not later than noon on September 3, endorsed "Private Street Works, Bulstrode Avenue."

September 14. STREATHAM.—Making up and paving the following new streets, viz.:—(a) Thrale Road, Streatham. (b) Part of Crowborough Road, Streatham, between Chillerton Road, and Ramsdale Road. (c) Part of Ramsdale Road, Streatham, between Rectory Lane and Crowborough Road, for the Council of the Metropolitan borough of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained at the borough engineer and surveyor's office, New Streets Department, 53, East Hill, Wandsworth, between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving —— Road," must be delivered to Henry George Hills, Town Clerk, Council House, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on September 14. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

September 16. BEXLEY HEATH.—Levelling, kerbing, channelling, tar paving, draining, and making good nine streets on the Oaklands and Broadway estates, and carrying out the Lion Road improvement, all at Bexley Heath, for the Urban District Council. Plans and sections may be seen and specification, conditions and bills of quantities obtained, on application to W. T. Howse, surveyor, council offices, Bexley Heath, and upon payment of two guineas, which sum will be returned upon receipt of a bona fide tender and the documents which have been supplied. Sealed tenders, together with fully priced in quantities endorsed "Private Street Works," must be delivered to Thos. G. Baynes, clerk to the council, council offices, Bexley Heath, Kent, not later than noon September 16.

SANITARY.

August 27. WILLIAMSTOWN, Penygraig. — Laying about 400 yards of 12 in. and 9 in. surface water drain at Williamstown, Penygraig, for the Rhondda U.D.C. Plans and specification may be seen and forms of tender obtained from W. J. Jones, engineer and surveyor, Public Offices, Pentre, Rhonda, on payment of a deposit of one guinea (to be returned on receipt of a bona fide tender). Sealed tenders must be delivered on or before August 27, addressed to the chairman of the council, Public Offices, Pentre. Fair wages clause.

August 31. HASTINGS.—Laying a pipe sewer in road at rear of Robertson Street, Hastings, and other work in connection therewith, for the Corporation. Drawing and specification may be seen, and form of tender obtained, at the office of the borough engineer, P. H. Palmer, M.I.C.E., town Hall, Hastings, between the hours of 10 a.m. and 5 p.m. Tender, under cover, endorsed "Tender for Sewer at rear of Robertson Street," must be delivered not later than noon on August 31, to Ben. F. Meadows, town clerk, town hall, Hastings.

August 31. HARWICH.—Execution of the following works for one year from October 1, for the Tendring R.D.C. Lawford, Manningtree, and Mistley. — House refuse removal, cleansing of street gullies, etc. Parkeston.—House refuse removal, cleansing of street gullies, attention to sewage tank, etc. Kirby.—Attention to sewage tanks, cleansing of effluent ditch, flushing of sewers, etc. St. Osyth.—Cleansing of sewage tanks. Further particulars may be obtained upon application to the clerk to the council, or the inspector of nuisances, E. H. Grant, of Thorpe-le-Soken. Tenders must reach A. J. H. Ward, clerk to the council, 42, Church Street, Harwich, not later than August 31.

September 1. WATFORD. — Construction of about 130 yds. lineal of 6 in. stoneware pipe sewers, with the necessary inspection chambers, etc., for the Urban District Council. Persons desirous of contracting for the work may see the drawings and specification and obtain the form of tender on application to D. Waterhouse, engineer, council Offices, High Street, Watford. Sealed tenders, addressed to the clerk to the council, and endorsed "Tender for Sewerage," must be delivered under cover to H. Morten Turner, clerk, Council Offices, 14, High Street, Watford, at or before noon on September 1.

September 2. CLACTON-ON-SEA.—Construction of 193 yards of 24-in. and 367 yards of 18-in. diameter stoneware pipe storm-water relief sewers in Rosemary Road, Clacton, together with all appurtenant works, for the Urban District Council. Plans may be seen and quantities and form of tender obtained at the office of the engineer, W. H. Radford, C.E., Albion Chambers, King Street, Nottingham, on deposit of two guineas, which will be returned on receipt of a bona-fide tender and the return of the quantities within two months of tendering. Plans may also be seen at the surveyor's office, town hall, Clacton-on-Sea. Sealed and endorsed tenders must be sent in to Geo. T. Lewis, clerk to the council, town hall buildings, Clacton-on-Sea, by noon on September 2.

September 9. GROOMBRIDGE.—Providing and laying about 200 yds. lineal of 9 in. stoneware pipes, and about 35 yds. lineal of 9 in. cast-iron pipes, together with the construction of manholes and other appurtenances, for the R.D.C. of East Grinstead. Drawings may be seen by appointment on and after August 31, at the office of the surveyor, Charles Turton, 6, High Street, East Grinstead, from whom, on and after the abovementioned date, copies of all bills of quantities, specification, schedule of prices, and forms of tender may be obtained on payment of the sum of one guinea, which will be returned on receipt of a bona fide tender and all documents received. Tenders sealed and endorsed "Groombridge Sewer Extension," must be delivered to Francis S. White, clerk to the council, 6, High Street, East Grinstead, before noon on September 9.

September 14. GALASHIELS.—Drainage and sewage purification works.—The town council of the Burgh of Galashiels have postponed the date for lodging tenders for the above works, which will now be received by J. B. Lumsden, town clerk, town clerk's office, Galashiels, up till 1 p.m. on September 14. The engineer, W. A. Baird Laing, or his assistant, will attend at the burgh buildings, Galashiels, on August 18 and 25, to accompany contractors over and point out the site of the works. Plans and drawings may be inspected at the engineer's office, 175, Hope Street, Glasgow, up to September 14. Specifications applicable to contract No. 3, being for the erection of pump house, with sludge tank and manager's house, and the formation of approach roads, has been withdrawn in the meantime.

September 15. BARKING. — Construction of about 325 lineal yds. of sewer and surface-water drain, 15 in. diameter, with manholes and catchpits complete, in connection with the Upney Valley drainage scheme, for the Urban District Council. Plans, sections, and details can be seen, and specification, conditions of contract, bill of quantities, and form of tender obtained, upon application to C. F. Dawson, surveyor to the council, public offices, Barking. The contractor whose tender is accepted will be required to employ, as far as possible only workmen resident within the district of Barking Town. Tenders are to be sent in, marked on the outside "Tender for Upney Valley Drainage," and addressed to the chairman of the public health committee, public offices, Barking, not later than 4 p.m. on September 15. Fair wages clause.

September 21. PRESTWICH.—Supplying and laying about 2,800 yds. of 24 in. diameter stoneware, or earthenware, and cast-iron pipe sewer, together with all necessary river, brook, ravine crossings, manholes, lampholes, overflows, and other appurtenant works, for the U.D.C. Detail drawings and specification by Sydney H. Morgan, A.M.Inst.C.E. Drawings may be seen and copies of the specification, bill of quantities, and general conditions of contract obtained at the office of Sydney H. Morgan, the council offices, Prestwich, Lancashire, between the hours of 10 a.m. and 12 noon, and from 2 p.m. to 4 p.m. each day, except Saturdays and Sundays, upon payment of two guineas, which will be returned on receipt of a bona fide tender, and the return of all documents within 14 days of notice that a tender has been accepted. The successful contractor will be required to enter into a bond, with approved sureties, for the due performance of contract. Tenders, endorsed "Tender for Main Outfall Sewer—Contract No. 1," must be sent not later than noon on September 21, to Lewis A. Orford, law clerk to the council, council offices, Prestwich, Lancashire.

MISCELLANEOUS.

August 28. RUSHOLME. Cleansing and repairing the Gore Brook in Birchfields Park, Rusholme, for the Corporation of Manchester. Drawing may be seen and specification and form of tender obtained on application at the city surveyor's office, town hall, Manchester, on payment of two guineas, which sum will be returned on the receipt of a bona fide tender. Cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope and addressed to the chairman of parks, etc., committee, are to be delivered at the city surveyor's office, not later than 9.30 a.m. on August 28.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

A competent architectural assistant (24) desires appointment, permanent or temporary; good designer, accurate draughtsman; constructional details, specifications, quantities, moderate salary.—Box 4484, BUILDERS' JOURNAL Office.

AN Architect renders professional assistance, on Competition or contract drawings for any class of buildings; quantities accurately taken off; moderate terms.—C., 50, Elm Park Road, Finchley, London. 4437

ARCHITECTS' Assistant (20), 4½ years' thorough general experience, good draughtsman and colourist, details, perspectives, specifications, and quantities; first class references and testimonials; salary about 20s.—W. H., care of Hipwell, Surveyor, Chatteris, Cambs. 4456

ARCHITECT'S and Surveyor's Assistant (24), 8 years' experience, working and detail drawings, levelling, and surveying, special experience in engineering portion of public baths, etc.—C. O., 18, Kempston Road, Bedford 4425

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Junr., 5 years' London experience, neat draughtsman; good colourist, details.—Box 4480, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4498

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4522, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22), good varied experience; excellent testimonials; working drawings, details, measuring, supervising, etc.; holder of numerous certificates; moderate salary.—Box No. 4433, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (27), first-class artistic draughtsman, travelling studentship winner, 11 years' experience; perspectives, quantities, etc.; moderate salary.—Scott, 28, Cromwell Terrace, Halifax. 4500

ASSISTANT A.R.I.B.A. (29), thirteen years' London Provincial experience; testimonials, references, working drawings, details, specifications, supervision perspectives, office work; well up in management; salary 2 guineas.—Apply A., 31, Cotswold Road. Westcliff-on-Sea, Essex. 4512

ARCHITECT'S Junior Assistant, good draughtsman, 6½ years experience, working drawings, details, perspectives, surveying, specifications; assist quantities; mod. sal. for experience in good office.—"H.," 53, Hartwood Road, Southport. 4489

ARCHITECT'S Junior Assistant; disengaged; (21); 4½ years' experience; neat draughtsman and colourist; details; specifications; surveying; assist with quantities.—Box No. 4474, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (26), disengaged, 10 years' experience; competent draughtsman, colourist, etc.; working drawings, details, surveying, levelling; specifications, specimens; excellent testimonials; moderate salary.—Box 4515, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24), desires engagement; seven years' general experience, working and detail drawings, specifications, superintendence, surveying and levelling; excellent references; moderate salary.—H. M., Parkhurst, Ilkeston. 4514

ARCHITECT-SURVEYOR'S assistant requires situation at once. Three building construction certificates, and Prelim. R.I.B.A.; articled to A.M.I.C.E. and M.S.A.; good all-round experience. Age 24.—Box 4492, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (33), disengaged; 14 years' experience in good offices; first-class testimonials, and references; can take charge; specimens sent; salary £2. — Box 4491, BUILDERS' JOURNAL Office.

ARCHITECT'S Junior Assistant desires engagement (21); 4½ years' experience; neat draughtsman; assist with quantities; good references.—knowledge of gas-engine; good refs.—T. S., 4, York Terrace, King's Road, Herne Bay. 4450

ARCHITECT and surveyor's assistant (24); eight years' experience; working drawings, details, design, surveying, specifications, quantities; student R.I.B.A., moderate salary.—Box 4495, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S assistant disengaged, 21 years' experience, comprising office routine, plans, specifications, quantities, outside supervision; measuring-up, levelling and surveying; good references; abstainer—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4494

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN, decorator good colourman, grainer and paperhanger; able to estimate; thoroughly experienced in management of men, for general jobbing work; age 42; wages £2 per week.—Box 4524, BUILDERS' JOURNAL Office.

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

IMPROVER (Plumbing, Gasfitting), wants situation. Willing to fill up time.—A. R., 344, Commercial-road, Old Kent-road. 4455

MACHINIST seeks permanency; work spindle, planer, tenoner, morticer, dovetailer, sharpen saws, make cutters, take charge of small plant; country job preferred. — Machinist, 39, Cathnor Road, Shepherd's Bush, W. 4504

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

PLUMBER, gas, hot water, lead-laying and sanitary, wants job, or constancy; town or country. —S. W., c/o Editor, Box 4510, BUILDERS' JOURNAL Office.

SANITARY work wanted by practical man, 16 years' experience, iron or earthenware, capable to take charge, or would give estimate for good work; good references; age 40; abstainer.—Box 4499, BUILDERS' JOURNAL Office.

SHOP Foreman of joiners seeks re-engagement, experienced, machinery, abstainer; reference; 11 years last situation; age 40.—T. R., 9, Second Avenue, Hendon, London, N.W. 4488

THOROUGHLY competent builder's book-keeper and general assistant requires engagement, 15 years' experience in London with builders and shopfitters; good reasons for leaving present berth; excellent references Age 32.—Apply Box 4414, BUILDERS' JOURNAL Office.

TO Property Owners.—Situation wanted on an estate or tenement property by a reliable man, aged 40, with a thorough practical experience of all repairs; capable of taking sole charge; distance no object.—Box 4503, BUILDERS' JOURNAL Office.

YOUNG Engineer (married), four years' Canadian experience, general engineering and concrete work (reinforced); returning to England, requires appointment; references from Can. Pack Railway. Apply T. B., 2, Grange Road, Ealing. 4505

YOUTH (age 18) requires situation in builder's or surveyor's office. Desirous of learning estimating. Three years' previous experience.—Apply W. B., 8, Medley Road, West Hampstead, N.W. 4441

Appointments Vacant.

ARCHITECT'S pupil, vacancy in busy West-end architect's office; small premium required but must be fond of drawing.—Stanley-Barrett and Driver, 23, York Place, Baker Street, W. 4521

EXPERIENCED representative wanted by well-known firm of lock manufacturers; must have influential connection amongst leading architects and contractors in London district; state salary required and full particulars of experience. — Box 4, 7, BUILDERS' JOURNAL Office.

TRAVELLER wanted, with established connection amongst architects, builders, contractors, decorators, etc., to sell our Artificial Marble, on salary and Commission; must have exceptional references as to ability. Apply by letter only, giving full particulars, and stating terms required, The Fassio Marble Company, Ltd., 46, Cannon Street, London, E.C. 4449

WANTED, for a permanency in the office of an old-established firm of surveyors in the city, a youth of good appearance and education, with previous office experience, who can write a good hand, quick and accurate.—Apply, in own handwriting, with copies of testimonials, stating salary asked, to Box 4457, BUILDERS' JOURNAL Office.

Business Wanted.

WANTED, a jobbing builder's business in London, suburbs preferred. Apply, stating all particulars, to Box 4415, BUILDERS' JOURNAL Office.

Businesses for Sale.

FOR Sale, a good old building business, in town of 10,000, at about £2,500, most of which could remain at 5 per cent. to good men; the business would suit joiner, bricklayer and painter; up-to-date shop and machinery.—Applicants for extended payment terms, must state amount of capital, age and class of work used to; good references indispensable.—Box 4452, BUILDERS' JOURNAL Office.

JOBBING builder and decorators' business in Suffolk; old-established; freehold house and premises for sale.—Box No. 4475. BUILDERS' JOURNAL Office.

Partnerships & Practices.

AN Architect and Surveyor practising in Essex is anxious to collaborate or enter into partnership with another architect practising within easy distance of Chelmsford. — Apply "Essex," Box 4508, BUILDERS' JOURNAL Office.

Dissolution of Partnership.

MR. A. E. TUTTE, architect and surveyor, having dissolved partnership with Mr. Cook (Cook and Tutte) and closed the offices at 394, Commercial Road, Portsmouth, has opened offices at 91, London Road, Portsmouth. 4496

September 2, 1908. Volume 28, No. 708

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Out-of-work Architects.

The letter of "A Young Architect," which appeared in the "Daily Express" of August 25th, strikes at once a pathetic and a warning note. After three years' pupilage and sixteen years as chief draughtsman to one firm, the writer, "married, and with a family," finds himself "stranded and unable to get a situation, or any work to do. Such is the over-crowded state of the profession and the utter absence of work." Unfortunately this is by no means an isolated case. The numerous schools and training centres, with their excellent organisations and curricula, without doubt attract many lads towards a profession in which the majority of them can never hope to earn a bare living. Parents and guardians are liable to be enamoured of an occupation which is "respectable and gentlemanly"; and the absence of any legal check to the incursion of untrained and uneducated men, who live mainly on work obtained by undercutting the proper standard of fees, has contributed to the present condition of overcrowding; while the advent of this unhappy state of things has been considerably hastened by the present paralysing depression in the building trade. It is not too much to say that we are now face to face with a crisis in the profession of architecture. Well-qualified men are holding subordinate positions; numbers of assistants are out of work, many practically starving; and emigration holds out no prospects, for our Colonies seem to need architects as little as does Great Britain. Meanwhile, our schools and training centres are turning out scores of fresh men to swell the already overcrowded ranks. We have heard all kinds of explanations for this congestion. One is that the schools are sending out better-trained men who are ousting those of inferior education; another has it that the schools are responsible, and that they should be stopped for the present, or the number of their pupils regulated, as, in the nature of things, they must, if they are to continue, keep on tempting men into the profession for the sake of the fees; a third explanation, which also has the ring of truth, is that the profession is being over-run by men blessed with private means, or who are being supported by their relatives for an indefinite period; these men will work for nothing, and consequently turn out men who are working for their living. This is a real hardship, but it is by no means confined to the profession of architecture. The remittance man is not less a curse to society here than he is generally represented to be in Colonial circles. But of these three explanations, apart from the present depression in the building trade, which is the correct one?—or are they all true? Perhaps some of our readers can tell us!

London County Hall Again.

Criticism of the new County Hall for London is likely, it may be supposed, to continue either mildly or violently epidemic until some considerable time after the building is completed. Within the past few days there has been a fresh outbreak. The revised designs, one correspondent declares, have caused "much painful surprise and consternation." He seems to prefer the original elevation, for he complains that apparently the river frontage is now "to be shorn of its characteristic motif—the very architectural effect by which, on the verdict of the selected judges, chosen on the ground of their undeniably expert knowledge, the successful competitor triumphantly carried off the blue ribbon of the *concours*. As proposed to be altered, the design gives place to effects suggestive of two linked cotton-mills, with an apologetic architectural feature, apparently appliqué, to form something central, and thus, desperately, to save the situation. A more disastrous result of meddling interference, frustrating an art work of national importance for the frontage of our noble river, can hardly be conceived. If this is to be the outcome of an occasion such as was responded to by Wren, Chambers, and Barry, and the result of well-won distinction in the keen struggle of competition, then may architects prudently think twice lest their crown of success should prove ultimately to be one of disappointment and sorrow." This is really very pathetic; and if Mr. Knott is fated to have many more such friends sympathetically weeping upon his bosom, his cup of sorrow will soon be overflowing, and he himself will be in no small danger of representing, in his own proper person, a modified river frontage. Almost any kind of criticism may be useful, but it need not be lugubrious; and the reference to Wren, Chambers, and Barry, suggests no more appropriate reflection than that, contrary to the correspondent's tacit implication, each of these architects, in his day, suffered more from "meddling interference" than Mr. Knott is ever likely to endure, even supposing that he has the good fortune and the ability to attain to their eminence. Such "sufferance is the badge of all our tribe."

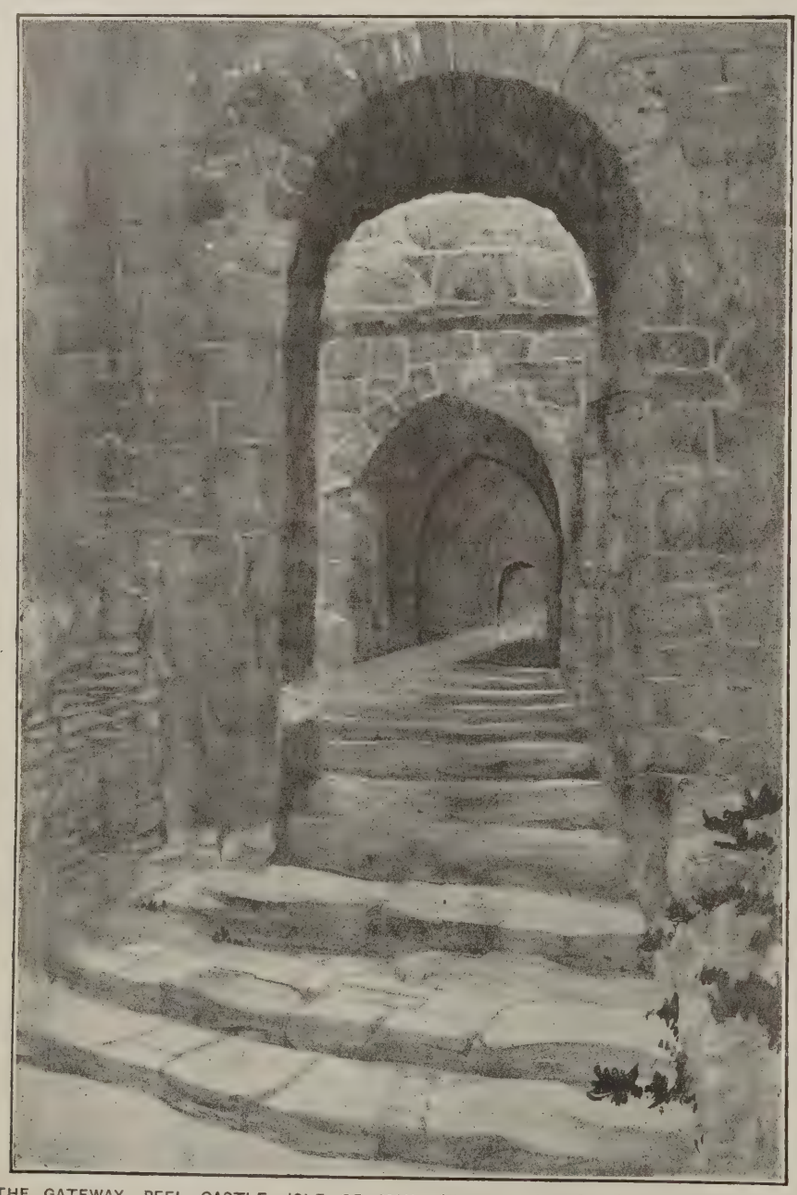
Trees for Towns.

That the builder is the inveterate enemy of trees may be classed among the vulgar errors that die hard or possess an unblessed immortality. Architects of to-day are fully aware of the effective value of trees in rendering buildings and estates attractive. The Garden City idea has taken firm root, and is extending many branches, and no modern builder can afford to ignore so obvious an indication of the trend of popular taste. His chief difficulty is to know how to get variety in contour and foliage without planting such trees as cannot endure the atmosphere of towns. A correspondence on the subject that is taking place in the "Times" seems to show that, as regards London, the choice is limited to about four kinds—the Oriental plane, the ailanthus, the robinia, and the poplar. Others, such as the catalpa, the tulip tree, and the acacia, are suggested, but their ability to thrive in streets paved with asphalt or creosoted wood, and to resist the noxious gases that poison the atmosphere around them and the earth beneath them, remains to be proved. But, at all events, let it no longer be said that the builder's one idea about trees is to cut them down.

Road Reform and its Building Interest.

Since the announcement was made that an International Roads Congress is to be held in Paris in October, the subject has received a great deal of attention in the public press. So far, the correspondence has not strikingly vindicated the truth of the proverb that in the multitude of counsellors there is wisdom, most of the criticism being purely destructive. The one established conclusion is that "something must be done" to supersede the obsolete methods of Telford and Macadam, to say nothing of the redoubtable General Wade, who was probably the only roadmaker who ever inspired poetic utterance—"If you had seen this road before it was made, You would lift up your hands and bless General Wade." Local authorities in this country are alarmed and incensed at the rapid and enormous increase in the cost of road maintenance since the develop-

ment of motor traffic, and their demand for some equitable scheme for pooling the expenses gathers force with every report upon the condition of the highways. The French roads, once the pride and joy of the country and the admiration of Europe, seem to have got into a more parlous state than our own, the old Roman model upon which they are said to have been formed having failed to anticipate the advent of so deadly an engine of destruction as the modern automobile—the racing motor with armoured tyres, tearing up the roads at terrific speed, or the lorry that pulverises them with its tremendous tonnage of build and burden. Nor is this exclusively a question of making, marring, and mending roads. Building interests are suffering. The sometime pleasant suburban highway or roadside residences are shaken to their foundations by the lumbering motor traffic, and the dust raised by the swift and frequent car renders the exterior of the house unsightly, and the interior almost uninhabitable. To tar the roads is only to substitute one evil for another. It may help the householder to keep the road out of his house in the form of dust; but if he is compelled to bring it inside in the form of tar (which is more difficult than dust to deposit on the doormat), the gain, though only too palpable, is nevertheless of doubtful value; and tar rises up to the destruction of his trees and shrubs. Out of this situation there may arise the necessity for building dust-resisting and smell-repelling houses, with deafened walls and windows, and anti-vibration construction throughout, from foundation to chimney-stack. These considerations should not be overlooked at the forthcoming congress, which may possibly produce some mighty Colossus of Roads, capable of dealing comprehensively and conclusively with every factor of the rather complex problem.



THE GATEWAY, PEEL CASTLE, ISLE OF MAN. (*From a water-colour by M. H. Baillie Scott.*)

Concerning this drawing Mr. Scott says: "It was chiefly interesting to me as showing what beauty can be achieved in building by mere masonry without any architectural features. The prevalent colouring of the stone is red of varying shades, but interspersed with this there are tones of yellow and grey. The shaft of light from the setting sun which suddenly appeared as I was sketching, and which I am afraid appears somewhat too substantial in the drawing, in its warm golden tone presented a marked contrast to the cold blue of the top lighting above the arch. Perhaps no better example could be given to show the futility of mere 'paper' architecture. Building, after all, is mainly an arrangement of materials, and here it is the mason who has been the artist."

A GIANT OF THE RENAISSANCE.

"When I thought I was learning to live I was learning to die." Thus, at the end of his career, wrote that versatile genius Leonardo da Vinci, who, by virtue of his extraordinary intellectual attainments, obtained fame in such varied pursuits as architecture, sculpture, engineering, mathematical science, music, and, above all, painting. In this gifted artist great imaginative power was conjoined with a remarkable facility of execution, and the diversity, strength, and universality of his mental capacities were little short of marvellous; indeed, it is recorded of Leonardo da Vinci that however difficult the subject to which he turned his mind he easily made himself master of it. Unfortunately, the ease with which he acquired knowledge produced the usual result. He attempted too much, and the tasks he set himself to perform were often too arduous and manifold to be brought to a successful conclusion within the brief span allotted to human life.

The Diversity of Genius.

It is true the comparatively few works of art he was able to complete were almost unrivalled in excellence by those of his great contemporaries or their successors, and that the authenticated records of his useful inventions and projects prove him to have been, as a practical scientist, one who was far in advance of his times. Nevertheless, owing perhaps in some measure to a lack of the power of concentration, the immense reputation of Leonardo da Vinci rests less upon the actual productions of his busy life than on the brilliancy of the inventive genius that enabled him to foreshadow and suggest many advancements in the scientific knowledge of his age which were not fully matured and realised until many years—in some cases centuries—after his death. For instance, he spent much time in experimenting with flying machines, and there is a note in one of his manuscripts in which he states his conviction that some day boats would be propelled through the agency of steam. His brain was full of daring architectural and engineering projects. He planned to raise the Baptistery of San Giovanni at Florence by lifting it bodily from its foundations and planting it on a base of marble, and he made drawings for an immense canal to connect the Loire with the Saône. He brought his insatiable spirit of inquiry to bear upon physiology, geology, botany, optics, and astronomy. Everything that offered food for experiment and research appealed to his craving for knowledge.

Leonardo is said to have been the first man of his time to draw attention to the study of anatomy, and to the structural classification of plants. He invented the camera obscura and a saw of the type still in use in the marble quarries of Carrara. His numerous designs for engines of war, and his investigations and researches into the composition of explosives were the wonder and admiration of his country, and it has been well said by an eminent writer that "the discoveries which he made wholesale were destined to be rediscovered piecemeal by men of narrower genius who came after him." His prolific brain was always at work, but through all his scientific pursuits, through all the successive developments of his mind, the ramifications of his trend of thought, the love of art was ever paramount. Hundreds of his drawings are

still in existence, cherished records of his artistic worth, some merely sketches made not as the necessary prelude to more finished productions, but because, through force of habit, drawing had become a part of his daily life. Ever a close observer and lover of Nature, Leonardo had far less regard for antique models than the majority of his contemporaries. His system of inspiration was one peculiar to himself. Strange fantastic shapes, abnormal forms, grotesque expressions, were for ever being memorised or graphically noted by this indefatigable artist.

Strangely enough, in his application for employment to the Court of Ludovico il Moro, at Milan, Leonardo rests his own claims to patronage mainly upon his attainments in military engineering, to which, in a still extant letter to the Duke, he refers at length under nine different heads. In the tenth he states that he can construct bridges which are "very light, strong, and portable," but his references to the fine arts are brief. They include statements to the effect that the applicant can execute sculpture "in marble, bronze, or clay," and "in painting do as much as anybody else."

Leonardo's Great Painting.

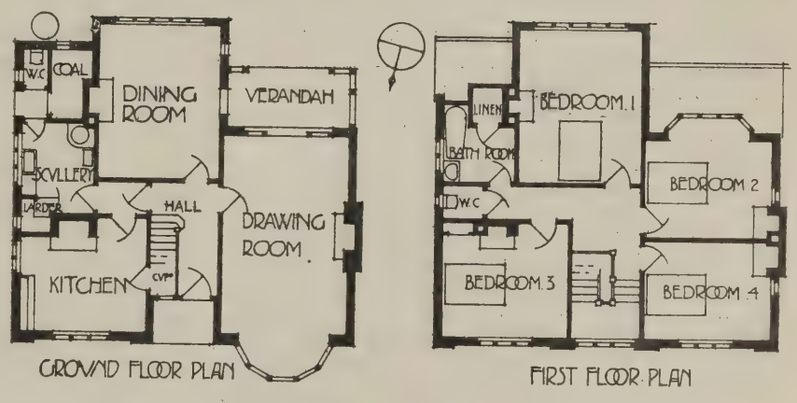
During the many years he spent at the Court of Milan the free exercise of the artist's manifold capacities was displayed in such diverse duties as the construction of military engines, works of irrigation and other schemes of a practical nature, and, in addition, in the preparation of a design for a dome at the cathedral, and the general control of the arrangements connected with the production of the court pageants and masques. During this period of his career he modelled the colossal equestrian statue of Francesco Sforza, which, according to some authorities, was never cast in bronze, although others assert that it was completed and set up in 1493, but destroyed by the army of Louis XII. a few years later. Equally disastrous was the fate which overtook another splendid work executed by Leonardo—the great mural painting of the Last Supper, which ranks as one of the most celebrated pictures of the world. This large fresco, painted on the wall of the refectory of the Convent of Santa Maria delle Grazie, has suffered terribly, partially from the ravages of time, and partially from successive attempts to restore it to its original beauty; yet, even in its mutilated condition, we feel with Goethe that "the painter rose to the height of his argument and realised worthily and for good this momentous scene in the spiritual history of mankind."

After leaving Milan, on the overthrow of his patron, Leonardo resided for some time at Florence, from which town an envoy, sent by the Marchioness of Mantua, with instructions to endeavour to attach Leonardo to her service, wrote respecting the artist as follows:—"He is entirely wrapped up in geometry, and has no patience for painting. Since he has been in Florence he has worked only on one cartoon."

Later, he entered the service of Cæsar Borgia, for whom, in the capacity of engineer, he seems to have mapped out nearly the whole territory of Tuscany and the Maremma between the Apennines and the Tyrrhenean Sea. Then, in 1503 he was once more in Florence busy on a commission for a historical painting to adorn the walls of the Palace of the Signory to correspond with one to be painted by Michael Angelo. Leonardo chose as his subject an episode in the victory of the republic over Picciuino, at Anghiari, and the immense cartoon, which depicted the episode of the fierce struggle for the colours between the opposing forces, and was therefore sometimes called the Battle of the Standard, was exhibited in company with the companion cartoon of his brother artist, and the two works received the highest commendation on all sides. The actual painting was commenced by Leonardo, but the technical method employed by the artist proved defective, and the work was ultimately abandoned by him, and, before long, the unfinished painting disappeared altogether from the wall, while the much-admired cartoon has, unfortunately, also perished.

In his sixty-fourth year Leonardo was prevailed upon by Francis I. to enter his service, but the strenuous life of the great artist was drawing to its close, and beyond the fact that he is known to have painted two pictures, which have since been lost, and to have prepared a scheme for some large canals, very little is known of the work upon which he was engaged in France, although it is evident, if reliance can be placed upon the words of Benvenuto Cellini, that Leonardo succeeded in gaining the respect and esteem of his royal patron.



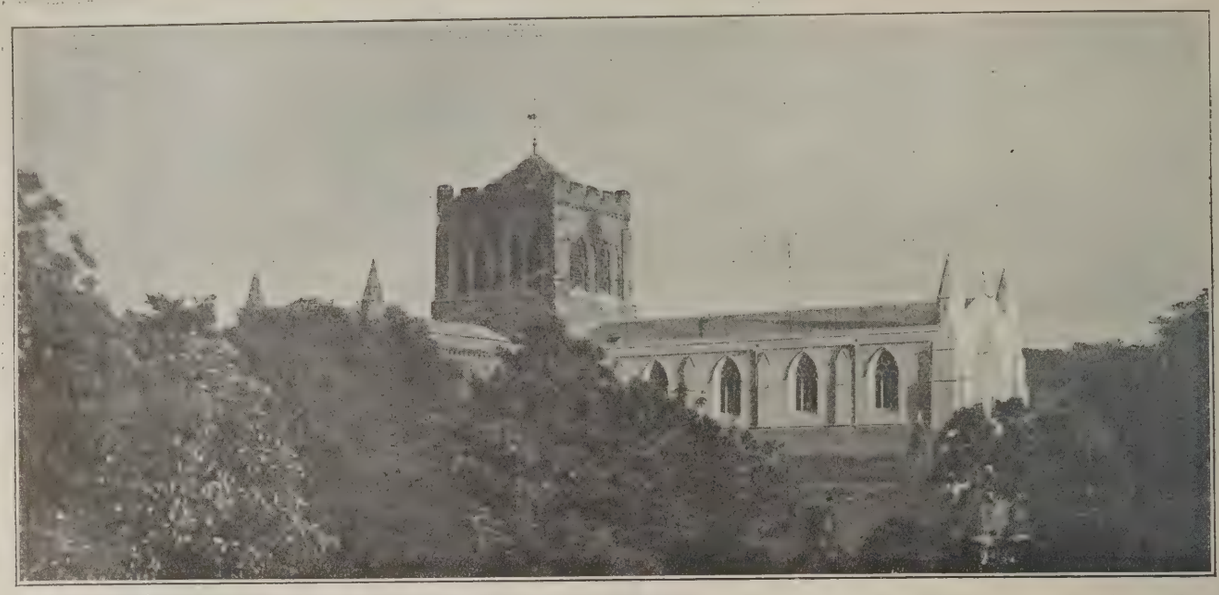


COTTAGE AT ELSTREE, HERTS. EDWIN GUNN, A.R.I.B.A., ARCHITECT.

This cottage, in accordance with the wish of the client, provides a drawing-room very large in proportion to the size of the house, and commanding views both to front and rear. The materials are intended to be red sandfaced bricks of varied colour, with wide mortar joints, and with thick red sandfaced tiles for roofs. The joinery will be deal, painted white. A lead gutter and rainwater heads will be used on the road front, together with some plaster panels having slightly modelled enrichments. The architect is Mr. Edwin Gunn, A.R.I.B.A.

THE R.I.B.A., THE ROYAL INSTITUTE OF IRELAND AND THE ULSTER SOCIETY.

In our issue of July 29th we gave an extract from our contemporary, "The Irish Builder," commenting on the dispute between the R.I.B.A., The Royal Institute of Ireland, and the Ulster Society of Architects. Mr. N. Fitzsimons, F.R.I.B.A., hon. secretary of the Ulster Society, has replied to this comment in a vigorous letter, for which he asks publicity, and in which he states that "The character and constitution of the Royal Institute of British Architects has been falsified, its relation to the Royal Institute of the Architects of Ireland misdescribed, and the history of the initiation of The Ulster Society, with its subsequent action, travestied." Pressure on our space prevents us from publishing in full the letter, which is very long, but we propose to give the salient paragraphs in our next issue. It is a very pretty quarrel, which appears to turn mainly on the interpretation of the actual relationship subsisting between the two Royal Institutes; and on this point the Ulster Society is entitled to be heard. Our desire for fair play all round is our only reason for making further reference to the controversy.



THE NEW NAVE, HEXHAM ABBEY, TEMPLE MOORE, F.R.I.B.A., ARCHITECT. *Photo: Gibson.*

NEW NAVE AT HEXHAM ABBEY.

The Screen Controversy.

As duly recorded under "Notes and News," in our issue of August 19th, the new nave of Hexham Abbey was consecrated on August 8th. About £30,000 has been spent on this and other works of restoration, which have been carried out under the supervision of Mr. Temple Moore, F.R.I.B.A., with whom Mr. C. C. Hodges was associated as resident architect. The new work is well represented in the accompanying views.

Of course, the customary controversy has occurred as to the manner in which the restoration has been conceived and executed. It was hardly imaginable that the self-appointed champions of antiquity would forego so glorious an opportunity as the restoration of a building so venerable, and in other ways so remarkable, as Hexham Abbey, and, after all, it is quite surprising that they have made so little fuss about it.

The fine old priory church of Hexham was begun by Wilfrid in 674, and completed by Acca, his successor. In 875, all but the stonework was destroyed by the Danes. The stones of which it is built had been apparently used in earlier work, many of them bearing Roman inscriptions. In the twelfth century the buildings consisted of nave and transepts, choir and aisles, and a massive central tower. In 1296 the Scots burned the nave, which until now had never been rebuilt. The style is Early English, with Transition details, and the crypt, discovered in 1726, is a fine example of Saxon architecture, of which there are also traces in the choir.

Messrs. Temple Moore and Hodges were fully aware that in undertaking so delicate a task as that of restoring so venerable a building they were exposing themselves to inevitable attack, and they were probably by no means surprised to find Mr. Aymer Vallance making his moan in the columns of the "Times." They may congratulate themselves on being let off so lightly. Mr. Vallance is not concerned about the building of the new nave, nor has he "anything but heartfelt praise for such necessary works of repair as have been carried out for strengthening and preserving the central tower and north transept front." His great grievance is that "the restorers, not content with these achievements, have laid ruthless hands on the great organ-screen or pulpitum, which dates from about 1500. Now," Mr. Vallance continues, "whereas in every other instance extant of a cathedral or monastic pulpitum—*e.g.*, at Canterbury, York, Westminster, Lincoln, Wells, Exeter, Rochester, St. David's, Ripon, Christchurch, Glasgow, and Melrose—the material is stone, the pulpitum at Hexham Abbey is the solitary example remaining in timber. As such, therefore, it is literally unique. Its plan is that of two parallel wooden walls, pierced by a transverse passage, and having on the south a stone staircase between the walls, conducting through the floor of the platform on to the top. The westward front is panelled with solid panels of elaborate Flamboyant tracerywork. But those in office voted the pulpitum an obstruction, and, on the suggestion of Mr. Temple Moore, decided, without a moment's hesitation, to mutilate it by converting the fixed panels into shutters."

Mr. Vallance reminds us that the architects' report, dated April 26th, 1907, contains the following passage bearing on the point:—

"The opening of the side panels of the choir-screen above the transome level is necessary, in order that the congregation may, so far as possible, see into the choir from the nave. The eastern modern panels will be removed entirely, and the rich western panels be made to open as occasion requires. This work also necessitates the removal from the interior of the screen of the rough timber framing put there to support the weight of the organ, and also the strengthening of the ancient pillars and floor of the loft over, to allow of this timber trussing being removed. Certain items of restoration and finishing will also be needed to the interior of the screen, and some alteration may be found necessary to the 15th century spiral stair to the organ loft."

Mr. Vallance declares, in his wrath, that "the avowed motive of all this is nothing else than the same fatuous letch for vistas, the pandering to which has permanently spoiled the interiors of, for example, Durham, Salisbury, Ely, Chester, Worcester, Lichfield, Chichester, Peterborough, and Bangor. At Hexham the eastward panels, if not original, undoubtedly represented the original arrangement, and replaced the solid woodwork removed at the time when the canopies of the return stalls, backing against the pulpitum, were destroyed. These panels have now been taken away bodily. On the westward side of the pulpitum the two tracery panels flanking the entrance have been sawn through all round the edge and made to swing on hinges; while the two others, the end panels, have been cut vertically down the middle and the loosened half of each one hinged. It is a mercy that that portion of the piers which prevents these two panels from swinging open in their entirety was spared! The medieval stone stair, however, has not undergone 'some alteration,' as hinted at in the official report, represented in the official plan, and as sanctioned—so one would presume—by faculty. It has been totally demolished, and a new feature introduced. This is an iron spiral staircase—a hideous eyesore, resembling a fire-escape on the outside of a block of model dwellings!—set up in the north quire ambulatory. To make a way from it on to the loft at this point the north-east portion of the parapet has been cut open."

But Mr. Vallance has hardly made sufficient allowance for the difficulties of the problem that the architects were called upon to solve. The screen about which he raises his doleful lamentation had to be modified or removed. For many years only the chancel has been used for public worship. The screen, if left in position unaltered, would have cut off the new nave from the choir and chancel. The architects thought that the removal of the screen would be an act of vandalism. They therefore decided to make it, as far as possible, an open screen, "partly by taking off the range of picture panels which were fixed above the west front of the loft, and which did not belong to it and placing them in a better position and by hingeing the main panels above the transome on the west side so as to open inwards, or towards the east, to allow a clear view through the screen

during the time of service." At other times the panels can be kept closed, so as to present their original appearance. It is an ingenious and a rather daring device, and its failure to meet with the approbation of the enthusiastic archæologist was a foregone conclusion; but its cleverness will make an irresistible appeal to the mind of the average natural man. The screen is believed to have been erected during the priorate of Thomas Smithson, before 1525. It probably underwent considerable alteration to admit of the building of a new organ in 1856, and plain pine panels were inserted on the eastern side as late as 1860. These, of course, have now been removed.

Dean Fremantle, of Ripon, in the course of a brief but vigorous reply to Mr. Vallance, retorts that: "Surely the duty of an architect in dealing with a church which represents a different phase of Christian worship from our own is not to reproduce servilely the ancient model, but to adapt it to the truer ideas of our own church system. . . We want, for our sacred buildings, architects who will not merely copy the peculiarities of the unreformed system, but who, with equal boldness and reverence, will make these ancient buildings suit the principles and needs of the present day." He means that Hexham Abbey is no longer a monastic institution, in which, to quote the words of yet another of Mr. Vallance's opponents, "the chancel was sufficient for the choir offices, and the transept could be used for low masses. It is now the parish church of a populous and increasing town, and even with the new nave is not too large for the Sunday congregation, so the choir must be in touch with the people, and the panels of the screen must be opened." Sheer utility, therefore, and not what Mr. Vallance curiously stigmatised as "a letch for vistas," was the controlling influence in deciding upon an alteration that seems to have scandalised hardly anybody but that distinguished and uncompromising archæologist.

Mr. Vallance's reply, published on Monday last, challenges the Dean's assertion that screens are necessarily associated with "a different phase of Christian worship from our own." There is, Mr. Vallance points out, a continuous tradition of screen-building in Protestant England down to within quite recent times. . . . A pulpitum was erected by Bishop Cosin, at Durham; at Salisbury, by Wyatt, in place of one which he destroyed; and at Oxford by a Dean of Christ Church, in the seventeenth century." He declares that a cathedral "has nothing to do with any peculiar form of Christianity, reformed or unreformed, false or true," and reverts to his rather archaically expressed scorn of "a letch for vistas."



Photo: Gibson.

THE NEW NAVE, HEXHAM ABBEY. TEMPLE MOORE, F.R.I.B.A., ARCHITECT.
Showing the old screen or pulpitum over which a controversy has arisen.

Proposed New Works.

Blackburn Corporation have approved a scheme for the utilisation of a large area in the centre of the town, cleared several years ago of insanitary property, at a cost of about £80,000. They propose to erect thereon a police station, sessions and borough magistrates' courts, a public hall (to seat 3,500 people), and two other assembly halls. A proposal to erect also new county courts has been negatived by the Treasury.

A report on the damage to the sea-wall of the Marine Drive, Scarborough, caused by recurring storms and the washing away of the shale at the toe of the wall, has been under consideration by a committee of the Scarborough Town Council, who have decided to obtain alternative tenders (1) for the sinking of caissons in front of the damaged portion of the wall, with an apron of rough boulders between the caissons, and (2) for the construction of a toe in front of the portion referred to. In order to provide the necessary funds for carrying out the above, the Town Clerk has been instructed to obtain a provisional order empowering the Corporation to borrow an additional £12,000. It was decided to deal only with the damaged portion of the wall at present.

A Local Government Board inquiry has been held by Mr. W. O. E. Meade-King, M.I.C.E., relative to an application by the Devizes Town Council for permission to borrow £850 for the purpose of laying in a new sewer to serve a building area recently developed within the borough border, and known as Forty Acres.

Mr. W. A. Ducat, Local Government Board inspector, has held an inquiry into an application of the Manchester City Council for sanction to borrow £1,500 for the purchase of land adjoining Cheetham Baths for the purpose of extension.

St. Benet's, Kentish Town, which is quite a modern structure, was unluckily built on "made" ground, and, as a result, there are sunken aisles, split chancel, and cracked walls. The church has been condemned by the London County Council as a dangerous structure, and the repairs for which Canon Scott Holland is appealing will cost at least £4,000.

As a result of the development of the Warwickshire coalfield on the Earl of Craven's Coombe Abbey estate, there is an important scheme on foot for the erection of about 2,000 houses at Wyken. About six miles of streets will be laid out.

Basford's new baths, which have been built in Vernon Road, close to Basford (Notts) station of the Great Northern Railway, comprise a swimming bath 70ft. long by 28ft. wide, four small washing baths for men, four slipper baths for women, and eight slipper baths for men. The total cost is stated at £7,500. The building was designed by Mr. F. B. Lewis, the city architect.

A new pier for Whitley Bay, Newcastle-upon-Tyne, is to be built for a syndicate with a capital of £35,000, and provisional contracts were awarded to the Cleveland Bridge and Engineering Company, Darlington, for carrying out the work to the designs of Mr. T. Brewer-Mather, of Wallsend-on-Tyne. The pier, which will be the only one of the kind on the Northumbrian coast, is expected to be completed early next summer. It will have a total length of 772ft., and in addition to the usual promenades, bandstands,

and tea-rooms it will have in its centre a pavilion (with a garden roof), capable of seating 1,800 people. At the end of the pier there will be a landing stage for the accommodation of pleasure steamers and small craft.

Plans presented on August 25th for the approval of Eastbourne Rural Council included those for the erection of two pairs of houses in Brassey Avenue for the Eastbourne Artisans' Dwellings Company (Mitchell and Ford, architects); two houses in Rosebery Avenue (A. Chandler, architect); and five houses in Huggett's Lane, Willingdon (A. H. Burtenshaw, architect).

A site has been acquired for a proposed new Liberal club-house at Tilbury.

A site has been found in Deansgate for a proposed church house for the Diocese of Manchester. To provide the necessary capital, it is proposed to form a company, with a capital of £40,000.

The widening of the Great Western Railway at North Kensington will necessitate the demolition of nearly 100 houses, and the company has purchased in Southern Street and St. Ervan's Road 138 houses, and will build others, in which to house the population displaced by the extension of the line. Altogether, accommodation will be provided for about 2,000 persons.

The Improvement Committee of Nottingham City Council have recommended several street widenings, and other improvements, upon which the capital outlay is estimated at £4,225. These operations will be followed by the rebuilding of several important business blocks, including the Sun Fire Office premises.

Nuneaton improvements that are under consideration by the town council refer mainly to the widening of the approaches to the centre of the town. The cost is estimated to reach at least £8,000. Building developments in the suburb of Stockingford are also in contemplation; a large estate there is about to be plotted for the erection of dwellings.

A reredos for All Saints', Falmouth, is to be erected at a cost of about £350.

The "Largest Office Building in the World" is to be erected, of course, in New York. The premises will cover an area of 52,000 square ft., and the building will be thirty-five storeys in height. The site chosen for this gigantic skyscraper is close to the Battery, and the cost will be more than four million dollars. The building is being constructed for Mr. Chesebrough, of vaseline fame.

A new church for Newquay is proposed at an estimated cost of £10,000.

Owing to the growth of the telephone department of the Post Office, the Postmaster-General has decided to allot the whole of the buildings in Queen Victoria Street, London, to its use, and to move the money order department, which at present shares this accommodation. New offices for the latter are to be erected in Manor Gardens, Holloway, and these are to be ready by July, 1911, although the site has yet to be cleared.

The Blackburn Corporation propose to commence building operations on the Blakey Moor site, which has been cleared of slums at a cost of £80,000. The buildings contemplated include a public hall to seat 3,500 people, a quarter-sessions court, a police court, and a police station. On another part of the site a higher elementary school is to be erected.

Works in Progress or Recently Completed.

The new nurses' home and extensions at the City Hospital for Infectious Diseases, at Walker Gate, Newcastle, have been erected at a cost of nearly £50,000. The architect is Mr. Holford, the city surveyor, and the contractors are Messrs. J. Parkinson and Sons, Ltd.

Wickwar Church bells have been recast and rehung on a new steel frame, at a cost of about £300, by Messrs. Gillett and Johnston, of Croydon.

Bradford Town Hall extension is now nearly completed, the roof being on, and the electricians and other indoor workers being in possession. Mr. F. E. P. Edwards is the architect, and Messrs. Michael Booth and Sons are the contractors.

A fourteenth-century church house, or tithe-barn, at Poundstock, in the north of Cornwall, has been restored at the cost of £400. Care has been taken to preserve some fine old woodwork, including portions of the old oak-mullioned window-frames, and the heavy oak door of an ancient reception room.

Alterations to the Metropolitan Music-hall, Edgware Road, N.W., include an extension of the Mansfield stone elevation, into which gold and coloured mosaics have been introduced, enlargement of the auditorium and the vestibule, redecoration of the interior, and improved ventilation, lighting, and sanitation. Messrs. Frank Matcham and Co., who designed the hall in 1897, were architects for the work.

Truro Cathedral Progress. — The lower stages of the two western towers of Truro Cathedral were in 1903 carried to the ridge of the roof of the nave, and contain the internal vaulting. The total cost of the remaining stages of the towers and the spire is estimated at £16,500. A further sum of £3,500 will be used towards the erection of a cathedral school. The plans and designs for the west towers and spires are, with slight modification, those of the late Mr. John L. Pearson, R.A., architect of Truro Cathedral, and are being carried out by Mr. Frank L. Pearson, his son, architect to the Dean and Chapter of Truro. The contractors are Messrs. Willcock, of Wolverhampton. The clerk of the works is Mr. E. T. Price, who acted in the same capacity during the erection of the nave and central tower, which also was built by Messrs. Willcock. Mr. F. L. Pearson has designed the school. A design somewhat enlarged, and thus improved from an incomplete design of Mr. John L. Pearson, has been made for an octagonal chapter-house at the north-east of the cathedral, and also for a fine cloister court. Over the east walk of the cloisters is a library and song school, and some diocesan offices may possibly be added. The cost of entirely completing these buildings may be estimated at about £22,000. A peal of ten bells has been promised by various donors for the north-west tower, and the bells are being cast by Messrs. J. Taylor and Sons, of Loughborough.

A new stained glass window that has been inserted in the south side of the chancel in Stoke Church, Coventry, by Messrs. Heaton, Butler, and Bayne, of Covent Garden, London, consists of two lights, and has for its subject the Supper at Emmaus. Christ is depicted in the right-hand light, and the two disciples in the left-hand light. The tracery contains an angel holding a scroll, on which is the word "Alleluia."

A brass memorial tablet has been erected in the chapel at the Royal Naval College, Osborne, in memory of the late Mr. W. G. Grace (son of Dr. W. G. Grace, the famous cricketer), who died at the College three years ago.

The new cathedral at Pretoria, upon which work is now in progress, will possess interesting local features. For thirty years Pretoria has possessed a cathedral of sorts—a structure rather like a barn, of red brick without and plaster within, with an iron roof. The architect of the new cathedral, Mr. Herbert Baker, of the firm of Baker and Masey, who himself lives on the veldt, maintains that "a country should have no merely imitative architecture, but one fitted to its climate, scenery, atmosphere, and material." His design for the cathedral is very simple — that of a long apsidal church, with a dome visible only inside, roofed with red tiles, and with a high campanile; the material a rough stone from the district.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 7	BOAT SHELTER, INVERNESS. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
Oct. 31	*COUNTY HIGH SCHOOL FOR GIRLS, ROMFORD.—Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.

** This competition has been unfavourably reported upon by a Correspondent.*

A Typical French Competition.

A new Marine Service building is to be erected in the Avenue de Suffren, Paris. French architects only are invited to send in competitive designs, and those intending to compete must communicate with the Minister of Marine before October 1. British architects will no doubt be interested in noting this typical instance of the manner in which "these things are done in France." The designs are to be publicly exhibited on December 1st. The jury to whom the designs will be submitted will consist of the Inspector-General of Maritime Works, who will of course be the president, and of six others, of whom two will be elected by the competitors, two will be architects nominated by the Under-Secretary of State for the Beaux-Arts, and two will be maritime engineers. The premiums are as follows:—First, 8,000 francs; second, 5,000 francs; third, 3,000 francs. A further sum of 10,000 francs may be apportioned as the jury may see fit among the other competitors who are classed. Probably the author of the design placed first will be invited to supervise the work of construction.

FINISHING VERGES AND GABLE ENDS.

By Edwin Gunn, A.R.I.B.A.

The detailed finish of tiled or slated roofs next verges and gables, is a matter of considerable importance, both from a purely practical point of view, in relation to durability; and also as affecting the appearance of a building. The accompanying illustrations show various sound and simple methods of gable finish, and may prove a useful supplement to the scanty information which is usually obtainable by examining text-books of construction.

The Close Verge.

Fig. 1 shows the close verge, which represents the simplest treatment of all, and one which, when properly carried out, is always satisfactory. The end rafter next the gable should in all cases be fixed with its back about 1 in. higher than the general plane of the roof, to produce a tilt of the roof-covering away from the verge, a sprocket being nailed to the gable end of the ridge board to give that member a corresponding rise. The brickwork is cut to the same line, and on this a course of tiles or slates is laid flat and butting, bedded in cement and projecting 3 in. The roof-boarding or battening is extended as shown, and the end tiles or slates are bedded in cement, in addition to being nailed. Tile-and-half should, of course, be laid next the gable in each alternate course, or wider slates in a slated roof. The verge is afterwards well pointed up with cement or lime and hair, to finish with a flush face between the soffit and roofing tiles. For some inscrutable reason, builders (and some architects) are very fond of reddening this verge, either with colouring matter, or by rubbing in brickdust; but it looks best if left uncoloured—that is, showing the natural colour of the pointing and tiles. The latter, however, are apt to become smeared with cement, but can be cleaned off with water and a stiff brush before the pointing has set quite hard.

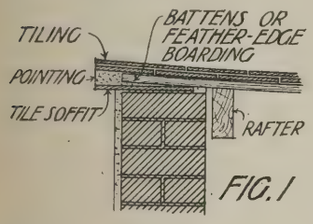


FIG. 1

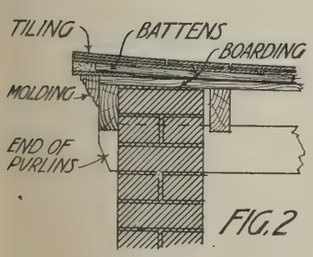


FIG. 2

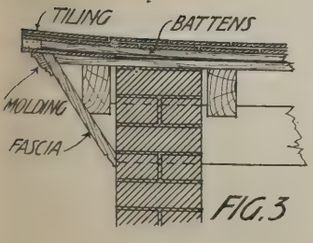


FIG. 3

VARIOUS TREATMENTS OF TILE & SLATE VERGES

The Flat Tile Soffit,

which is shown in all the illustrations, has the practical value of holding the pointing, which is apt to drop out when the roofing tiles alone project over the wall. It is also possible to project this thick verge further than the thin skeleton affair which the latter arrangement gives. Another advantage of the flat soffit is apparent when wood mouldings are fitted below the verge (as in Figs. 2, 3, and 4), as they fit easily without the necessity of scribing to a jagged line. Fig. 2 shows a simple treatment, with verge rafter supported on ends of wall plate and purlins. The amount of projection may be greater, but should, of course, be proportioned to the scale of the building. The soffit tiles, where they rest on wood, as in this case, should be nailed instead of being bedded. Fig. 3 shows a plain moulded fascia, covering the verge rafter, which is an effective treatment when well proportioned. Fig. 4 gives a section through a barge-board, and calls for little comment, save to enter a protest against the frequent practice of lining the exposed soffit of rafters with wrought V-jointed boarding. It is much better to let the soffit of roof-boarding or battens remain exposed, as seems always to have been done in old work.

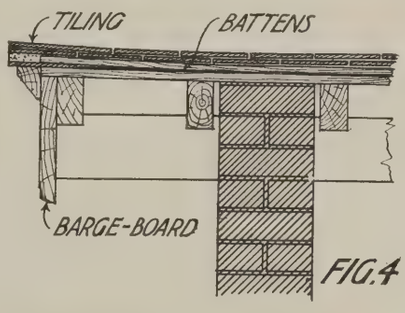


FIG. 4

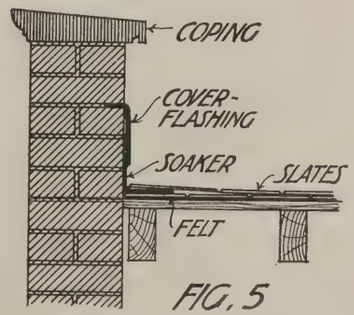


FIG. 5

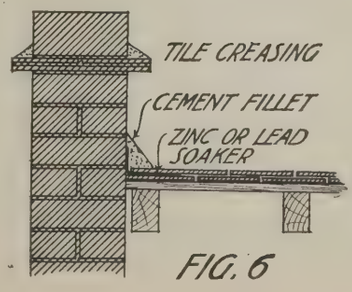


FIG. 6

Gable Treatment with Parapet Walls.

Figs. 5 and 6 show two gable treatments with parapet walls. Flashings, which are shown in all text-books, and are frequently carried out, are not only ugly in appearance and expensive, but in dressing the lead down over tiles and slates these latter are very likely to be fractured.

Soakers and Cover Flashing.

Fig. 5 shows a slated roof with soakers and cover-flashing—a much better arrangement. The soakers lie 5 in. on roof, and stand up 5 in. vertically; their length should be equal to gauge the lap. As the soakers are out of harm's way, 4-lb. lead is sufficient, and, being thinner also, lie better between the slates; but the stepped cover-flashing should be 5-lb. or 6-lb.

Soakers and Cement Filleting.

Fig. 6, showing soakers and cement filleting, is unsatisfactory for slated roofs, owing to the non-absorbency of slate giving no hold to the cement; but for tile roofs this is quite a good treatment for all ordinary purposes. The use of zinc in soakers is not open to the usual disadvantages, as the metal is protected from damage, but thin lead is, of course, better. Soakers for use with cement filleting stand up 2 in. only. The coarse effect of plain filleting may be obviated by forming a succession of nicks with the point of a trowel, or some other angular object (this is always done in old work), which also helps to consolidate and bind the cement.

Obituary.

Sir Eyre Massey Shaw, who died at Folkestone on August 25th, aged 78, was virtually the founder of the Metropolitan Fire Brigade. In the Tooley Street fire of 1861, which caused the destruction of property worth £1,300,000, James Braidwood, chief of the London Fire Engine Establishment, was killed, and Eyre Massey Shaw, who, as chief constable of Belfast, was also superintendent of the fire brigade, became his successor. In consequence of this great fire, the duty of protecting property was transferred to the Metropolitan Board of Works, an Act of Parliament to this effect being passed in 1865, and upon Captain Shaw devolved most of the task of the thorough reorganisation of the service. He remained at the head of the brigade until 1891, when he was created a K.C.B. He wrote a manual on "Fire Protection"; a work on "Fires in Theatres," in which he insisted on the desirability of public authorities requiring a report from their architect or surveyor as to the exits; "Fire Surveys: a summary of the principles to be observed in estimating the risk of buildings"; "Records of the late London Fire Establishment"; and an essay on "Fires and Fire Brigades," in the International Health Exhibition Handbooks. He was born on January 17th, 1830, at Ballymore, County Cork.

* * *

Sir George Barclay Bruce, who died at St. John's Wood on August 25th, was an eminent engineer who had constructed several railways, notably that of Madras, which, opened in 1857, included the building of a fine bridge near Trichinopoly. Born at Newcastle-on-Tyne on October 1st, 1821, he was in 1887 elected president of the Institute of Civil Engineers, and was knighted in 1888.

Law Cases.

Breach of a Building Covenant.

In the Chancery Division, on August 26th, the case of *White and Others* v. *Pollard* was a motion for an injunction to restrain the defendant until the trial of the action or further order—(1) from erecting upon a plot of land forming part of a certain building estate, any buildings adapted for use as or in connection with a place of business, or any buildings other than buildings adapted for private residence purposes, only; and (2) from using any buildings erected or to be erected on this plot as or in connection with a place of business or otherwise than as and for private residential purposes only, in breach of restrictive stipulations to which the said building estate was subject. It appeared that the defendant was erecting stables on a certain plot of land in Shearbridge Road, Bradford, of which he was the owner, and that he was bound by covenant not to "use or suffer to be used any building which might be erected upon any part or parts of the said plot of land as an hotel, tavern, public-house, beer-house, or shop, warehouse or manufacturing dyehouse, chandler's shop, or other place of business." Plaintiff stated that the stables in question consisted of four stands and a loose-box, and that the defendant had stated to several persons that he intended to use them for horses employed in his business as a coal merchant. The defendant deposed that he had erected a stable upon this plot of land, but that he did not intend to use it for the purpose of carrying on his business. From affidavits filed on his behalf, it appeared that the plaintiffs had taken no steps against a doctor who used a stable on a neighbouring plot, subject to the same covenant, to house three horses used in his profession, or against a saddler, who used a stable on a similar plot for a horse used in his business. Mr. Bramwell Davis, K.C., contended, on behalf of the defendant, that if the defendant used his stable for horses employed in his business as a coal merchant, that business did not come within the purview of the covenant. The use of the plot for housing the horses he might use in his coal business was not a use of it as a place of business: and the plaintiffs had waived their right to sue for this injunction by not taking action against the doctor and saddler. Mr. Justice Eve said that the defendant had only himself to thank for any ambiguity there might be as to how he intended to use this stable. He found as a fact that the defendant intended to use the stable for the purpose of stabling horses employed in his business as a coal merchant. He thought that a retail coal merchant carried on his business at a number of places—the wharf, the siding, and the place where he kept his horses. It was impossible to say that he was carrying on his business at any one of these places and not at another. He thought the object of the covenant was to protect a residential estate from being used for the purposes of business. As to the point as to waiver, it had long been decided that every trifling breach of a covenant was not to be taken as a waiver. The order, therefore, would be made to restrain the defendant in the terms of the covenant. The costs of the motion would be the costs in the action.

Notification of Workmen's Accidents.

At Marlborough Street Police Court, on August 18th, Messrs. Waring and White, Limited, answered five summonses alleging that they failed to notify to the Government factory inspector of the district certain accidents to employees which occurred at 410, Oxford Street, W., in May and June. Mr. Leonard Ward, inspector of factories, said that the summonses related to accidents to workmen which occurred in the course of their duties in erecting a large building in Oxford Street, the proceedings being taken under the Factory Act, 1901, and the Notices of Accidents Act, 1906. Mr. Thatcher, a factory inspector, in paying a visit to the premises in July, found that fifteen accidents had occurred, and that they were entered on the register, but had not been reported to the district factory inspector. They were, however, reported subsequently. The five in question were selected. Mr. Melville, counsel for the defence, pleaded guilty, and mentioned that the failure to report was quite unintentional, and was the innocent act of a hard-worked official on the works. He could only express great regret on behalf of the firm for the omission. The accidents were not serious, being only bruises and cuts, and in one case a broken wrist. They were reported to the companies in which the men were insured. Mr. Mead imposed a fine of £5, with £5 4s. costs on one summons, and a fine of 10s. on each of the other summonses, without costs, the penalties amounting in all to £12 4s.

Views and Reviews.

Rood Screens in English Churches.

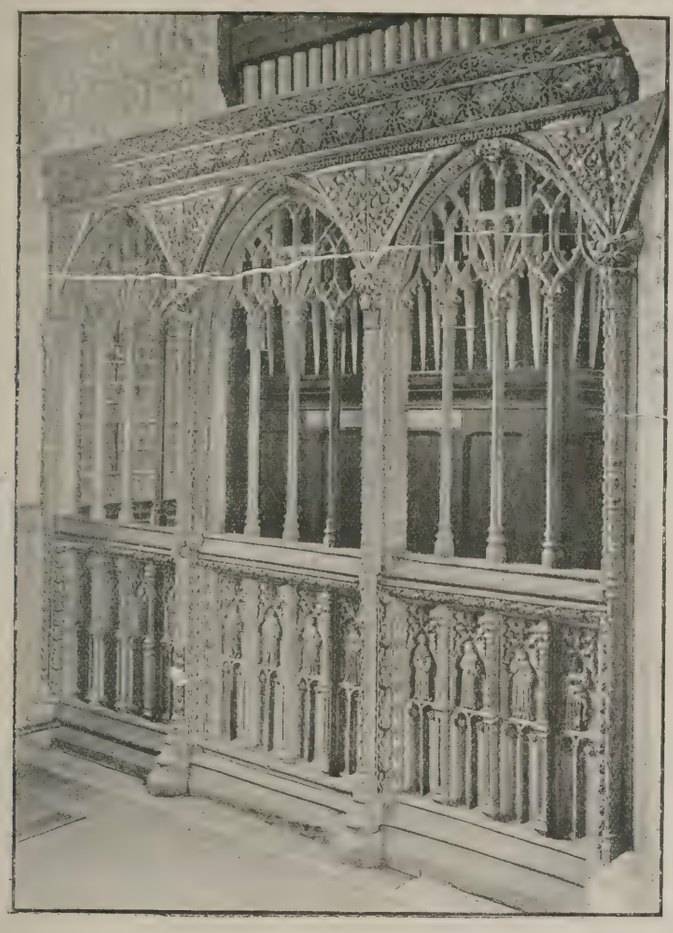
The rood and rood screen, being the most conspicuous features of church interiors, susceptible of very varied decorative treatment, and representing, collectively, many centuries of artistic and religious feeling, have naturally claimed much attention from the makers of books. The "literature" of the subject is sufficiently extensive to warrant Mr. Francis Bond, the author of the present delightful volume, in prefacing it with a "bibliography" that fills two pages, and enumerates about forty works dealing either specifically or incidentally with particular screens, or with screens in general. Mr. Bond's aim is to present the object from the evolutionary point of view. Beginning with the rood and rood beam of the early Christian churches, he follows their gradual development into the chancel screen of the parochial and collegiate churches, or into the quire screen and rood screen of the churches of the monks and regular canons; finally tracing to the transposition of the rood lofts the galleried churches of the seventeenth and eighteenth centuries.

From primitive Christian times, the apse, or sacrarium, where stood the altar, was fenced off with railings of wood or bronze. Sometimes the barrier took the form of a colonnade, where lamps, candlesticks, curtains, or a cross could be suspended. The origin of the rood screen is



ENRICHMENTS ON SCREEN AT KENTON, DEVON.

"In Devon," says Mr. Francis Bond, "the screens were crowded and exuberant with design from top to bottom. Below was panelling with paintings of saints, as at Kenton; or, more rarely, with little figures in wood, as at Bridford" (*see illustration on page 163.*)



SCREEN AT BRIDFORD, DEVON.

Late in the sixteenth century there was a rage for the destruction of rood lofts. "Sometimes," says Mr. Francis Bond, in "Screens and Galleries in English Churches," from which, by courteous permission of the publisher, this and the illustration on the facing page are reproduced, "the coving as well as the loft was removed, and bits of the old coving were used to fill up the spandrels. This explains such awkward [illegible] combinations as one sees in the screen of Bridford, Devon. Note the carved figures.

ingeniously conjectured. "The greater churches of the early Christians," Mr. Bond reminds us, "were all unvaulted, and the nave, and consequently the chancel arch, or Arch of Triumph, was exceedingly broad. A rood beam of wide span, unsupported, would certainly have sagged at the centre. To prevent this, supports would be added, and these supports would naturally take the form of columns, as at Old St. Peter's (Rome). This was to convert the rood beam into a rood screen. Such an erection was at once altar railing and rood screen. Then came a change in church planning. In the earliest churches the apse was attached directly to the nave, and formed a sanctuary, containing the high altar. A quire was also needed, and for the purpose of a quire the western bays of the nave were appropriated. Just as the altar had been fenced off by railings or by a colonnade, so the quire needed to be enclosed and secured from intrusion. This was effected by erecting round it a wall or parapet, which was kept quite low, so as not to block the view of the altar. These quire enclosures usually consisted of thin marble slabs, about 4ft. high. The slabs were sometimes solid, but covered with carved work, especially with interlacings, *e.g.*, at St. Clement's, Rome; frequently they were pierced, as at Torcello. . . . Even so late as the fire of 1174, a low wall, a lineal descendant of the low early Christian parapets, survived in Canterbury Cathedral, on either side of the quire. . . . In St. Maria, in Cosmedin, both arrangements are seen, a colonnade in front of the altar, and a low parapet enclosure round the choir. The next step is to consolidate both these, and to make the combined colonnade and western parapet occupy the position of the western parapet." The subsequent elongation westward of the apse led to further modifications; but the chief point to observe is that in Italy the rood beam with its supports developed into a colonnade; in England, into the quire screen of oak or masonry. Other theories of the origin of the mediæval quire screen that have found favour are summarised by the author, but need not be elaborated here.

Although the origin of screens appears to have been utilitarian, their artistic value seems to have been immediately perceived. It was perhaps recognised that, as the author says, "nothing adds so much to that most potent of all effects in church architecture, 'mystery,' as a screen, with its vistas half-hidden, half-revealed, of beautiful and holy things beyond . . . nor does anything add so much to the apparent length of a church as to break it up with a screen."

The four chapters into which the book is divided deal, respectively, with (1) origin of screens, (2) chancel screens and galleries in parish churches, (3) quire screens in cathedrals and collegiate churches, and (4) quire screens and rood screens in churches of monks and regular canons. The fourth chapter comprises also a most interesting series of measured drawings, an "Index Locorum," and an "Index Rerum."

The 140 or so photo-process engravings include many examples of beautiful carving, and the author may be congratulated on the production of a book that, in text as well as in illustrations, is of striking and inexhaustible interest. It is exactly the kind of book to which one returns again and again, in the assurance of renewed and increased pleasure at each re-perusal.

For permission to reproduce the illustration of the enriched screen at Kenton, shown on p. 162, and the screen at Bridford appearing on this page, we are indebted to the courtesy of the publisher.

*Screens and Galleries in English Churches. By Francis Bond, M.A., etc. Illustrated by 152 photographs and measured drawings; 6s. net. Henry Frowde, Oxford University Press, London, New York, and Toronto.

DETERIORATION OF FRENCH ROADS LARGE RE-METALLING SCHEME.

An interesting article in the *Temps* draws attention to the deterioration of French roads, especially in the neighbourhood of large towns, the damage being due to the enormous increase of wheeled traffic in recent years. Automobiles, of course, are regarded as the chief agents of destruction. In the last seven years there has been an increase in the Department of the Seine and Seine-et-Oise alone of 8,630 motor-cars and 6,564 motor-bicycles, to say nothing of 108,327 ordinary bicycles. Most of the main roads leading out of Paris are described as being in a "very bumpy" condition, and the question of re-metalling them has become of urgent importance. Pending the discovery of the ideal road material of the future, which, it may be hoped, will result from the proceedings of the International Road Congress in October, the Ministry of Public Works has drawn up a plan whereby seven of the 14 national roads radiating from Paris are to be remetalled for a considerable distance, at a cost of nearly 4,000,000f. (£160,000). The work is to be completed by the end of next year. The actual metalling will be 24ft. wide, of stones 20 centimetres (7.87 in.) long, 10 centimetres (3.94 in.) wide, and 16 centimetres (6.3 in.) deep, laid upon about 2½ in. of fine sand spread over a bed of concrete 6 in. thick. A very slight convexity will be given to the surface. This system of remetalling can only be regarded as the best compromise obtainable at the moment, and French engineers are still seeking for the means which shall enable France to maintain her reputation for the finest roads in the world. The latest objection to the use of tar on the roads to lay dust comes from France, and is a curious one. The result of tarring the Avenue of the Bois de Boulogne is that in four months seven magnificent trees have been destroyed and had to be cut down. It appears that the imperceptible dust rising from the tarred surface has a most deleterious effect upon vegetable life. The cost of renewing the flower-beds along the Avenue is said to be ten times as great as that of watering the untarred road. The allegation of certain angling circles in England that the tarring of roads contaminates the streams and kills the fish must be admitted to gain in probability from the unfortunate experience of the Parisian trees.

ROMAN BUILDING AND SCULPTURE AT CORBRIDGE.

An account of the excavations conducted during the year 1907 at Corbridge, the Roman Corstopitum, by a committee constituted for the purpose, shows a number of highly important discoveries. Corstopitum was not an ordinary fortress, but was laid out and built as a town. Its buildings were massive and important. They have been freely plundered in order to build churches and houses in Corbridge, Hexham, and elsewhere in the neighbourhood, but their foundations still remain to be traced. The principal building excavated was a house, which turns out to be a building of great importance. It had possessed many rooms and corridors, and under some of the rooms were hypocausts containing cooking vessels and other pottery, in fragments which admitted of piecing together and restoration. But the most interesting discovery here made was that of a sculptured group, representing a lion and a stag, which was found in clearing the floor of a cistern. The group was lying flat, and had been broken in two, but the fracture admitted of being accurately put together, and nothing is missing but a chip from the lion's right hind leg and tail. The group measures 3ft. in height and 3ft. in length. The lion is represented standing on the back of the stag, one fore-paw resting on the right antler and crushing it down against the stag's shoulder, while the talons of the other are tearing at the forehead and left eye. The lion's head is turned towards the spectator; the mouth is wide open, and the lips are drawn back so as to bare the teeth on either side and throw the heavy jowl into prominence. There are wrinkles across the nose and up the forehead, and deep puckers round the staring eyes; the sculptor, apparently, has meant to suggest that the beast has turned half round to face some sudden intruder. Beneath the lion's weight the stag lies crushed and helpless, its legs doubled beneath it, its body pressed against the stone, its head strained forward and flattened beneath the lion's claws, while the closed eye and the tongue lolling from the corner of the mouth indicate complete exhaustion. The group is described as being of "first-rate interest and importance." The lion's mouth was adapted to serve as a fountain, a round hole having been cut completely through the stone at the back of the mouth, and a groove cut in the neck of the stag shows the line of a leaden pipe, which presumably passed behind the lion's leg and into his mouth, from which the water was discharged, so that it is natural to connect the group with the cistern in which it was found.

SUNDERLAND AND DISTRICT BUILDING TRADES' ASSOCIATION ADOPTION OF THE "BUILDERS' JOURNAL."

At the general meeting of this Association, held at the Board room, 14, Norfolk Street, Sunderland, on August 20th, it was decided on the advice of the Executive Council, and in reply to a reference from the Northern Counties Federation, to take no further action at present with respect to the wages paid to operatives. It was resolved, on the proposition of Mr. J. W. White, supported by Mr. R. J. Huntley, "That this meeting recommend to a general meeting that the adoption of 'THE BUILDERS' JOURNAL' meets with the approval of this Association, and that all members be asked to support it by subscribing, and, when requiring, to advertise in it. Further, that all members in the future be asked to pay an additional amount of 5s. per annum to their subscriptions, for which they will receive the journal weekly post free; the cost of the journal by post in the ordinary way being 10s. 10d. per annum." The secretary was directed to obtain a supply of specimen copies, to be sent with a letter asking members to take the paper on the reduced scale. The question of tendering for the Durham County Council was also discussed; two important matters at issue are the principle of independent arbitration in case of disputes, and that quantities should be the basis of a contract. The Council had not conceded these points, though other concessions had been obtained. A meeting with the Chairman of the Council's Education Buildings Sub-Committee had been attempted without success, and it was decided to recommend the Northern Counties Federation to call a meeting of members and non-members of the Federation who have tendered for work for the Durham County Council, to go fully into these grievances.

Notes and News.

THAT LEEDS IS OVERBUILT is shown by recently prepared statistics, from which it appears that there are in the city no fewer than 7,000 empty houses or shops. In two of the chief thoroughfares there are several rows of excellent shops that were built more than two years ago, and have never been occupied.

REMOVAL.—Mr. Sidney R. Stevenson, architect, Nottingham, has removed his offices from Burns Street to Queen's Chambers, King Street, Nottingham, and will in future work co-operatively with Mr. J. R. Poyser, whose offices adjoin, and with whom this arrangement has been made for mutual business accommodation.

FOR THE TURIN INTERNATIONAL EXHIBITION of 1911 the general plan has been prepared by Signore Fenoglio, Molli and Salvadori, architects. The exhibition will extend along the banks of the Po between the bridges known as Humbert I. and Isabelle, a distance of about a mile and a quarter, while the site, as a whole, will have a superficial area of nearly 1,500 acres. The two banks of the Po will be crossed by a specially constructed bridge. Vast terraces will lead to the summit of a hill, on which will be erected an ambitious national monument.

THE IRON AND STEEL INSTITUTE, of which Sir Hugh Bell is president, will hold its autumn meeting at Middlesbrough from September 28th to October 2nd, both days included.

COASTGUARD STATIONS AS CONSUMPTION SANATORIA is a suggestion that comes from Dorsetshire. Several such stations on the Dorsetshire coast are about to be abandoned, and it has been proposed to the Weymouth Board of Guardians that, failing the erection of a central consumption hospital, for which funds are lacking, these stations might be adapted to meet the deficiency.

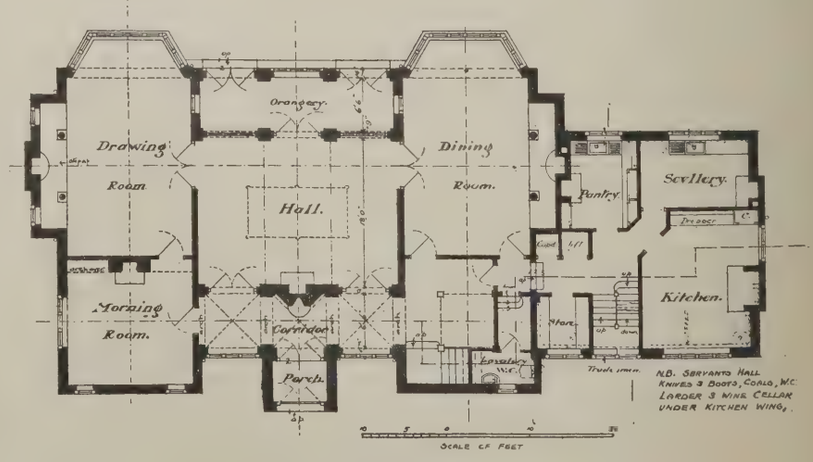
A COLLAPSE OF COTTAGES AT BLACKBURN that were in process of demolition caused the death of two children who were playing near, and injured others.

MR. MEDLAND TAYLOR (OF MANCHESTER): A CORRECTION.—In the notice of the late F. H. Oldham, of Manchester, in the last number of the *R.I.B.A. Journal*, Mr. J. Medland Taylor (whose office Mr. Oldham entered as pupil or improver in the year 1864) was referred to as "*the late.*" We are happy to state that Mr. Medland Taylor is still alive and in active practice at 7, Chapel Walks, Manchester.

THE LATE MR. JOHN FULLEYLOVE, R.I., the well-known painter of architectural subjects, and vice-president of the Royal Institute of Painters in Water-Colours, who died on May 22nd, aged 62, left estate valued at £1,666 12s. 3d. gross, of which £1,329 7s. 10d. is net personalty.

MESSRS. W. DUNN AND R. WATSON, F.F.R.I.B.A., architects for the restoration of Dunkeld Cathedral, have been enquiring as to the whereabouts of the old brass lectern, used in the cathedral over 200 years ago, which was supposed to be in some parish church in the Midlands. The lecturn has, we believe, now been located at St. Stephen's, just outside St. Albans.

THE COMMITTEE FORMED TO PROTEST against the proposal to erect additional courts on the open space on the western side of the London Law Courts, known as the Strand Park, have prepared a petition for presentation to Mr. Lewis Harcourt, M.P., First Commissioner of Works. The document, which will be signed by ratepayers in London and taxpayers of the United Kingdom, will ap-



Ground Plan.

CLIVE HOUSE, ROEHAMPTON. C. H. B. QUENNELL, F.R.I.B.A. ARCHITECT. (*See centre plate*

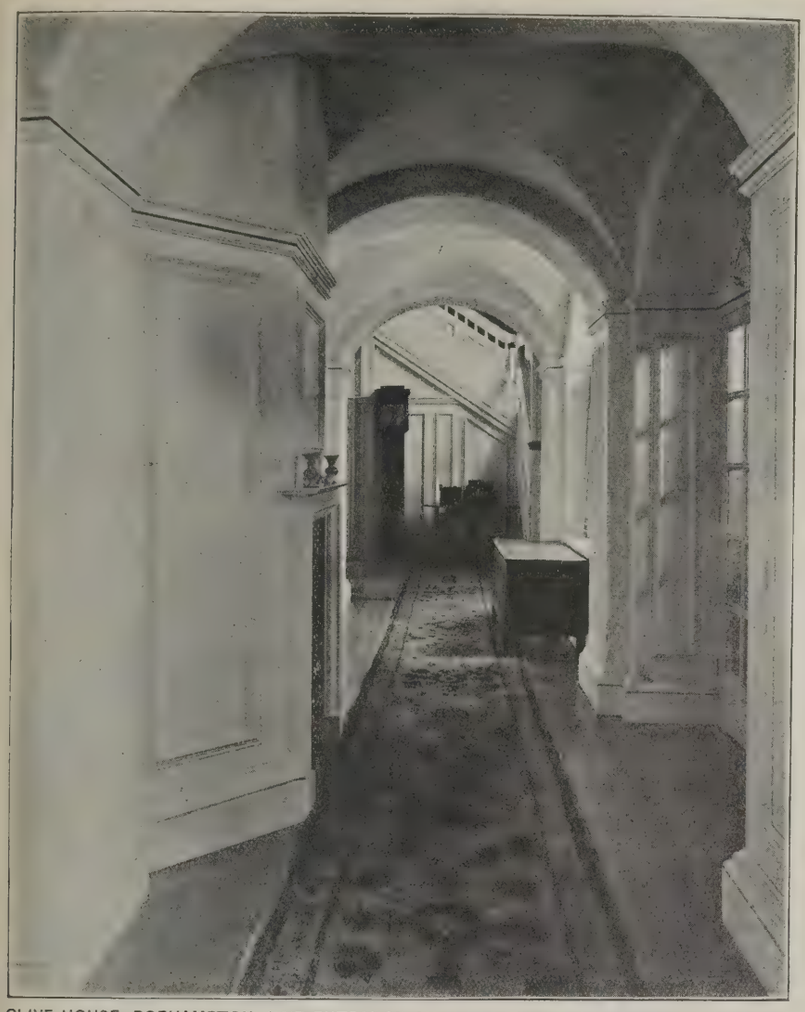




Garden Front.

CLIVE HOUSE, ROEHAMPTON, SURREY. C. H. B. QUENNELL, F.R I.B.A., ARCHITECT.

LIBRARY
OF THE
UNIVERSITY OF HARVARD



CLIVE HOUSE, ROEHAMPTON: THE ENTRANCE CORRIDOR. C. H. B. QUENNELL, F.R.I.B.A., ARCHITECT. (*See centre plate.*)

peal to Mr. Harcourt "to act in the spirit of the twentieth century, and to save for London this valuable and beautiful open space." The hon. secretary of the committee which has organised the petition is Mr. W. H. Talbot, 146, Fleet Street, E.C.

A BRONZE STATUE OF BOSWELL, the gift and work of Mr. Percy Fitzgerald, F.S.A., is to be unveiled at Lichfield on September 19th, the day following the birthday of Dr. Johnson, from whose statue that of his biographer, will be only a few yards distant. The face is the one in Reynold's portrait, and the figure and costume are derived from Langton's sketch.

R.I.B.A. APPOINTMENTS.

The following appointments to the Institute Standing Committees have been made by the Council under by-law 46:

Art Committee.—Sir Aston Webb, R.A. (F.); John Belcher, A.R.A. (F.); George Frampton, R.A. (H.A.); T. Raffles Davison (H.A.); Geoffry Lucas (A.).

Literature Committee.—J. D. Crace (H.A.); Francis Bond (H.A.); G. H. Fellowes Prynne (F.); C. Harrison Townsend (F.); C. E. Sayer (A.).

Practice Committee.—Ernest Flint (F.); J. Douglass Mathews (F.); W. E. Riley (F.); Thomas Henry Watson (F.); W. G. Wilson (F.).

Science Committee.—F. N. Jackson (H.A.);; A. W. Moore (F.); F. T. Reade, Assoc.M.Inst.C.E. (H.A.); Lewis Solomon (F.); T. H. Markham (A.).

Mr. Edwin T. Hall, vice-president, has been nominated by the Council to represent the Institute on the sectional committee on Bridges and General Building Construction (chairman, Sir John Wolfe Barry, K.C.B.) of the Engineering Standards Committee.

Our Plate.

Clive House, Roehampton, Surrey, is an interesting example of the larger suburban house by Mr. C. H. B. Quennell. As may be seen, the house has an excellent and workable plan, and it is to be deplored that our suburban districts afford us so few dwellings as good as this. Mr. Quennell published some time ago a book of suburban houses, which ought to be more widely studied, both for practical planning on both narrow and ample plots, and also for hints in exterior treatments. The present house is faced with grey stocks with red brick dressings, and the roof is covered with hand-made tiles. The casements are of iron, with leaded glazing. The entrance corridor, shown in a separate view, is finished in plaster, painted white. Messrs. Roffey and Sons, of Putney, were the builders.

A new church for Woolacombe, Devon, is proposed at an estimated cost of £5,000.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

The querist's name and address must always be given, not necessarily for publication.

Government Appointments.

BELFAST.—W.T.M. writes:—"Can you give me any information as to where I can obtain particulars of all the technical examinations for engineering appointments held by the Civil Service Commissioners."

See answer to Westminster—"Quercus." Correspondents must invariably send their names and addresses, as evidence of good faith.

Duties of a Clerk of Works on a Small Water Supply Scheme.

FERMOY.—BEGINNER writes: "Please define the duties to be performed by a clerk of works over a water supply."

The duties of a clerk of works on a scheme of water supply for a small town really embrace those of resident-engineer on a larger scheme, and he is supposed to be directly responsible to the consulting engineer for its proper execution in accordance with specifications, plans, etc. He should have a competent inspector subordinate to him, who, in his absence, could act on the more particularly important points. With respect to reporting to his chief, he is usually required to keep a comprehensive diary; and, in the ordinary course, if the engineer is not resident near the works, the clerk of works takes this diary to him once a week and orally explains details. In an emergency, such as a contractor's refusal to comply with his instructions, the engineer should be at once informed by telegram or letter giving full particulars. The ordinary duties of a clerk of works on small works are:—The setting-out of, checking, supervision, and measuring-up of the whole of the work, taking samples of materials for testing, careful examinations of all foundations, registration of temperatures to govern the making of concrete, and the building of brickwork (neither of which work should be done if the thermometer registers more than 4 degrees of frost), the testing of all pipe and other joints, and the refusal to accept any doubtful work or material whatsoever; and where day-work has to be resorted to, a careful check must be kept on the number of men employed, and their various trades; the contractors should submit sheets daily for the clerk of works to certify or initial as correct. He should keep full details of all extras, orders for which should be given in writing, accompanied where necessary by plans or sketches. Certificates for payments on account to the contractor are usually prepared monthly, and progress plans and sections should be kept, showing (properly dated) the work completed. In the case of way-leaves, etc., where private property is disturbed, damage done, or inconvenience to trades, etc., caused, careful observations, measurements, and dates, should be recorded in the diary for future reference, in case claims are made for compensation. On the completion of the works, he should see that all trenches and other disturbances are made good and left in as perfect condition as possible. With reference to the duties of resident-engineer on a large scheme, they are much more comprehensive and responsible than those

of a clerk of works on a small scheme, and embrace the preparation of plans, etc., for extensions or alterations, testing of cement and other materials, the supervision of clerks of works and inspectors, who should report to him every morning, or oftener if necessary, and the duties of the clerk of works are, in consequence, considerably lessened.

ASSOC.M.INST.C.E.

Roofing with Stone Slates.

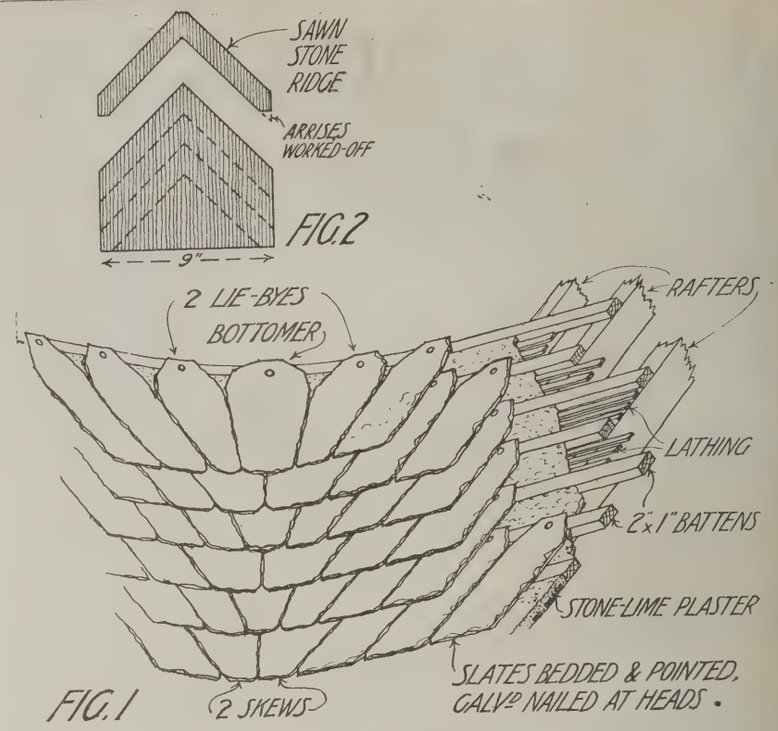
AYR.—AILSA writes:—"I want to cover the roof of a small building of old Scotch design with stone slates: how are they overlapped, and are they broken-bonded in the width, and are they checked? If so, are they checked on the sides as well? Also what construction of roof is required to receive the stone covering, and what thickness and size should each stone be?"

To cover a roof with tooled slabs would be a very expensive matter, if it were sought to make a weathertight job. In that case, the rafters would be spaced to the width of the slabs, which would not be broken-bonded, but jointed continuously over each rafter, the joint being covered with a stone capping, very much in the manner of the marble tiles of Greek temples. This would surely be quite out of harmony with the "old Scotch" style. Stone slates are best laid in the manner shown in the accompanying illustration (Fig. 1). The slates are split naturally, from blocks of laminated stone, quarried and exposed to the winter frosts. They are sorted into various lengths, the longer ones (which may be as much as 30 in.) being laid next the eaves, each successive course diminishing in length towards the ridge, where the smallest slates (about 10 in. long) are laid. No special form of roof construction is needed, but the strength of the ordinary forms should be considerably increased, as the stone slate covering is very heavy. After the roof is battened to the gauge of the diminishing courses, the spaces between the battens are lathed, and plastered flush with the battens with stone-lime mortar. Each slate is bedded solid, nailed or pinned at the head, with a single stout galvanised iron nail or oak pin, and pointed in stone-lime mortar. The method of laying a valley without the use of lead is also shown in the illustration, consisting of two and three tapered slates in alternate courses, nailed to curved fittings. All slates are laid broken-bonded; but as the width of the several slates in each course is likely to vary considerably, though the length is the same, no great regularity is attained, and a wide slate will sometimes receive two vertical joints in the course above. Ridges are covered with sawn stone, economically cut from the block in series, in about 12 in. lengths, as shown in Fig. 2. The eaves are laid double, as in ordinary slating, and unless the projection is great, a soffit may be formed by laying a single course of large slates flat upon the wall, over which the ordinary slating tilts, thus leaving no woodwork exposed. G.

Question of a Commission.

LONG EATON.—F.S. writes:—"In August, 1907, I prepared plans for a pair of houses for which a would-be client gave me particulars orally, but nothing in writing. In September he postponed his intention to build. He had a tracing of my plans, and has since given the work to another architect in the town. The houses are now erected, and are exactly as on my plans. I sent the client my account, and he has written that he did not order the plans and is not going to pay for them. Can I make him pay for the services rendered in the preparation of my plans?"

We think that you have good cause for action if you can prove that the houses were erected from your plans. But our recollection of your district is that the majority of the houses there are built on one stereotyped plan, and unless your design has distinct or novel features, which are also present in the houses erected, you would find it difficult to prove this. Consult a solicitor.



ILLUSTRATING ANSWER TO "AILSA," AYR.

Designing Photographic Studios.

DUBLIN.—H.B. writes:—"Where can I obtain particulars for the up-to-date construction of a photographer's studio?"

An article on the subject appears in Specification No. 6, post free, 5s. 9d., from these offices.

Damage to Shop Front.

HEMEL HEMPSTEAD.—In reply to "R.F." we know of no way in which the trouble mentioned may be obviated. It is impossible to control the animals.

Measured Drawings: Royal Engineers' Appointment.

DOVER.—W.P. writes:—"(a) Is there any book published on the method of making drawings, especially of Gothic Tracery? (b) In what division of the Royal Engineers in the new Territorial Army would a draughtsman (architectural) with a fair knowledge of land surveying be of use in the ranks with a chance of promotion, and where could I obtain particulars?"

(a) We do not know of any work of the nature mentioned. (b) The Secretary of the War Office replies to this enquiry as follows:—"Your correspondent should address the secretary of the local Territorial Force Association for any information regarding the territorial force of the district in which he resides. A list of these associations is given in the monthly Army List, which can be obtained through any bookseller."

Official Appointments.

WESTMINSTER.—QUERCUS writes:—"I should be pleased if you could give me particulars of any architectural appointment under the L.C.C. or Government for which I should be eligible to apply. I am twenty-two years of age, and have a good knowledge of construction and building generally, but do not see much before me as an assistant unless I can obtain an appointment in a public office. Is there anything offering a better prospect than architecture in which an architectural training would be of use?"

Appointments on the permanent staff of the architect's department of the L.C.C., when not filled by promotion, are usually advertised in the professional papers and in the *London County Council Gazette*, which is a weekly publication to be obtained of Messrs. P. S. King and Sons, Nos. 2 and 4, Great Smith Street, Westminster, S.W., price one penny. In addition to the permanent staff, there is an unestablished staff in the architect's department consisting of draughtsmen and technical assistants who are engaged in a temporary capacity. The rates of pay range from £1 1s. (for youths) to £4 14s. 6d. a week. The commencing pay for clerk of works is £3 3s. a week. A form of application, on which a number of questions have to be answered as to your technical training, etc., may be obtained from the Clerk of the L.C.C., County Hall, Spring Gardens, S.W. Vacancies also occur during the summer months for temporary employment as clerks of works to superintend the painting of the Council's schools. Applications for this class of employment must be made to the Architect (Education), Nos. 8 and 10, Charing Cross Road, W.C. There is, unfortunately, a long list of applicants for appointments on the unestablished staff, which at the present time is being reduced, so that very little inducement is offered to

the prospective candidate. There are a number of appointments in various Government departments for men who have had a training in architecture, but very few of these offer very bright prospects, as they are for the most part filled with young men, and vacancies occur very rarely. The correspondent had better write to the Civil Service Commissioners, Burlington House, W., asking for particulars of all appointments under Government requiring a previous training in architecture, and from these the correspondent will find out whether any suit his case. Information may also be obtained from the Civil Service Year-book, to be seen in any library. H.M.

New Street.

YORK.—"E. T. F." writes: "I shall be glad to have your opinion on the following case. A is the owner of certain building land, approached by an accommodation road of an average width of 18ft. A has laid out his land, forming a new street 36ft. wide, and has erected certain houses thereon, the foundations and drains of which have been approved by the Urban District Council's surveyor. The local authority, however, have informed A that unless he provides an entrance to his street 36ft. wide, and in all ways complies with their by-laws, they will refuse to grant a certificate of completion, and thus make it an offence against their by-laws if he allows any of the houses to be occupied. A contends that the entrance to his new street is of the required width, and that he should not be called upon to purchase the strip of land to make the connecting road 36ft. in width."

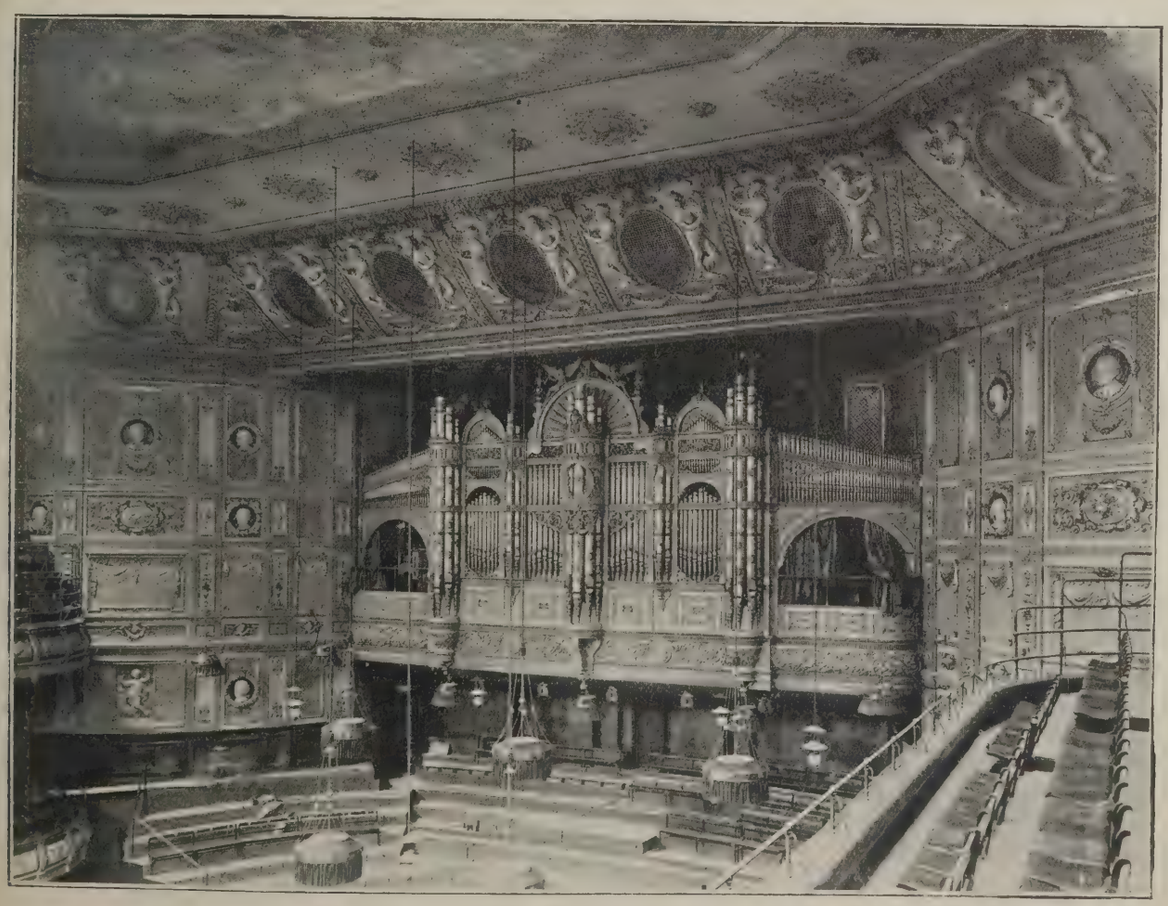
Unfortunately for A, there is no possible doubt that the Urban District Council are right in claiming that a "new street" shall be laid out, of the full width of 36ft. (24ft. being carriage way, and 6ft. for each footpath), and that the entrance "at one end at least of such street" shall be "of a width equal to the width of such street," "and open from the ground upwards." I cannot at all understand how the situation you describe can have arisen. Did you not deposit drawings before you laid out the new street? The objection would then have arisen before capital had been expended upon the road-making and building.

F. S. I.

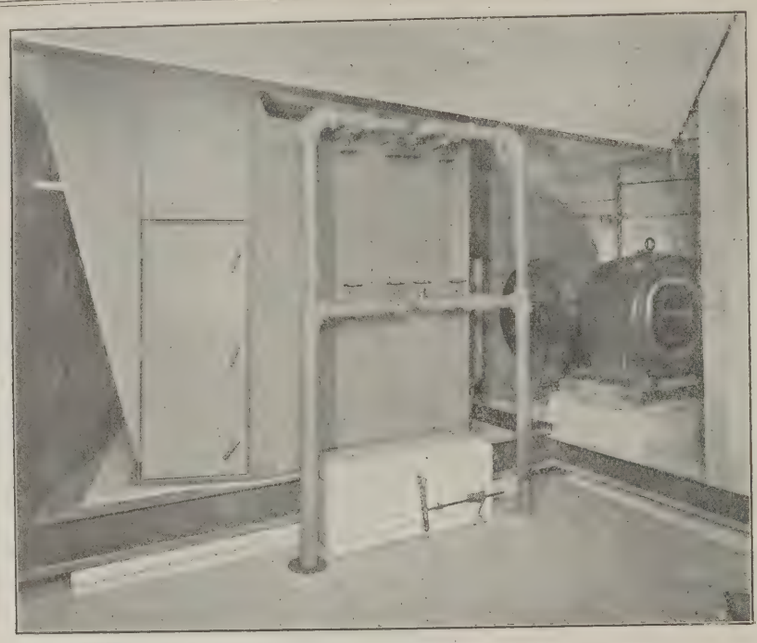
THE QUEEN'S HALL, LONDON.

A New Heating & Ventilating Installation.

At the three gates of the world, Singapore, Port Said, and Charing Cross Station, a man may, according to Kipling, see every friend and acquaintance pass, sooner or later. Without exaggerating overmuch, a fourth foregathering place might be named in the Queen's Hall, London. Certainly it is difficult, nowadays, to discover anyone who has not, at some time or other, been present at one of the ever-popular promenade concerts; and, while this is a tribute to the enterprise which those concerts represent, and to the excellence of the music there provided, it has also served to draw particular attention to the building. With the exception of the Royal Albert Hall, the Langham Place building is at once the largest and most popular concert hall in London, and its acoustics are, generally, very satisfactory. The organ is rather hampered by being hung up on the wall at the back of the orchestra, and the organist is not well placed to see the conductor's baton. In other respects the big semi-circular plan, with an open floor area and two balconies supported on cantilevers, without columns, has proved favourable both to hearing and seeing. The decorations err rather on the side of crudeness, and the figures placed on either hand of the eyelet windows in the roof look coarse and uncomfortable. In one respect, the Queen's Hall was not well equipped, and that a very important one for a building intended for an audience of over 2,000 people. Except for one section of the grand circle balcony, smoking is permitted at the promenade concerts all over the hall, and as a performance progressed the orchestra receded from sight behind a gradually thickening veil of blue vapour, which was intensely irritating to the eyes, and must have been extremely trying to the throats of the singers. The only remedy for this and the heat was to open the doors and the eyelet windows, which meant an unbearable draught in the grand circle and a dangerous breeze on the heads of patrons in the upper balcony. From the accounts of our daily contemporaries, since the commencement of this present season on August 15th, we judge that these defects have been entirely removed by the new system of heating and ventilating, which has been installed during the last few months by Messrs. Richard Crittall and Co., of 197, Wardour Street, W., under the direction and supervision of Mr. E. Wingfield-Bowles, consulting engineer.



THE QUEEN'S HALL, LONDON: INTERIOR VIEW SHEWING NEW AIR INLETS OVER ORCHESTRA.



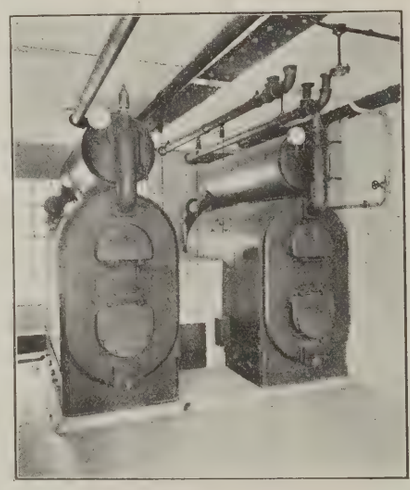
INTAKE FAN AND MOTOR.

Of this new system, by which the air in the building is now changed six times in the course of an hour, we are enabled to give some interesting views and particulars.

The system is, of course, a mechanical one, this being the only suitable means of dealing with such a vast body of air. A combined installation has been so arranged that the incoming air is warmed in winter and cooled in summer, and in a place devoted to music, where any extraneous sound would jar, this must be accomplished in perfect silence. The fresh air is filtered through screens placed at the south-east angle of the building, the intake fan being a double-inlet cased fan coupled direct to a 20 b.h.p. motor. The air then passes through a duct in the roof, and, as seen in the interior view, is delivered through the eyelets over the orchestra. In winter the air will be driven over heating batteries before being distributed, and one of our illustrations shows the steam boilers on first floor supplied for the purpose of feeding these batteries.

Cool air bye-passes are arranged under the batteries so that it is possible to regulate the temperature of the air while the volume remains the same. The vitiated air is carried away through gratings arranged around the various circles and opening into ducts constructed over the corridors, the whole leading up to the extract fan, which is single-cased, and belt-driven by a 12 b.h.p. motor, the fan delivery discharging into the open air. It is interesting to note that the whole of this installation has been completed without interfering in any way with the usual routine of the work carried on in the hall, in fact, very few people were aware that anything out of the ordinary was taking place.

A new church for Stanton-under-Bardon, of which the foundation stone has just been laid, is being built by Messrs. Toone and Warrington, of Anstey, from designs by Mr. E. Turner, of Leicester. It will be faced with granite, lined with bricks and Derbyshire stone. The ultimate cost is estimated at £2,200, but the immediate outlay will be about £800.



THE BOILER HOUSE.

ELECTRICITY IN BUILDINGS.

V.

By Harold Hastings, M.I.E.E., A.M.Inst.C.E.

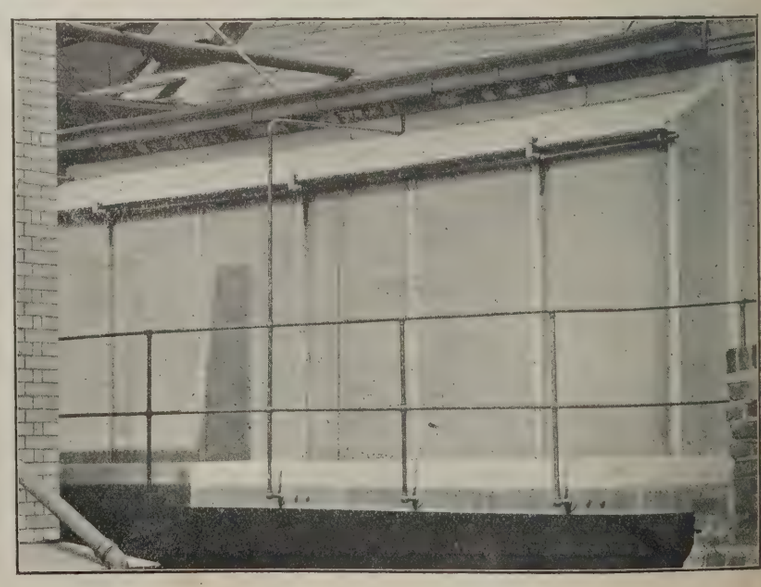
(*Continued from p.* 102, *No.* 704.)

Cut-outs.

This apparatus constitutes the safety-valve of an installation, and, as too much caution cannot be displayed, cut-outs are always distributed generously.

The principle upon which a fuse operates is that it is the weakest part of the circuit which it protects, and consequently is the first portion to break. Once broken, the current ceases to flow in the wires, and so danger is avoided and attention is called to the fact that something is wrong. A fuse is a short length of wire or strip of a metal with a low melting point. This is inserted in the path of the current, and its cross-section is such that it will heat up considerably when an excess of current flows through the circuit. The exact adjustment striven for in determining fuses is such that the metal will melt when double the normal current is passed. In heavy circuits this is reduced to 1½ times the current. As an example, a circuit which has a flow of 2 ampères, when all its lamps or other apparatus are in use, would have fuses on each pole—*i.e.*, on each wire—which would be so heated by the flow of four ampères that their melting-point would be reached almost instantaneously. A circuit having a normal flow of 100 ampères would have fuses arranged to melt at 150. The melting usually takes place so suddenly that it forms a miniature explosion, which has given rise to the word "blow," instead of "melt," when they operate.

The chief troubles to guard against when examining the design of cut-outs may be thus enumerated: damage or fire caused by the spluttering of the molten metal, breakage of the base or cover if the explosion takes place too violently or in too confined a space, and, worst of all, the maintaining of a flow of current through the metallic gases after the fuse has "blown." This last danger can be obviated by arranging that the fuse is of ample length, or by inserting shields between the terminals to which it is attached.



A PORTION OF ONE OF THE SCREENS.

It will be noted that the strip of metal which melts is the "fuse," but the whole apparatus, base, cover, terminals, and fuse, is called a "cut-out."

The continued flow of current through the vapour of a conductor is termed "sustaining an arc," and various means are adopted for removing the arc should it hold on. It is found to be susceptible to magnetism, and for heavy currents a type of fuse is made having a coil of wire behind the strip, so arranged that when the fuse blows, the current, which would maintain the arc, has first to flow through the coil. The magnetic field thus produced draws the arc into its centre, until it is of such length that it cannot continue. An arc can always be broken by extending its length sufficiently. Hence, a point of design is to have sufficient gap between the terminals, and to have no other metal present to which the arc may jump. A safe rule for small currents, say up to 25 ampères, is to allow ½in. gap for every 100 volts of the system, so that a 200-volt circuit would have cut-outs with 1in. clear gap between the terminals.

Cut-outs are usually made with porcelain bases and covers. Slate is also used for large sizes. Whatever base is employed it must be incombustible as well as being an insulator. Metal covers should not be allowed, the only metal in the apparatus besides the fuse being the brass terminal screws which form the means of connecting the wires, and which also grip the fuse. Double-pole cut-outs, which have both poles on the one base with a screen between them, are of advantage in isolated cases, but two single poles and independent ones are preferable.

Distribution Boards.

When the mains enter a house, they are carried to a distributing centre, and terminate in a "distribution-board." This apparatus consists of a wood case, of ornamental design, containing two long incombustible bases with a non-flammable screen between them. Each base supports a row of fuses, one being positive and the other negative pole. All the terminals on one side of each set are connected together by a copper bar. The fuses are mounted upon small handles with blades which fit into suitable contacts forming part of the terminals mounted on the board. One of the main wires is connected to each copper bar, while from the other terminals the various circuits radiate. The case is provided with a hinged cover having a glass front. The fuses are arranged vertically in pairs, and each pair protects one circuit. Distribution-boards should be well ventilated, otherwise the glass in front may be shattered if three or four fuses happen to blow at the same instant. Besides this, it is found that when fuses are enclosed in a confined space without ventilation they frequently blow in sympathy with one another. Again, the heated air, due to the radiation of a number of fuses, will cause them to blow with a smaller current than that allowed for. It should, therefore, be replaced with cold air. An easy way to arrange for efficient ventilating, in cases where it has been overlooked, is to cut away the corners of the glass front.

Distribution-boards should be fixed in accessible places. They are only examined in cases of emergency, and when all concerned are anxious to have a fuse replaced and current restarted. It does not tend to increase the facilities in this work if the operator has to balance himself on the top of a step-ladder, or work with a candle in one hand. A pantry, a corner in the hall, or upon a landing is generally a convenient spot. If the board is provided with a key it should have a handy hook where the key can always be found. Spare handles, with fuses ready mounted upon them, should always be provided, and they too should be kept in some convenient position close at hand.

Switches.

A flow of current can be immediately stopped by breaking the metallic continuity. Even then there is a certain impetus which causes the current to try to jump the intervening space. This impetus exhibits itself in the form of a spark, where the pressure is not great, and an arc of varying intensity with higher potentials. An arc is always to be avoided, because it must be fed, and, therefore, its continuance indicates that the metal parts, between which it plays, are being consumed. The heat of the arc is well known to be the most intense discovered. It will melt metals, such as platinum, which no other form of heat will affect. Copper does not wait to melt, but vaporises under its action.

These considerations lead to two conclusions in the design of switches, namely, (1) the arc must be reduced to a minimum, and (2) the materials of which the switch is made must be non-flammable. The first is attained by making the blades of the switch fly apart at a great rate, and by so arranging the gear that it is impossible for anyone to manipulate it slowly, or to leave the contacts in any but the "on" and "off" positions. The use of non-combustible materials is of easy solution, since porcelain is so good an insulator.

The difference between a switch and a fuse, as regards arcing, is that a cut-out is recognised as a chamber in which it will occur, and it is provided for; a switch, on the other hand, is not proof against arcing, as it should never occur if the apparatus is properly designed. The covers of switches, therefore, are often made of metal, through which the handle protrudes. The gap between contacts is also less than that between the terminals of a cut-out, being about ½in. to ¾in. for 200 volts. As the tendency to maintain an arc depends not only upon the pressure but largely upon the quantity of ampères flowing, the length of gap increases in relation to both ampères and volts. This is the case also with fuses, but the gaps already referred to may be taken as sufficiently correct for the usual requirements of house-wiring.

Types of Switches.

The most popular type of switch at present upon the market is the "Tumbler" pattern. There are a variety of qualities, and it is not sufficient to know that switches of this pattern are being supplied, to think that they are the best. The purchaser should examine a sample from every batch to see that there is ample surface at the contacts, a sharp, quick-beat action, a good spring, and yet perfect ease in working. They should be mechanically sound, and should have no parts likely to loosen with continual use.

Combined switches and fuses should be avoided. The principle of such a combination is bad. Combined switches and lampholders should be examined with special care, as there are very few patterns that can be said to be satisfactory; besides which, the lampholder is seldom the most convenient place for a switch.

Double-pole switches are usually placed where the main passes into the house, so that they can control the whole installation. They are also used on heavy branch circuits in large installations. A double-pole switch consists of two single-pole ones which have their handles linked together with a bar of insulating material, and mounted upon a common base.

Positions for Switches.

Switches are generally placed at the entrance of a room, or sometimes just outside. This is the best position, as the light can be turned on before the room is entered and extinguished after it is left. In bedrooms it is most convenient to have a switch near the head of the bed controlling the lamp over or near the sleeper. As the bed is not always near the door, and in most bedrooms there are two lights at least (one by the bed and one over the dressing-table), it is advisable to light the second lamp from the door. Another very convenient arrangement is to have two two-way switches connected. By means of this arrangement the lamps can be turned on or off from either point at will. This method is also very successful in a long corridor which may be entered from either end, or a flight of stairs.

If a case ever occurs in which it is required to turn lamps off and on from three distant points at will, this can be done by wiring three three-way switches on the same principle.

In fine, it is false economy to cut down the number of switches in an installation. Every well-placed switch will add to the saving of current, and will soon pay for itself in this way. For instance, a fitting containing three lights should be controlled by two switches—one on two lamps and one on one. It is then possible to use one, two, or three lamps as occasion demands.

Wall Plugs.

Wall plugs are made in two parts, one of which is for attachment to a wall, and the other to the flexible cord of any portable apparatus requiring current. Standard lamps, reading lamps, radiators, and all the accessories to be described later, commonly receive their current through a wall-plug.

The device has two brass sleeve-contacts completely surrounded by and sunk into the porcelain base of the fixed portion. These contacts are each connected with a wire from the opposite poles of the system. The removable part has two projecting contacts corresponding to the hidden ones. They are connected to the two conductors of a flexible cord. The terminals are completely covered with a porcelain shell. When the two parts are joined together, by inserting the projecting contacts in the hidden ones, current is conveyed from the fixed wires to the flexible and thence to the portable apparatus.

All wall-plugs in any one installation must be interchangeable. They are generally fixed on the skirting, though they can be conveniently placed above the picture-moulding. Special patterns are made which can be let into the floor and flush with it. This, however, is an undesirable position, since the wall-plug must receive damage whenever the floor is washed down.

Where it is important that the direction of the flow of the current should always be the same through the portable accessories, the contacts are arranged in the form of concentric rings.

Adaptors are sometimes used to take the place of wall-plugs. They are dummy lamp caps with a flexible attached to the

two contacts. By their use any lamp may be removed and an adaptor put in its place, thence conveying current to the portable apparatus to which it is attached.

Ceiling Roses.

In nine cases out of every ten the wires which pass through the ceiling on their way to supply a lamp enter a ceiling-rose, and from this a flexible cord depends. A ceiling-rose consists of a porcelain base and cover, the latter being screwed on to the former, and having a hole in the centre through which the flexible cord passes. On the base two brass terminals are fixed with two screws each, one for making electrical contact with the wires and the other with the flexible cord. A porcelain screen is moulded as part of the base between the terminals, with suitable holes in it through which to loop the flexible cord, so that the weight of the lamp and shade will not be dependent on the screws alone for support. The wires enter the terminals through the base. Recent patterns of roses are arranged to take two wires in each terminal, as well as the flexible cord, to enable the practice of "looping" to be properly carried out. Looping will be discussed more fully later, but in the meantime it may be stated that this is a method of leading the wires into and then out of the apparatus: they then go to other fittings, and thus the necessity of jointing is avoided. Where looping is thoroughly done it is possible to carry out a whole installation without a single joint. This is of great advantage, as joints are always considered a source of weakness. They are also costly to make, since they occupy considerable time in each case.

Ceiling-roses should always be mounted upon wooden blocks. These may be enamelled white, or merely polished, according to taste. The blocks are supported by two No. 14 screws at least 3 ins. long. Secure fixing must be obtained. If they are not screwed into a convenient joist, the ceiling must be backed with a piece of wood fixed independently of the laths and plaster to the joists on either side. Holes are bored through the block before it is placed in position, for the wires to pass through in their correct relation to the ceiling-rose. The latter is fixed to the block with two 1in. screws.

There are many designs of roses in varying degrees of ornamentation and expensiveness. The main design should be as has been described. Anything containing a fuse should be rejected, a fuse in a ceiling-rose being one of the most inaccessible things possible.

A very useful form of rose is a counter-weight fitting. It is provided with pulleys and a running container for shot to counterbalance the fitting.

Lampholders.

There are two kinds of lampholders on the market—"screw" and "bayonet." The latter are the more popular in England. The difference is in the method of fixing the lamps, and when ordering lamps it is always necessary to state which kind of holder they are for. As the name implies, the method employed in the first case is to screw the lamp into its socket, and, in the second case, to press it in against a spring and give it a slight turn, so that it is retained in the same manner as were the old-fashioned bayonets.

Lampholders are made so that they are suitable for screwing on to a fitting, such as a bracket or an electrolier. They are also made with a grip at their head, consisting of two pieces of hardwood in a hollow cone which bind upon the flexible cord when the cone is screwed round. The insulating material inside the holder is porcelain. It supports two terminal contacts, which connect with metal contacts on the cap of the lamp. In the case of the screw-holder, one contact is in the centre of the fitting, corresponding to one on the centre of the lamp cap, and the other is a threaded case which fits round the cap when it is in position. In the case of the bayonet-holder there are two contact springs which press upon two corresponding plates upon the lamp cap.

Shade rings are an addition to holders to facilitate the attachment of shades. Switch lamp holders have already been dealt with under the head of switches, and are seldom required. Special water-tight holders are made, which have a screwed gland with a rubber washer where the flexible enters. They are for use in exposed exterior situations, or in very damp places generally.

In attaching the wires to the holders they should be prepared just as in the case of jointing. There should be a short length of rubber exposed between the outer covering and the copper. The conductor should be quite clean, and care must be taken to see that the terminal screw grips it properly. With flexibles the practice—so often adopted—of burning away the insulation is a bad one. It should be removed with a sharp knife. (A pair of curved nail scissors forms an excellent tool for this purpose.) It must be cut away in a long slope, so as to avoid nicking the wires. Unless this is carefully done the wires will subsequently break, or, what is worse, all will separate except one or two, and when current is switched on these remaining ones will blow as a fuse, and the outer covering of the flexible may catch alight. When burning is resorted to, the carbonised ends form a path for leakage, and also the wires become very brittle. No ends of wires should be left protruding beyond the terminals, as they may make contact with the shell of the holder, and either cause a short-circuit or, if only touching one side, may give someone an unpleasant shock.

(To be continued.)

INTERNATIONAL COMPETITIONS.

The special committee appointed at the International Congress of Architects in London, 1906, to consider the question of international competitions reported thereon, according to instructions, at the recent Vienna Congress. The Committee consisted of seven delegates, and has drawn up recommendations under twelve heads, to which we shall refer in detail next week. The resolutions arrived at are now to be referred to the various representatives bodies in each country, adherent to the Permanent Congress Committee, for consideration, and a further meeting of the delegates in Paris will be held in the second week of November to discuss any objections or amendments raised and settle a final report to which every nation, represented on the Permanent Committee, shall be held to subscribe.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

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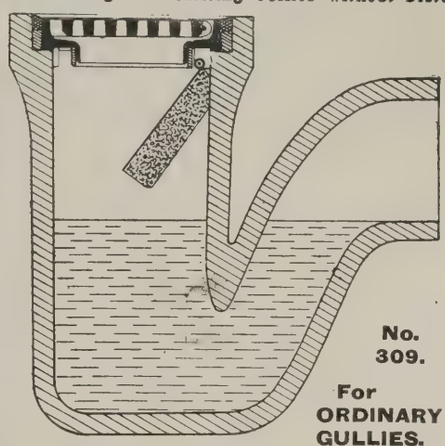
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Offices : Advertisement and Editorial—Caxton House, Westminster. Counting House and Publishing—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address : "Buildable, London."

Telephones : Advertisement and Editorial—364, Westminster. Counting House and Publishing—2200 Holborn (six lines).

Date of Publication:—The Builders' Journal and Architectural Engineer is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

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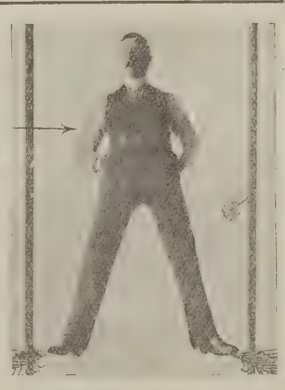
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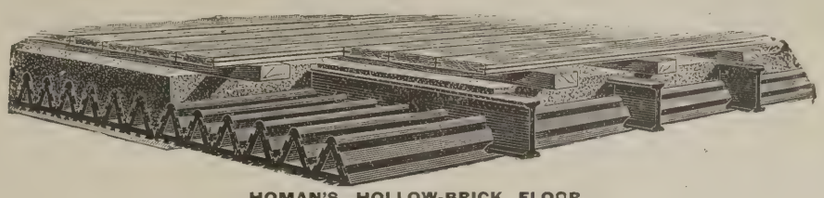
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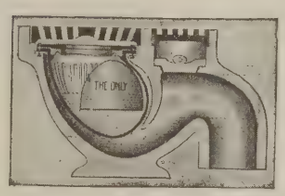
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(Tenders continued from page vi.)

London, W.C.—For National Gallery extension (superstructure), for the Commissioners of H.M. Works and Public Buildings:—

G. Godson and Sons	£21,584
W. Downs	21,570
W. H. Lorden and Son	21,000
Higgs and Hill	20,990
J. Chessum and Sons	20,963
Leslie and Co.	20,931
Stephens, Bastow and Co.	20,785
H. L. Holloway	20,683
B. E. Nightingale	20,453
Spencer, Santo and Co.	19,957
C. Wall, Limited	19,671
J. Dorey and Co.	19,250
Holliday and Greenwood	18,900
J. Mowlem and Co.	18,825
Foster and Dicksee	18,660
Perry and Co.	18,562
J. Smith and Sons	18,550
Lawrance and Sons	18,371
Holloway Bros.	18,200
J. Allen and Sons	17,598
F. and H. F. Higgs	15,979

Norbiton (Surrey).—For new buildings at Norbiton Common Farm, and alterations and additions to isolation wards of infirmary, for the Kingston-on-Thames Guardians. Mr. W. H. Hope, 12, Clarence Street, Kingston-on-Thames, architect:—

New buildings.

H. Coombes	£8,825 0 0
J. Harrison and Co.	8,672 0 0
Drowley and Co.	8,152 0 0
F. Deacon	7,964 1 1
Oldridge and Sons	7,597 0 0
A. N. Coles	7,375 1 5
W. Harbrow	7,167 8 5
Jarman, Dawes and Co.	6,995 0 0
Goddard and Sons	6,953 0 0
Hawkins and Co.	6,934 4 0
Nightingale and Co.	6,896 0 0
Mc. E. Fitt and Co.,* 118, Oxford Road, Reading	6,750 0 0
L. J. Adams and Co. (informal)	6,600 0 0

*Accepted.

Additions and alterations.

H. Coombes	465 15 9
A. N. Coles	449 3 0
J. Harrison and Co.	428 2 5
Oldridge and Sons	425 0 0
Drowley and Co.	406 4 0
Goddard and Sons	391 0 0
F. Deacon	389 0 0
W. Harbrow	379 0 0
Jarman, Dawes and Co.	369 0 0
L. J. Adams and Co. (informal)	359 12 0
Mc. E. Fitt and Co.*	357 0 0
Hawkins and Co.	350 0 0
Nightingale and Co.	347 0 0

*Accepted.

Rainham.—For the erection of an enlargement to provide additional acommodation for 150 scholars to the Council school at Rainham, Kent, for the Kent Education Committee. Mr. G. E. Bond, Rochester, architect:—

		Credit.
G. H. Denne and Sons	£1,030 0 0	£4 0 0
G. Browning	989 0 0	3 0 0
G. W. Ellingham	970 0 0	10 0 0
Strange and Sons	916 7 0	10 17 0
J. Lonsdale	892 0 0	7 0 0
T. Cornelius and Son	879 0 0	—
G. Baker and Son	834 0 0	5 0 0
L. Seager	807 0 0	12 0 0
H. E. Phillips	789 0 0	—
Kemp Bros.,* Rainham	788 0 0	10 0 0
T. Monk	785 0 0	10 0 0
J. A. Davidson	785 0 0	11 8 0
C. E. Skinner	775 0 0	11 14 0

*Accepted.

Ripley (Derby).—For the construction of tanks and continuous filters (Waingroves sewage disposal scheme). Messrs. Herbert Walker and Son, Nottingham, engineers:—

G. Bell and Sons, Manchester	£1,102 18 6
Johnson Bros., Hereford	1,083 2 4
H. D. Smith and Co., Westminster	896 1 6
A. E. Palmer, Leicester	882 4 0
L. A. and F. Fowkes, Codnor, Derby	875 4 5
J. C. Truman, Limited, Swanley Junction, Kent	873 0 0
H. H. Barry, Radcliffe-on-Trent	852 15 6
E. Cope, Nottingham	788 14 6
C. E. Cox and Co., Ilkeston, Derby	788 4 2
S. Johnson and Sons, Pendleton	785 0 0
H. Ashley, Mansfield	780 0 0
T. H. Harper, Carlton, Nottingham	750 9 0
J. and J. Warner, Mickleover, Derby	744 14 6
A. and C. Raynor West Bridgeford, Nottingham	743 4 4
J. Bradley, Mansfield	740 0 0
W. Norman,* Marehay, Derby	712 1 0

Engineers' estimate, £707 7s. 6d.

*Accepted.

Wells.—For erection of laundry buildings and alterations to boiler-house at the Somerset and Bath Asylum. Messrs. G. T. Hine and Co., architects, Westminster

Pollard and Son, Bridgwater, Somerset £5,480

Bankruptcies.

Bennett, Robt., architect, 96, Cheapside, E.C. Adj., Aug. 21.

Britton, Fredk., builder and contractor, 44, Bedford Row. Adj., Aug. 18.

Cooper, Chas., joiner and builder, Thornton Dale. R.O., Aug. 19. First meeting O.R.'s, Scarborough, Sept. 3, at 11.30. P.E., C.C., same, Sept. 22, at 12. Adj., Aug. 19.

Curwood, Ellis, carpenter, Loyalty Hall, Kentisbeare. R., Aug. 17. First meeting O.R.'s, Exeter, Sept. 3, at 10.30. P.E., The Castle, Exeter, same day, at 11.30. Adj., Aug. 17.

Daw, Ada Cecilia (widow, trading as H. L. Daw), retailer of wallpapers and house decorating materials, 108, Commercial Street, Newport. First meeting O.R.'s, Newport, Sept. 2, at 12. P.E., Town Hall, Newport, Oct. 6, at 10.30.

Dowdall, John Wilson (trading as John Dowdall and Son), builder, 107, Alma Road, and at 22, Bedford Place, Southampton. R.O., July 28th. Adj., same day. Gross liabilities, £2,376 8s. 10d. Assets, £1,688 8s. 8d.

Hanbury, Geo., master plasterer, Vale Farm Cottage, Thornaby-on-Tees, late 45, St. Cuthbert's Road, Stockton-on-Tees, and High Street, Yarm. R.O., Aug. 18. Adj., same day.

Jones, Ernest, builder, Derwent House, Prees-gweene, near Chirk. First meeting Crypt Chambers, Chester, Sept. 2, at 12. P.E., County Buildings, Wrexham, Sept. 8, at 12.

Mackenzie, Tom, builder and contractor, Workington Road, and Gavel Street, Maryport. Adj., Aug. 17.

Richardson and Somerfield, plumbers and glaziers, Bearwood Hill Road, Burton-on-Trent. R.O., Aug. 20.

Rowland, Wm. Hy., painter and decorator, Red Hill oil and colour stores, Coventry Road, Hay Mills. R.O., Aug. 18. Adj., same day.

Sayce, Jno. Geo. (trading as J. G. Sayce), builder and contractor, 114, Sycamore Road, Smethwick. R.O., July 31 (amended notice). First meeting, 191, Corporation Street, Birmingham, Sept. 2, at 12. P.E., Law Courts, West Bromwich, Sept. 4, at 10.30.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

September 3. SOUTH GOSFORTH.—Masonry, etc., required in widening Haddricks Mill county bridge, near South Gosforth Station, for the Northumberland county council. Plans and specifications may be seen and bills of quantities obtained from the surveyor. Tenders to be delivered to J. A. Bean, county surveyor, county surveyor's office, Moot Hall, Newcastle, by 9 a.m. on September 3.

September 4. SMETHWICK. — Erection of stabling, at the depot in Rolfe Street, Smethwick, for the Corporation. Plans can be seen and specification and bill of quantities obtained at the office of the surveyor, any day between 9 and 1 and 2 till 5, Saturdays 9 till 1. Applications for quantities must be accompanied by cheque for one guinea. Tenders to be sent under seal, addressed to the chairman of the public works committee, and endorsed "Tender for Stables, Rolfe Street Depot," and delivered not later than noon on September 4 to C. J. Fox Allin, borough surveyor, council house, Smethwick. Fair wages clause.

September 5. CYMMER (Port Talbot).—Alterations and improvements, at the workmen's hall, Cymmer, for the committee. Plans, specifications and bills of quantities may be inspected at the hall on arrangement with Tom John, 10, Maesteg Road, Cymmer, Port Talbot. Tenders, sealed and endorsed, are to be delivered to the chairman, D. Daniel, 13, Maesteg Road, Cymmer, Port Talbot, on or before September 5.

September 5. HASLINGTON.—Erection of New Wesleyan Church and School, Haslington. Tenders to be sent to the Rev. J. Hewitson not later than September 5. For particulars apply to Jas. Martin, architect, Crewe.

September 5. CARNBEE.—Mason, plumber, and joiner work in connection with erection of shelter sheds at Carnbee School, for the School Board. Specifications and plan may be seen on application to Andrew Gilchrist, Carvenom, Anstruther. Offers to be lodged by September 5 with Guthrie and Maxwell, solicitors, Anstruther.

September 5. LANIVET (Cornwall).—Erection and completion of a dwelling-house at Higher Woodley, in the parish of Lanivet, Cornwall, for Mr. C. T. Treffry, J.P. Plans and specifications may be seen on application to James Retallick, Higher Woodley Farm, Lanivet, Bodmin; and further particulars obtained from F. C. Jury and Son, architects, 1, Alma Villas, Tregonissey Road, St. Austell, to whom sealed and endorsed "House Tenders," must be sent on or before September 5.

September 5. BALLYWARD (Banbridge). — Erecting and completing a dwelling-house (with Belfast brick), at Ballyward, near station on G.N.R. (Ireland). Plan and specification may be inspected, and surveyor's quantities obtained, at the office of John M'Aleenan, C.E., Castlewellan; or, at the site, from James Harold, Ballyward, Banbridge, with whom tenders are to be lodged by September 5.

September 5. DUNFERMLINE.—Mason and brick, carpenter and joiner, plumber, slater, plaster, and painter works of internal alterations to County Buildings, High Street, Dunfermline for the County Council of Fife. Plans can be seen and schedules of quantities obtained on application to T. Hyslop Ure, architect and surveyor, 43, Carnegie Street, Dunfermline. Sealed tenders to be lodged with David Mackenzie, C.E., clerk to the County Buildings Sub-Committee, County Buildings, Dunfermline, on or before September 5, marked outside, "Tender for County Buildings Alterations."

September 7. MILTON REGIS.—Erection of a store in Gas Road, for the Urban District Council. Plans and specifications may be seen and full particulars obtained at the office of the surveyor, Town Hall, Milton Regis, between the hours of 10 a.m. and 4 p.m. Tenders, suitably endorsed, to be delivered not later than noon on September 7, to Jno. Dixon junr., clerk to the Council, Town Hall, Milton Regis.

September 7. WEYMOUTH.—Erection of a kitchen, alterations to bath-rooms and the hot-water supply, and external painting, at the isolation hospital, Cold Harbour Lane, Radipole, for the Rural District Council. Plans, etc., may be seen, and the site of proposed building inspected, on application to the caretaker at the hospital. Tenders should be submitted not later than September 7.

September 7. ROCHFORD. — Builder's work required at Rochford Workhouse, for the Union. Plans, etc., may be seen at the office of the clerk. The work is divided into four parts, and a separate tender is required for each. Tenders, endorsed "Tender for Covered Way, etc.," must reach Frderic Gregson, clerk, 46, Alexandra Street, Southend, not later than September 7.

September 7. POOLE.—Works of construction to No. 3 groyne on the shore at the sandbanks, for the Poole Harbour Commissioners. Plans and specification can be seen at the office of H. F. J. Barnes, surveyor to the Commissioners, Poole, after payment of £2 2s., which will be returned upon the receipt of a bona fide tender. Tenders will be received at the Harbour Office, Quay, Poole, up to noon on September 7, endorsed "Tender, Groyne."

September 8. GODREAMAN (near Aberdare). —Erection of a new boys' school, outbuildings, laundry, cooking kitchen, workshop, etc., at Godreaman, near Aberdare, for the Urban District Council. Plans and specification may be inspected and a copy of bills of quantities obtained at the Education Offices or at the offices of the architect, T. Roderick, Clifton Street, Aberdare, upon payment of the sum of £2 2s. to the Director of Education, which will be returned on receipt of a bona fide tender. Sealed and endorsed tenders to be sent in not later than September 8 to John Morris, Director of Education, Education Offices, Aberdare.

September 9. KILKEEL.—Erection of 52 labourers' cottages (including fencing of plots), for the Rural District Council. Full particulars and instructions can be obtained by enclosing a stamped addressed envelope to W. Hughes, clerk of Council, Board Room, Kilkeel. Tenders must be delivered not later than September 9.

September 9. CRAGHEAD.—Erection of an addition to the Craghead social club and institute, consisting of a corrugated iron billiard room, with brick cellar under, etc. Plans and specification may be seen on application to the steward of the club, and tenders to be sent to the secretary at Craghead on or before September 9, sealed and marked "Tender for Club Addition."

September 9. LONDON, W.—Erection of a block of shops and showrooms at 143-9, Great Portland Street, London, W. Drawings, specification, and conditions of contract may be inspected at the offices of the architects, John W. Simpson and Maxwell Ayrton, 3, Verulam Buildings, Gray's Inn, W.C., from August 24 to Sept. 8, between 10 and 4. Bills of quantities and forms of tender may be obtained at the same address on payment of three guineas. The sums so paid will be returned to those persons who send in tenders on the forms provided in conformity with the conditions. Tenders must be delivered before noon on Sept. 9, addressed to the Owner, Great Portland Street site, care of Messrs. Jubber and Co., 61, Great Portland Street, W., and endorsed "Tender for Shops and Showrooms."

September 9. LETCHWORTH GARDEN CITY. —Erection and completion of a new County Council school at Letchworth Garden City, for the Education Committee of the County Council. Persons desiring to tender for the work may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturday, when they may be seen from 10 a.m. till 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office, on or after the above-mentioned date, upon payment of two guineas, which sum will be returned to the tenderer upon receipt of a bona fide tender and the documents which have been supplied to him. Sealed tenders, endorsed 'Tender for New School, Letchworth," must be delivered to Urban A. Smith, county surveyor, County Surveyor's Office, Hatfield, not later than 5 p.m. on September 9. Such security for the due execution of the works as the council may require must be given by the contractor.

September 9. WIMBLEDON.—Extensions to the domestic economy centre, Queen's Road schools, Wimbledon, for the education committee of the Corporation. Plans and specification may be inspected, and bills of quantities obtained, on payment of two guineas (which will be returned on receipt of a bona fide tender), at the surveyor to the education committee's offices, town hall, Wimbledon. Tenders must be delivered not later than noon on September 9.

September 10. CARDIFF.—Pulling down and rebuilding Nos. 18 and 19, Church Street, Cardiff, for Messrs. Cross Brothers, Limited. Plans etc., can be seen and bills of quantities obtained, from the architect, on a deposit of two guineas, returnable on receipt of a bona fide tender. Sealed and endorsed tenders to be delivered not later than September 10, to Veall and Sant, architects, Cardiff.

September 10. TIPTON.—Alteration and extension of public offices, Owen Street, Tipton, for the Urban District Council. Drawings and specification may be seen and all information obtained on application to Wm. H. Jukes, M.E., engineer and surveyor, Surveyor's Offices, Public Offices, Tipton, any day during office hours, and on payment of one guinea, which will be returned on receipt of a bona fide tender. Tenders to be sealed and sent in on the forms provided to the clerk to the Council, on or before September 10. Fair wages clause.

September 10. SUNDERLAND.—Construction of buildings for plant, offices, boiler house, and chimney, workshops, entrance gates, etc., at the Ayre's Quay works, for the Sunderland Gas Company. Specification, bills of quantities, and plans may be inspected at the engineer's office at Hendon gas works, Commercial Road. Arrangements to inspect site can be made on application. Tenders to be delivered on or before September 10, to John H. Cox, secretary and manager, Fawcett Street, Sunderland.

September 12. LEES. — Adapting premises situate in Cross Street and Booth Street, Lees, known as the Christian brethren congregational chapel, as a board-room and offices, for the Urban District Council. Specifications, etc., may be obtained on application to Whitehead and Platt, architects, High Street, Lees, on payment of £1 1s. Tenders should be submitted not later than September 12.

September 12. KILLALOE (Co. Clare).—Erection and completion of a new chapel at Garraunboy, Killaloe, Co. Clare, for the Very Rev. Canon D. Flannery, P.P., and committee. Drawings and specification may be seen at the parish priest's house, Killaloe, or at the office of the architects. Bills of quantities for the use of builders tendering can be had at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick, or with the parish priest. Sealed tenders, endorsed "New Chapel, Garraunboy," accompanied by bills of quantities, must be delivered to the parish priest on or before September 12. Two solvent sureties required for the due performance of the contract.

September 12. GRANGE-OVER-SANDS.—Erection of a balcony, and alterations in the Victoria Hall, Grange-over-Sands, for the Urban District Council. Plans and specifications may be seen, and bills of quantities and form of tender obtained from Henry T. Fowler, A.R.I.B.A., 6, Cornwallis Street, Barrow, or from Thos. Huddleston, surveyor to the Council, Council Offices, Grange-over-Sands. Sealed tenders, endorsed "Victoria Hall Balcony," will be received up to five o'clock p.m. on September 12.

September 12. TUNSTALL. — Erection of 48 workmen's dwellings, at Tunstall, for the Sunderland Rural District Council. Plans and specification may be seen at the office of Joseph Spain, A.R.I.B.A., architect, 12, John Street, Sunderland, from whom bills of quantities can be obtained on payment of two guineas, which will be returned on receipt of a bona fide tender. Whole tenders only will be received, and must be delivered, endorsed "Workmen's Dwellings, Tunstall," not later than noon, September 12, to J. C. Wilson, clerk to the council, Rural District Council offices, 17, John Street, Sunderland. Fair wages clause.

September 12. MILTON REGIS (Kent).—Erection of an enlargement, to provide accommodation for about 260 scholars, to the council school, at Ufton Lane, Milton Regis, Kent, for the education committee. Plans and specification, prepared by the committee's architect, Wilfrid H. Robinson, M.S.A., may be inspected at the offices of the committee, on or after September 3, between the hours of 10 a.m. and 4 p.m. Any person desiring to tender, and to receive a copy of bills of quantities, must send his name to Fras. W. Crook, secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on September 3. The deposit will be returned, provided a bona fide tender shall have been submitted, and not with-

drawn. Tenders, on the form supplied, with bills of quantities, in a sealed envelope, endorsed "Milton Regis Ufton Lane Tender," must be delivered to the school correspondent, J. Filmer, Albion House, London Road, Sittingbourne, Kent, not later than noon on September 12.

September 14. HERTFORD.—Erection and completion of a new county record and strong room at Hertford, for the County Council. Persons desiring to tender may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturdays, when they may be seen from 10 a.m. to 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office upon payment of two guineas, which sum will be returned upon receipt of a bona fide tender and the documents which have been supplied. Sealed tenders, endorsed "Tender for New Record and Strong Room, Hertford," must be delivered not later than 5 p.m. on September 14, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Such security for the due execution of the works as the county may require must be given by the contractor.

September 14. LYDBROOK (near Ross).—Erection of a public elementary school at Lydbrook, near Ross, for the Gloucestershire Education Committee. Plans and specifications may be seen at the office of M. H. Medland, architect, 15, Clarence Street, Gloucester. Bills of quantities and form of tender may be obtained from E. A. Pryer, surveyor, 15, Clarence Street, Gloucester, upon payment of two guineas, which will be returned on receipt of a bona-fide tender. Sealed tenders, endorsed "Tender for School at Lydbrook," must be delivered not later than 9 a.m. on September 14 to H. W. Household, secretary to the Education Committee, County Education Office, Gloucester.

September 15. OXFORD.—Erection of the new church of St. Stephen, Lonsdale Road, Summertown, Oxford, for the building committee. Plans, specification of works, and conditions of contract may be seen, and form of tender, with bills of quantities obtained, at the office of A. Mardon Mowbray, architect, 117, St. Aldate's Street, Oxford, during office hours, on payment of five guineas, which will be returned on receipt of a bona fide tender. The contractor will be required to enter into a bond, with two responsible sureties, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. Tenders, sealed and endorsed "Summertown New Church" to be delivered not later than noon on September 15, to Rev. C. J. Burrough, Summertown Vicarage, Oxford.

September 15. BACUP. — Erection of a new school in Burnley Road, Bacup, for the education authority of the Corporation. Each trade may be tendered for separately. Specification and quantities may be obtained and plans seen at the office of the architects, S. Butterworth and Duncan, F.R.I.B.A., South Parade, Rochdale, on and after September 3, on payment of the sum of one guinea. Tenders, endorsed "Northern School," to be delivered not later than September 15, to Joseph Entwistle, town clerk.

September 16. PORTSMOUTH.—Erection and completion of two pairs of dressing-rooms at the north end recreation ground in the borough of Portsmouth. Specification and plan may be seen and form of tender obtained at the borough engineer's office, town hall. The form of tender is to be filled in and sent under cover to reach Alexander Hellard, town clerk, town hall, Portsmouth, not later than 10 a.m. on September 16. Fair wages clause.

September 21. SUTTON COLDFIELD.—Erection of a school to accommodate 200 children in the Green Lanes, Chester Road, for the Corporation. Specification and quantities may be obtained from Crouch, Butler, and Savage, architects, 39, Newhall Street, Birmingham, on deposit of two guineas. Tenders, marked "Green Lanes School," to be delivered on or before September 21, to R. A. Reay Nadin, town clerk, council house, Sutton Coldfield.

September 23. NEWBRIDGE (Mon.).—Erection of thirteen villas at Newbridge, Mon., for the North Road building club, Newbridge. Plans and specifications may be seen at the office of A. J. Bowen, architect, Crown Street, Crumlin. Sealed tenders, endorsed "Tender for Villas," to be sent to T. A. Thomas, Bryn-Awel, Abercarn, Mon., not later than September 23.

September 24. ASHFORD.—Construction of a brick-foundation, timber and iron-covered cowshed for 20 cows, at Henwood Farm, Hythe Road, Ashford, Kent, for the Urban District Council. Plan and specification may be seen, form of tender, and any other information obtained, on application to William Terrill, surveyor, 5, North Street, Ashford, Kent. Sealed tenders, endorsed "Cowshed," to be sent to John Creery, solicitor, 11, Bank Street, Ashford, not later than 5 p.m. on September 24.

No date. DUBLIN.—Erecting and repairing a residence at Lugg, near Brittas, Co. Dublin. Specifications can be had at 43, Arran Street East, Dublin.

No date. FFORESTFACH.—Erection of 10 houses in Armine Road, Fforestfach. Particulars can be obtained from Charles S. Thomas, M.S.A., 15, Wind Street, Swansea.

No date. CROSS HANDS.—Erection of ten cottages at Cross Hands. Particulars can be obtained from the architect, Charles S. Thomas, M.S.A., 15, Wind Street, Swansea.

No date. SOUTHAMPTON.—Erection of six cottages at Southampton. For plans and specifications apply H. M. Camfield, auctioneer and land agent, Woolston, Southampton.

No date. WALLSEND (Northumberland).—Erection of a new boot factory for the Wallsend Industrial Co-operative Society. Plans, specifications, and bills of quantities, prepared by Shewbrook and Hodges, architects, Newcastle, may be seen on application to F. Robertson, secretary.

No date. BESSBROOK (Co. Armagh).—Erecting and completing new female schools, at Convent of Mercy, Bessbrook, Co. Armagh. Plans and specification can be obtained from J. J. M'Donnell architect, 27, Chichester Street, Belfast, to whom sealed and endorsed tenders are to be sent.

ENGINEERING.

September 3. PENISTONE (Sheffield).—Taking out the existing heating apparatus boiler at Millhouse provided school, near Penistone, and fixing new sectional boiler in place of same, for the West Riding county council (education department —division 12). Specification may be had from T. R. Bryan, divisional clerk, education offices, Penistone, near Sheffield. Tenders must be sent to the divisional clerk by September 3.

September 3. CORK.—Execution of the following works to specifications, which may be inspected at the boardroom, for the Rural District Council. (a) Sinking well and erecting pump at Laherdane. (b) Sinking well, supplying and erecting pump at Killeagh Cross. (c) Erecting two fountains at Little Island. Each party tendering is required to give the names and addresses of two solvent sureties who are willing to enter into a bond for the due performance of the work. Tender forms may be obtained on application to John Cotter, clerk of council, boardroom, workhouse, Cork. Tenders will be received not later than noon on September 3.

September 4. DUBLIN. — Supply and erection of boiler plant, etc., at the pigeon house generating station, for the Corporation. Specification, with general conditions and form of tender, can be obtained from the city electrical engineer, Fleet Street, Dublin, on payment of one guinea for each specification, which will be returned on receipt of a bona fide tender. "Tenders, addressed "Chairman of the Lighting Committee, 3, Cork Hill, Dublin," and marked "Tender for Boiling Plant," to be received not later than noon on September 4.

September 8. EXETER. — Covering in two service reservoirs, at Dane's Castle, for the Corporation. Drawings and specifications may be seen, and form of tender, together with a copy of the quantities, obtained between the hours of 10 a.m. and 4 p.m. (10 a.m. and noon on Saturday), at the office of Thos. Moulding, Assoc. M.Inst.C.E., city engineer and surveyor, Municipal Offices, Exeter, on deposit of two guineas. Sealed tenders, endorsed "Tender for Covering Reservoirs," must reach H. Lloyd Parry, town clerk, not later than 4 p.m. on September 8.

September 10. EASTNEY (Portsmouth). — Repairing main pumps and engines at the Eastney pumping station, for the Corporation. Specification may be seen and form of tender obtained at the borough engineer's office at the town hall. The form of tender is to be completely filled in and sent under cover not later than 10 a.m. on September 10, to Alexander Hellard, town clerk, town hall, Portsmouth. Fair wages clause.

September 10. ROTHERHAM.—Heating the Alma Road council schools, for the Corporation. Plans of the schools and further particulars may be obtained at the office of the architect, J. Platts, Rotherham, until September 10. Tenders, sealed and endorsed "Tender for Heating Alma Road Council Schools," to be sent not later than September 10, to Spurley Hey, director of Education, education offices, town hall, Rotherham. Fair wages clause.

September 12. BOLTSBURN.— Sinking two shafts at Boltsburn lead mine, for the Weardale Lead Co. The company supply machinery and enginemen to pump the water and draw the work. Specifications and conditions on application. Tenders will be received up to September 12.

September 12. MARAZION (Cornwall).—Erection of water storage, etc., at Marazion Council school, for the Cornwall Education Committee. Plans and specification may be seen by appointment at the school, or the office of Sampson Hill, architect to the committee, Green Lane, Redruth, from whom all particulars relating to the work may be obtained. Sealed endorsed tenders are to be sent on or before September 12, to F. R. Pascoe, secretary, education office, Truro.

September 12. BALLINASLOE.—Supply and erection of a steam laundry plant, for the joint committee of Ballinasloe Asylum. Plans and specifications prepared by the engineer, Geoffrey B. Meenan, 5, Charleville Road, Rathmines, Dublin, from whom copies may be obtained on payment of £1 1s., returnable on receipt of a bona fide tender. Contractors will be required to enter into a bond for the due performance of the work. Tenders to be endorsed "Tender for Laundry Plant," and delivered not later than September 12, to J. St. L. Kirwan, resident medical superintendent, board-room, Ballinasloe Asylum.

October 1. HOLSWORTHY.—Construction of an impounding reservoir, service reservoir, and filter beds, and the laying of cast-iron mains, and other work at Holsworthy, for the Urban District Council. Plans may be seen at the office of the engineer, I. Chadwick, Bletchley, Bucks, or at the office of the solicitor. Copies of specification, quantities, and form of tender may be obtained from the engineer on payment of £3 3s., which will be returned upon receipt of a bona fide tender. Sealed tenders, endorsed "Holsworthy Waterworks," to be delivered on or before October 1, to W. C. R. Peterson, solicitor, clerk, Holsworthy, Devon.

IRON AND STEEL.

September 5. HOUGHTON-LE-SPRING. — Supply of about 400 yds. of 6 in. cast-iron pipes or weldless steel tubes, for the Urban District Council. Specification and form of tender may be obtained from John W. Holbrook, engineer and surveyor to the council. Tenders (endorsed "Water Mains"), to be delivered not later than September 5 to D. Miller, clerk of the council, Houghton-le-Spring.

September 14. HINDLEY.—Supplying 1,000 yds. 6 in. open socket and spigot c.i. pipes, also 1,000 yds. open socket and spigot steel pipes, for the Urban District Council. Specification and forms of tender may be obtained from H. O. Timmins, gas engineer. Sealed tenders, endorsed "Gas Main," to be delivered on or before September 14, to Thomas Robey, clerk to the council, council offices, Hindley.

September 15. ACTON.—Supplying and fixing 342 ft. of 6 ft. unclimbable wrought-iron railings and one pair of gates, for the Urban District Council. Plans and specifications can be seen, and bills of quantities obtained at 57, High Street, Acton, during office hours. Tenders to be delivered not later than 3 p.m. on September 15 to Wm. Hodson, clerk to the council, 242, High Street, Acton, W.

PAINTING & PLUMBING.

September 3. SOUTHWELL.—Outside painting of the workhouse, infirmary, and all other buildings at the workhouse, for the Guardians of the Union. For specification of the work required and other particulars apply to the master of the workhouse. Tenders, marked "Painting of the Workhouse," to be sent on or before September 3, to G. E. Kirkland, clerk to the Guardians, Southwell, Notts.

September 10. STROOD.—Painting, etc., all outside wood, iron and stone work at the union workhouse at Strood, in accordance with specification to be seen at the office of the architect, G. E. Bond, 384, High Street, Rochester. Sealed tenders, endorsed "Tender for Painting," must reach J. E. Povey, clerk to the Guardians, union workhouse, Strood, not later than 10 a.m. on September 10.

ROADS AND CARTAGE.

September 5. EBBW VALE (Wales).—Work required in providing and laying kerb, channel and pavement, and otherwise improving South Street, Beaufort, for the Urban District Council. Plan and specification may be seen, and form of tender with bill of quantities obtained, by appointment at the office of T. J. Thomas, town surveyor. A deposit of 10s., to be paid in postal orders, will be required from each person who obtains a copy of the form of tender and bill of quantities. This sum will be returned upon receipt of a bona fide tender with price schedule. Tenders enclosed in a sealed envelope, endorsed on the outside "Tender for South Street Improvement," should be addressed to the Chairman, and be delivered to Tho. Hughes, clerk, by September 5.

September 5. WITHINGTON.—Kerbing, flagging, tar-macadamising, and otherwise completing Cromer Avenue, Withington, Tenby Avenue, Withington, Redcar Avenue, Withington, for the Corporation of Manchester. Plans, sections, and specifications of the work can be seen, and form of tender, with quantities and any further information, obtained from the surveyor to the committee, town hall, West Didsbury. Tenders to be endorsed "Tender for Street Works," and addressed to the chairman of the Withington committee, town hall, West Didsbury, not later than noon on September 5.

September 7. FINSBURY.—Paving carriageways as undermentioned:—Wilmington Square (part of) with 3 in. by 4½ in. by 8 in. creosoted deal blocks. Wilmington Square (part of) wi

ar slag macadam, for the Corporation. Specifications can be seen and forms of tender obained at the borough surveyor's office, Finsbury own hall, Rosebery Avenue, E.C., any day except Saturday, between 10 a.m. and 4 p.m., on eposit for each form of tender of one guinea. enders must be delivered not later than 4 p.m. n September 7, to George Whitehead Preston, own clerk, Finsbury town hall, Rosebery Avenue, .C.

September 7. BROMLEY. — Supplying flicked flints, granite and ragstone of approved uality, and carting gravel, from the date of the xecution of the contract to September 30, 1909, or the undermentioned parishes:—Chelsfield, Cudam, Downe, Farnborough, Hayes, Keston, nockholt, Mottingham, North Cray, Orpington, t. Mary Cray, St. Paul's Cray, West Wickham. eparate tenders must be made in respect of each tem as separately numbered on the form of ender relating to each parish. Tenders to be elivered not later than noon on September 7, o Edward Haslehurst, clerk to the council, ouncil offices, Park House, Bromley, Kent. orms of tender may be obtained at the offices of he council.

September 7. YARDLEY.—Supplying and laying bout 900 super yds. of concrete slab paving on tratford main road footways, at Sparkhill, in he parish of Yardley, for the Worcestershire .C. Specification and further particulars can be btained on application to J. H. Garrett, county oad surveyor, Shire Hall, Worcester. Sealed enders, marked "Concrete Slab Paving," must e sent in not later than September 7.

September 7. EPPING.—Supply and delivery 700 tons of well-screened gravel, for the Urban istrict Council. Tenders to be submitted not ter than September 7, to G. J. Creed, clerk to e council. Epping.

September 7. SANDGATE.—Supply on hire of a team roller and scarifier, for the Urban District ouncil. Particulars and form of tender may be btained upon application to the council's surveyor. Tenders must be on the forms supplied nd under cover, marked "Tender for Rolling nd Scarifying," must reach J. Shera Atkinson, erk to the council, council offices, Sandgate, not ter than September 7.

September 7. BIDEFORD.—Supplying about 100 tons of broken granite and 200 tons of anite chippings for roadmaking, also 1,000ft. n of 10in. by 6in. granite kerb, for the Corration, to be delivered free at Bideford in such antities as the surveyor shall from time to ne order. Forms of tender and further parulars as to gauge, etc., can be obtained on plication. Samples of granite to be sent with nder. Tenders, to be endorsed "Tender for anite," to be sent on or before September 7 W. B. Seldon, town clerk.

September 7. COLCHESTER.—Construction of a new road, with sewer, manholes, and other rks incidental thereto, for Lady Grant Duff, on e Lexden Park Estate, Colchester. The work mprises about 300 yards lineal of road-making, th kerbing, channelling, metalling, and sewer h manholes, etc. Plans and sections can be pected at the offices of Cobbe, Wince, and ooper, and E. S. Beard and Daniell, and specifications, bills of quantities and forms of tender n be obtained from the same on payment of e sum of £1 1s., which will be returned to all ho send bona fide tenders. Tenders, accomnied by the schedule of prices, must reach Cobbe, Wince, and Cooper, surveyors, 5, Arcade reet, Ipswich, and E. S. Beard and Daniell, rveyors, Head Gate, Colchester, on or before ptember 7, endorsed "Tender for St. Clare ad."

September 7. BULCAMP (Halesworth).—Supply d delivery by October 1, at the workhouse, Bulcamp, of 200 tons of Jersey, Guernsey, or erbourg quartzite granite blocks, for breaking in the labour yard, for the Guardians of Thing Union. Tenders (at per ton), sealed d endorsed "Tender for Granite," to be deliered not later than 10 a.m. on September 7, Harold A. Mullens, clerk to the guardians, e Board Room, Bulcamp, Halesworth. No m of tender is issued.

September 8. ARNOLD.—Making-up the undertioned roads, viz.:—Villiers Road and Woodrpe Avenue (from Villiers Road to Egerton ad), for the Urban District Council. Persons irous of tendering are requestel to send their mes to R. E. Clarke, council surveyor, Public ices, Arnold. Tenders, endorsed "Tender for king-up Roads" to be sent not later than on on September 8, to C. Ford Spencer, clerk the Council, Public Offices, Arnold.

September 8. SWANSEA.—Whole of work to be formed and the materials required in paving carriageway and footways of High Street, re-laying and doubling the tramway therein, ing a route length of about 700 yards, for the poration. Plans may be seen and further parulars obtained on application to George Bell, ough surveyor, 13, Somerset Place, Swansea, m whom copies of the specification, general ditions, bill of quantities, and form of tender be obtained on payment of £5 5s., which unt will be returned on receipt of a bona fide der. Sealed tenders, endorsed "Paving and Tramway Works," to be delivered not later than noon on September 8 to Jno. Thomas, town clerk, Guildhall, Swansea.

September 9. SHAFTESBURY.—Steam-rolling roads within the district, for the Rural District Council. Tenders to quote cost per day and cost per cubic yard. Contractor to provide steam-roller with experienced driver, horsed water barrel, brushers, and brushes. Tenders to be sent to reach James Burridge, clerk, Shaftesbury, on or before September 9.

September 10. KEIGHLEY.—Paving, etc., in certain streets, for the Corporation. Full particulars from Walter Fowlds, borough surveyor, town hall, Keighley. Tenders to be received by September 10.

September 14. STREATHAM.—Making up and paving the following new streets, viz.:—(a) Thrale Road, Streatham. (b) Part of Crowborough Road, Streatham, between Chillerton Road, and Ramsdale Road. (c) Part of Ramsdale Road, Streatham, between Rectory Lane and Crowborough Road, for the Council of the Metropolitan borough of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained at the borough engineer and surveyor's office, New Streets Department, 53, East Hill, Wandsworth, between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving ——— Road," must be delivered to Henry George Hills, Town Clerk, Council House, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on September 14. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

September 14. URMSTON.—Paving, flagging, draining, and other improvement works in Manor Avenue, and Windermere Road, and in certain side and back streets, all in Urmston, for the Urban District Council. Plans, sections, and specifications may be seen and quantities and forms of tender obtained from the surveyor to the council, James Heath, council offices, Urmston, on payment of £1 1s. Sealed tenders must be delivered, endorsed "Tender for Private Street Works," not later than 4 p.m. on September 14, to T. J. Rowland, clerk to the council, council offices, Urmston.

September 14. BROADSTAIRS.—Steam rolling and scarifying required in connection with the repair of roads within the district for the ensuing twelve months, for the Urban District Council. Further particulars and form of tender may be obtained on application to Howard Hurd, C.E., town surveyor, Broadstairs. Sealed tenders, endorsed "Steam Rolling and Scarifying," must be delivered by noon on September 14, to Lionel A. Skinner, clerk to the Council, Council Offices, Broadstairs.

September 15. ACTON.—Making-up Bradford Road, in the district, for the Urban District Council. Plans and specifications can be seen, and bills of quantities obtained at 57, High Street, Acton, during office hours. Tenders to be delivered not later than 3 p.m., on September 15, to Wm. Hodson, clerk to the Council, 242, High Street, Acton, W.

September 16. BEXLEY HEATH.—Levelling, kerbing, channelling, tar paving, draining, and making good nine streets on the Oaklands and Broadway estates, and carrying out the Lion Road improvement, all at Bexley Heath, for the Urban District Council. Plans and sections may be seen and specification, conditions and bills of quantities obtained, on application to W. T. Howse, surveyor, council offices, Bexley Heath, and upon payment of two guineas, which sum will be returned upon receipt of a bona fide tender and the documents which have been supplied. Sealed tenders, together with fully priced in quantities endorsed "Private Street Works," must be delivered to Thos. G. Baynes, clerk to the council, council offices, Bexley Heath, Kent, not later than noon September 16.

September 16. LONDON, S.W.—(a) Paving the roadway and yard at the workhouse, Wallis's Yard, Buckingham Palace Road, S.W., with granolithic concrete; (b) supplying and fixing (including builder's work) a steel ventilating gate to strong room at the offices, Prince's Row, S.W., for the Guardians of St. George's Union. Specifications may be obtained at the Guardian's offices between the hours of 10 a.m. and 4 p.m. Tenders must be forwarded not later than noon on September 16, to Thomas Worlock, guardians' offices, Princes Row, Buckingham Palace Road, S.W.

September 16. ASHTON-IN-MAKERFIELD. — Making-up several private streets, for the Urban District Council. Plans, etc., may be inspected, and copy of specification, etc., obtained (on deposit of 10s. 6d. with Albert Sykes, clerk to the council, council offices), on application to Thomas Burgess, F.I.S.E., council's surveyor, council offices, Ashton-in-Makerfield. Tenders to be submitted not later than September 16.

No date. CROSS HANDS.—Road making at Cross Hands for the New Cross Hands Collieries, Limited. Persons desirous of tendering can obtain all particulars from D. F. Davies, at the colliery office, or from C. S. Thomas, M.S.A., Wind Street, Swansea.

SANITARY.

September 3. DUNFERMLINE.—Providing and laying about 3,200 lineal yds. of 9-in. water main, for the Corporation. Offers to be returned not later than September 3, to Andrew W. Bell, burgh engineer, Dunfermline, from whom copies of detailed schedule may be obtained.

September 3. RUFFORD.—Excavating the ground and providing and laying about 3,583 yds. of 4 in. and 6,410 yds. of 3 in. cast-iron turned and bored water-pipes, with the necessary valves, hydrants, etc., in the township of Rufford, for the West Lancashire R.D.C. Specification, drawings, and conditions may be seen at the office of the engineer, C. Law-Green, A.M.I.C.E., union offices, Wigan Road, Ormskirk. Tenders must reach Alfred Dickinson, clerk to the council, Ormskirk, not later than 9 a.m. on September 3.

September 10. DORCHESTER.—New sewer and rising main, and works incidental thereto, for the Urban Sanitary Authority. Plans and specification may be seen at the office of Percival T. Harrison, Assoc.M.Inst.C.E., borough engineer, Guildhall chambers, Dorchester, to whom tenders should be sent not later than September 10.

September 15. BROMLEY.—Erection of a public convenience for ladies (above ground), comprising four closets and three urinettes, for the Corporation. Plans and specification may be seen at the borough engineer's office on payment of 10s. 6d., which will be returned if a bona fide tender is received, and not afterwards withdrawn. Tenders, endorsed "Public Convenience," must be delivered not later than 3 o'clock on September 15, to Fred H. Norman, town clerk, Bromley, Kent.

September 9. GROOMBRIDGE.—Providing and laying about 200 yds. lineal of 9 in. stoneware pipes, and about 35 yds. lineal of 9 in. cast-iron pipes, together with the construction of manholes and other appurtenances, for the R.D.C. of East Grinstead. Drawings may be seen by appointment on and after August 31, at the office of the surveyor, Charles Turton, 6, High Street, East Grinstead, from whom, on and after the abovementioned date, copies of all bills of quantities, specification, schedule of prices, and forms of tender may be obtained on payment of the sum of one guinea, which will be returned on receipt of a bona fide tender and all documents received. Tenders sealed and endorsed "Groombridge Sewer Extension," must be delivered to Francis S. White, clerk to the council, 6, High Street, East Grinstead, before noon on September 9.

MISCELLANEOUS.

September 3. MERTHYR TYDFIL.—Carrying out work in connection with the ventilation of the kitchen at the union workhouse, Merthyr Tydfil, for the guardians. Plan and specification may be seen at the workhouse, or at the office of the architect, Thomas Roderick, Clifton Street, Aberdare. Sealed tenders, endorsed "Tender for Ventliation of Kitchen," must be sent to Frank T. James, clerk to the guardians, 134, High Street, Merthyr Tydfil, by September 3. Fair wages clause.

September 10. GOSPORT.—Supplying of the following materials, etc., for the year ending September 29, 1909, for the U.D.C.: — Broken stone, for macadamising; kerb, channel, and setts; artificial paving stone; stoneware drain pipes; cement and lime; castings; ironmongery; disinfectants; brooms, etc., forage; repairs to picks, etc.; repairs to harness, etc.; shoeing horses, etc.; printing; coal and coke; hospital necessaries; repairs to firemen's boots; stable requisites. Specifications and forms of tender may be obtained from the surveyor to the council, H. Frost, town hall, Gosport. Tenders, sealed and endorsed "Tender for ———," as the case may be, should be delivered with any necessary samples at the offices of the council, not later than noon on September 10. Fair wages clause.

September 11. LEEDS.—Supplying, lettering, and fixing gravestones, at the Leeds, Holbeck, Hunslet and Harehills Cemeteries, for the Corporation. Forms of tender and all particulars may be obtained, and copies of the documents may be inspected, on payment of a deposit of one guinea, at the office of W. T. Lancashire, city engineer. Tenders, properly endorsed, should be received at the town clerk's office not later than 10 a.m. on September 11.

September 11. DUBLIN.—Building, plumbing, heating, and electric lighting works at the State Apartments, Dublin Castle, for the board of public works. Plans and specifications can be seen at the office of the secretary, and of the overseer of works, Dublin Castle. Forms of tender will be supplied on application to H. Williams, secretary, office of public works, Dublin. Envelopes containing the tenders and the detailed estimates must be endorsed "Tender for Building, Plumbing, Heating, or Electric Lighting Works, Dublin Castle," as the case may be. Tenders will be received not later than 10 a.m. on September 11.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

REFINED Detail, architect's assistant, fully qualified, 10 years' experience, best work—school, municipal, domestic work. Give part time evenings to competition work; specimens; highest references.—Apply Classic, Box 4533, BUILDERS' JOURNAL Office.

A competent architectural assistant (24) desires appointment, permanent or temporary; good designer, accurate draughtsman; constructional details, specifications, quantities, moderate salary.—Box 4484, BUILDERS' JOURNAL Office.

ADVERTISER requires situation in south of England, experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECTURAL draughtsman and general assistant requires engagement; age 30; 14 years' experience in ecclesiastical and domestic work; salary according to position offered.—Fimo, 171, Seaview Road, Liscard, Cheshire. 4530

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT'S Assistant desires engagement; 6 years' general experience. — Sedgwick, Belvedere Road, Sunderland. 4367

ARCHITECT'S Junr., 5 years' London experience, neat draughtsman; good colourist, details.—Box 4480, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4498

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4522, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ARCHITECT'S Assistant (27), first-class artistic draughtsman, travelling studentship winner, 11 years' experience; perspectives, quantities, etc.; moderate salary.—Scott, 28, Cromwell Terrace, Halifax. 4500

ASSISTANT A.R.I.B.A. (29), thirteen years' London Provincial experience; testimonials, references, working drawings, details, specifications, supervision perspectives, office work; well up in management; salary 2 guineas.—Apply A., 31, Cotswold Road, Westcliff-on-Sea, Essex. 4512

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (26), disengaged, 10 years' experience; competent draughtsman, colourist, etc.; working drawings, details, surveying, levelling; specifications, specimens; excellent testimonials; moderate salary.—Box 4515, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24), desires engagement; seven years' general experience, working and detail drawings, specifications, superintendence, surveying and levelling; excellent references; moderate salary.—H. M., Parkhurst. Ilkeston. 4514

ARCHITECT-SURVEYOR'S assistant requires situation at once. Three building construction certificates, and Prelim. R.I.B.A.; articled to A.M.I.C.E. and M.S.A.; good all-round experience. Age 24.—Box 4492, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (33), disengaged; 14 years' experience in good offices; first-class testimonials, and references; can take charge; specimens sent; salary £2. — Box 4491, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S assistant disengaged, 21 years' experience, comprising office routine, plans, specifications, quantities, outside supervision; measuring-up, levelling and surveying; good references; abstainer—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4494

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (24), 8 years in and outdoor experience with large London contractor; quantities, general office routine; assist estimating and supervision.—Box 4401, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

EXPERT all-round Engineering draughtsman (over 10 years' experience) wishes for occasional work at his own home, or otherwise; lowest terms.—Freeman, 44, Horsell Road, Highbury, N. 4416

FOREMAN, decorator good colourman, grainer and paperhanger; able to estimate; thoroughly experienced in management of men, for general jobbing work; age 42; wages £2 per week.—Box 4524, BUILDERS' JOURNAL Office.

FOREMAN painter and decorator (well-experienced) wants re-engagement; not afraid of work. First-class references. Age 37.—Foreman, 16, Gambole Road, Garratt Lane, Tooting. 4431

FOREMAN of painters and decorators, take entire management of flats or estate; town or country; well up in all branches of building trades; total abstainer.—C/o G. N., Sanitary Works, Bridge Road, Chertsey. 4420

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, of large and varied experience, thoroughly conversant with every branch of the trade, pushing and punctual; open to undertake any job; none too large; wages moderate.—J. M., 22, Eve Road, Tottenham. 4466

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good references.—H. Cruse, Boxford, Newbury, Berks. 4537

MACHINIST seeks permanency; work spindle, planer, tenoner, morticer, dovetailer, sharpen saws, make cutters, take charge of small plant; country job preferred. — Machinist, 39, Cathnor Road, Shepherd's Bush, W. 4504

PAPERHANGER, practical, wants piecework; builders' flats, hotels, and clubs.—S. Jamer, 48, Carlisle Street, N.W. 4539

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

PLUMBER, gas, hot water, lead-laying and sanitary, wants job, or constancy; town or country. —S. W., c/o Editor, Box 4510, BUILDERS' JOURNAL Office.

QUANTITY surveyor and draughtsman requires engagement; 15 years' experience; taking-off, etc., working drawings, specifications, supervision, passed final examination, Quantity Surveyors' Association; provinces preferred; low salary.—Box 4544, BUILDERS' JOURNAL Office.

SHOP Foreman of joiners seeks re-engagement, experienced, machinery, abstainer; reference; 11 years last situation; age 40.—T. R., 9, Second Avenue, Hendon, London, N.W. 4488

TO Property Owners.—Situation wanted on an estate or tenement property by a reliable man, aged 40, with a thorough practical experience of all repairs; capable of taking sole charge; distance no object.—Box 4503, BUILDERS' JOURNAL Office.

YOUNG Engineer (married), four years' Canadian experience, general engineering and concrete work (reinforced); returning to England, requires appointment; references from Can. Pack Railway. Apply T. B., 2, Grange Road, Ealing. 450

YOUTH (age 18) requires situation in builder's or surveyor's office. Desirous of learning estimating. Three years' previous experience.—Apply W. B., 8, Medley Road, West Hampstead, N.W. 444

£5 is deposited with cashier of a bank, and will be paid to anyone securing permanent position for draughtsman-surveyor desiring change; thorough constructional training, quantity surveyor fullest investigation; references; articles; age 23; salary, desired.—Box 4541, BUILDERS' JOURNAL Office.

Appointments Vacant.

ARCHITECT'S pupil, vacancy in busy West-end architect's office; small premium required but must be fond of drawing.—Stanley-Barrett and Driver, 23, York Place, Baker Street, W. 452

TRAVELLER wanted, with established connection amongst architects, builders, contractors, decorators, etc., to sell our Artificial Marble, on salary and Commission; must have exceptional reference as to ability. Apply by letter only, giving full particulars, and stating terms required, The Fassi Marble Company, Ltd., 46, Cannon Street, London, E.C. 444

WANTED, for a permanency in the office of an old established firm of surveyors in the city, a youth of good appearance and education, with previous office experience, who can write a good hand, quick and accurate.—Apply, in own handwriting, with copies of testimonials, stating salary asked, to Box 4457, BUILDERS' JOURNAL Office.

Business Wanted.

WANTED, a jobbing builder's business in London suburbs preferred. Apply, stating all particulars to Box 4415, BUILDERS' JOURNAL Office.

Businesses for Sale.

NEWPORT, SHROPSHIRE.

To be sold, the old-established builders' and contractor's business for many years carried on by Mr. George Ingram Muirhead, and for some time past known as "George Ingram Muirhead, Ltd.," situate adjoining and fronting the main road near the station (L. and N.W. Railway), Newport, Salop.

The yard is well equipped with all modern machinery and plant, and immediate possession can be given; all contracts just completed, stock-in-trade, machinery, etc., at a valuation; inspection by appointment.—Apply to Messrs. Poole and Davies, Auctioneers and Valuers, Newport, Shropshire. 4

JOBBING builder and decorators' business in Suffolk; old-established; freehold house and premises for sale.—Box No. 4475. BUILDERS' JOURNAL Office.

Partnerships & Practice

AN Architect and Surveyor practising in Essex is anxious to collaborate or enter into partnership with another architect practising within easy distance of Chelmsford. — Apply "Essex," 4508, BUILDERS' JOURNAL Office.

Dissolution of Partnership

MR. A. E. TUTTE, architect and surveyor, has dissolved partnership with Mr. Cook (Cook & Tutte) and closed the offices at 394, Commercial Road, Portsmouth, has opened offices at 91, London Road, Portsmouth. 4

September 9, 1908. Volume 28, No. 709

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Roads and Rodomontade.

Is it not about time that the editors of our daily papers instituted a close season for the publication of wild and irresponsible schemes of road improvement? An elementary knowledge of motor mechanics does not necessarily fit its possessor to lecture experienced road engineers on the principles of their work, and some little discretion should be exercised by a responsible Press to extinguish mere assertive ignorance. A writer on motor matters in one London daily paper recently dealt with the comparative merits of Tarviated or Gladwellised roads and those of the Kent County Council in a manner that left no doubt of his complete ignorance of both. More recently still, we are treated, in the same organ, to a description of a patent for roads of five tracks, made of iron blocks, resting on cushions of indiarubber to deaden the sound. Has the editor no conception of the cost of iron blocks, and more particularly of indiarubber? And would not the trial and abandonment of iron roads in the long distant past be sufficient reason for withholding this priceless information, quite apart from the other facts (1) that no amount of indiarubber under the blocks would prevent noise; (2) that any horse would have its legs jarred to ruin in three days on such a road; and (3) that we could not find the hundreds of millions required to rebuild our roads on such lines even if we wanted to.

The Slump in Bricks.

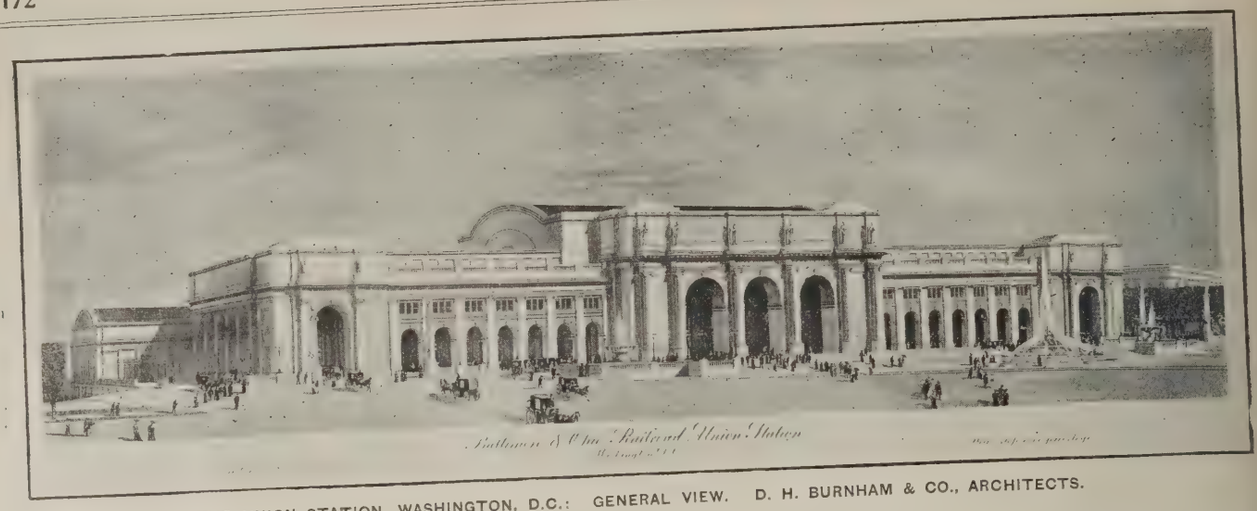
The diminished demand for bricks is giving rise to the usual consequences of a depressed and overstocked market. There are the customary complaints of under-selling. In a report from Fletton, near Peterborough, where they have a capacity for turning out five hundred million bricks a year—which capacity is, for the moment, by no means being overstrained—it is observed that "it would be difficult to find an instance of a greater fall in selling prices than has been experienced in Fletton bricks," and figures are given showing that in 1896-7 the average price on rail was 22s. per 1,000; in 1898-9 20s.; in 1900, 17s.; 1901-2, 15s.; 1903, 15s. 6d.; 1904, 15s.; 1905, 13s.; 1906, 11s.; since which two bad years have been experienced. "The remedy," continues the report, "for the present low prices is obviously a combination among Fletton manufacturers, not necessarily in capital and control, but to provide concerted action which shall secure a profit to all, and mutual assistance in the moderate control of prices." Some of the makers, it is stated, do not agree with the proposals, but think that the lowest level having been probably reached, prices will improve without the creation of a trust. Desperate diseases are said to demand desperate remedies; and the formation of a trust is perhaps justified as a means of protection against ruinously unremunerative prices.

Sweating the Architect.

Lancashire Asylums Board is in the throes of a severe fit of economy, falsely so-called. Extensions to Whittingham Asylum are to be made, and it was proposed to pay the architect four per cent. A Mr. Short ("Short's, the friend—not Codlin") moved as an amendment, that the commission be five per cent., and argued "that it was as necessary to pay architects trade union rates as to pay artisans a standard rate of wages." Architects will hardly have the heart to disdain Mr. Short's inapt comparison, except perhaps on the ground that in one special particular it is glaringly fallacious. The standard rate set up for them is of the nature of a pious aspiration rather than of a dogmatic requirement, and mean clients can disregard it with comparative impunity; whereas, if they attempted to sweat the artisan there would be instant trouble. Mr. Short's amendment was lost, Alderman Greenwood expressing his confidence that "they could get the work done well at a commission of four per cent." Whether or not his confidence turns out to be too well founded, it is only fair to him to circulate as widely as possible among architects his sturdy championship of thrift. In the event, however, he and his niggardly Board may perhaps realise the impolicy of sweating the architect. Whether or not such pinching parsimony meets with its just retribution depends on the profession. A strict boycott would not be too severe a corrective of the Board's cynical assumption of the architect's squeezability and powerlessness.

Out-of-work Architects.

It is doubtless merely an ironic coincidence that brings to us on the same day a letter animadverting on the advantages of the A.A. School of Architecture at the advent of its new session, and the current issue of the A.A. Notes, wherein we find Mr. Philip Turner, F.R.I.B.A., correcting an impression that Canada is a Promised Land for English out-of-work architects, and also a sarcastic little note on "Architectural Practice in Great Britain," in which all architects are heartily recommended to try elsewhere, and where, it is asserted, only those who have been pupils of the assessor, or are related to members of the building committee, run any "risk" of winning a competition. Our leader of last week on this subject has attracted considerable attention, and "The Evening News," in quoting from it, gives point to our remarks by adducing the case of an architect, aged 31, who has been without a post for 15 months, and who has applied for 1,025 "situations vacant" without success. We have had advanced against us the old argument that those out of work are the half-educated and unskilled assistants and tracers, who are being displaced by the more thoroughly trained men from the modern schools, but we remain unconvinced. The schools are, without doubt, turning out highly trained men, but it is just these men, who have been imbued with a high sense of a great art, and with a keen sense of the rigid rules of professional etiquette, who are most likely to go under to men who are either untrained or who possess a less scholastic equipment and a more materialistic temperament. Much credit is due to leading members of the R.I.B.A. for the efforts they have made to improve our system of architectural education, but this is not enough. If you insist on a long and rigid schooling, you are surely under a moral obligation to make some effort to ensure a possibility of that training coming to its due fruition; or, alternatively, you must restrict the numbers of those who enter upon that training. It is hardly humane to take four or five years out of the life of a man and then turn him loose upon the world with the smallest concern as to his ultimate fate. The R.I.B.A. has the remedy to its hand if it likes to use it, and we need not specify what that remedy is. But at least it might devote its attention to a gross abuse under the present system, and regulate the proportion of paying pupils to paid assistants in the offices of its members. The letter from a correspondent, in another column, is eloquent testimony to the necessity of such a step, and the R.I.B.A. will not be the first professional institute to adopt the course suggested.



THE UNION STATION, WASHINGTON, D.C.: GENERAL VIEW. D. H. BURNHAM & CO., ARCHITECTS.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Sept. 15	REFORMERS' MEMORIAL AT GENEVA (funds expected to amount to £20,000). Sketch, plans, and plaster model. Premiums £6,000. Conditions from the Secrétariat de l'Association du Monument de la Réformation, 56, Rue du Stand, Geneva.
Oct. 7	BOAT SHELTER, INVERNESS. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
Oct. 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. No deposit.
Oct. 31	*COUNTY HIGH SCHOOL FOR GIRLS, ROMFORD.—Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.

* *This competition has been unfavourably reported upon by a Correspondent.*

Ellesmere Port Free Library.

The designs of Messrs. Sproat and Warwick, architects, of Liverpool, for the Ellesmere Port Free Library, were recently selected, in a limited competition, by Mr. J. Swarbrick, F.R.I.B.A., of Manchester, the assessor appointed by the Council. The Council have since adopted the assessor's recommendation.

International Competitions.

As announced last week (p. 170), the special committee appointed at the seventh International Congress (London, 1906), to consider the question of international competitions, and to report thereon to the Vienna Congress, 1908, has drawn up its recommendations under twelve heads. These resolutions, as translated by Mr. John W. Simpson (F.), acting secretary of the British Section, and printed in the R.I.B.A. Journal, are as follows:—

1. International competitions should be reserved for exceptional occasions of a really international character.

2. International competitions may be either open to all architects without invitation, or limited, and by invitation. Limited and invited competitions may consist of a single stage. Competitions open to all should be held preferably in two stages.

3. The "conditions" of International competitions are to be identical for all competitors. No drawing or document submitted should be taken into consideration except those specified in the conditions.

4. The instructions to competitors should state definitely the conditions of the competition, and matters considered desirable should not be left to the option of competitors.

5. In limited and invited competitions the conditions should be fully detailed and should require the scheme to be fully developed. In competitions open to all, the conditions should express the technical requirements in general terms and limit the number and scale of the drawings to the minimum necessary for the jury to understand the design. The conditions should require designs to be submitted anonymously under motto in the first stage, and to be signed by the author in the second stage.

6. In double competitions the conditions in the first stage should be as those for competitions open to all, and in the second stage as those for limited and invited competitions. Designs selected in the first stage only can be admitted to the second stage.

7. The conditions of a competition should be published and placed at the disposal of competitors on the same date in all countries. The date of despatch (evidenced by the carrier's receipt, which must be sent on to the jury) is to be the date of closing the competition.

8. The conditions must be drawn up in one only of the four languages officially admitted at the International Congresses of Architects of 1907 (London) and 1908 (Vienna): English, French, German, or Italian. The conditions should be prepared in consultation with experienced architects.

9. The jury of an International Competition shall consist of seven architects, all of different nationality, one of whom shall belong to the country which institutes the competition. A legal authority, nominated by the administration promoting the competition, shall preside in order to insure regular procedure, but shall have no vote. The members of the jury by accepting nomination shall be held to have declared themselves to have no material interest, either directly or indirectly, in the execution of the work the subject of the competition.

10. It is desirable in International Competitions, and especially in the preliminary stages, that the exact limit of cost shall not be fixed, in order to leave full liberty to the artistic conception of competitors.

11. The total value of the premiums to be awarded shall be at least double that of the fees payable upon the execution of the work if it had been entrusted to an architect without competition. The principle must be enforced that the carrying out of the work be entrusted to the architect placed first, subject to the conditions in force in the country promoting the competition. The amount of the prize shall not be deducted from the amount of the fees payable. In the event of the person or corporation promoting the competition wishing to reserve the right to pass over the architect placed first, the conditions of competition must state the terms of compensation. Should the work not be executed, the same compensation shall be due. In all cases the authors of designs submitted retain all artistic right in their design and in the building erected from it.

12. In single-stage competitions all the designs shall be exhibited in a suitable place and for a sufficient time to enable all competitors to visit the exhibition which shall be advertised beforehand in the professional papers. In double competitions there shall be no exhibition after the first award. All the drawings shall be placed under seal and exhibited subsequently together with the designs in the final competition. The full report of the jury giving their reasons for the award shall be published before the opening of the exhibition for the information of all parties interested.

The special commission responsible for these resolutions consisted of A. Wels (Austria), L. Bonnier (France), L. Nels (Germany), John W. Simpson (Great Britain), M. E. Cannizzaro (Italy), Repulles y Vargas (Spain), and G. Totten (United States).

The resolutions were read at the closing meeting of the Vienna Congress, and approved of generally: but at the suggestion of Mr. John W. Simpson, the various nations adherent to the permanent committee are to have an opportunity of considering and confirming them. A member of each section of the Permanent Committee is to meet the other delegates at Paris with full powers

to discuss the said resolutions and settle a final and definite report. The meeting of the delegates is to take place during the second week of November next.

THE LATE HUGH HUTTON STANNUS.

By courtesy of a relative of the late Mr. Hugh Stannus, we are enabled to present the accompanying portrait of that distinguished architect, lecturer, and teacher, whose death, which occurred on August 18th, at his residence, The Cottage, Hindhead, Surrey, was recorded in our issue of August 26th. A few further particulars respecting his influential and eminently useful career may now be appropriately given.

Hugh Hutton Stannus was born at Sheffield, in 1840, and was the son of the Rev. Bartholomew Teeling Stannus. Hugh had an exceptionally brilliant career at the Sheffield School of Art, winning many prizes, among them being an award for the design for a pair of iron gates. Mr. Stannus acquired a thorough acquaintance with the technical details of foundry work, and some of his designs for metal-work were selected for the Exhibition of 1862. It was while he was articled to Messrs. Hoole, the famous metal-workers, at Sheffield, that he first met Alfred Stevens, who was then engaged upon the Wellington monument for St. Paul's.

Coming to London, Mr. Stannus entered the Architectural School of the Royal Academy. He began to practise as an architect in 1879, but while the commissions that he obtained were fulfilled with admirable skill and taste, it is to be regretted that he never had an opportunity of making a great name for himself as a designer of buildings. Mr. R. Phené Spiers, who contributes some recollections of him to the Journal of the Royal Institution of British Architects. recalls that Mr. Stannus sent in a set of drawings for the American competition for the University of California, and that though, in Mr. Spiers's opinion, Stannus showed a more thorough mastery of the peculiarities of the site than did any other competitor, he was probably placed at a disadvantage because, in the absence, in his case, of the sectional drawings which the French and American architects produced with elaboration and profusion, the judges disregarded, or perhaps did not quite understand, Stannus's really superior design.



Photo: Fradelle & Young.

THE LATE MR. H. H. STANNUS.

It was as lecturer and teacher that Stannus did his best work—in the architectural modelling schools of the Royal Academy; at University College, London; at the Royal College of Art, South Kensington; at the Manchester School of Art, where for two years he was director of architectural studies; at the evening schools of the Architectural Association; or before the Royal Society of Arts, where, in 1890, 1898, and 1901, he was Cantor lecturer. He was also an able and incisive writer, as those who remember his occasional contributions to this journal and to the "Architectural Review" will readily concede. His *magnum opus*, of course, is his fine folio volume on "Alfred Stevens and His Work," which was published in 1891. In the same year he issued "Decorative Treatment of Natural Foliage," and, four years later, a companion treatise on the "Decorative Treatment of Artificial Foliage." It is believed that he had been long collecting material for a work on the Classic orders, for which during his tours in Greece and Italy, he had taken many photographs. It is to be hoped that this work may yet see the light.

Mr. Stannus's connection with Alfred Stevens's world-famous monument to the Duke of Wellington in St. Paul's Cathedral is well known. He had acquired and jealously preserved Stevens's plaster model of the equestrian figure of the Duke, without which the monument must have remained incomplete, and he supplied the drawings that established Stevens's final intention with respect to the pedestal. It is pathetic to think that Mr. Stannus has not lived to see the final triumph of his loyal and persistent endeavours to see justice done to the masterpiece of this great though wayward genius.

Of Mr. Stannus's eloquence as a speaker, of his skill as a teacher, and of his rare elocutionary talent, his hearers speak with enthusiasm; but his large circle of pupils and friends will chiefly miss his ever-ready helpfulness. Architectural students have lost in him a generous and sympathetic friend. The remains were cremated at Woking on August 22nd.

IMPORTANT ANNOUNCEMENT.

We have much pleasure in announcing that we have made arrangements with the National Federation of Building Trades Employers of Great Britain and Ireland by which, beginning with next week's issue, the transactions of the Federation will be regularly and systematically recorded in our pages. The information that we shall thus present will be supplied officially from all quarters of the United Kingdom where associations in connection with the Federation have been established. It will therefore be comprehensive and authentic; and we believe that it cannot fail to be advantageous not only to members of this powerful organisation, but also to every reader of the journal who desires to keep well abreast of the varied and important interests that are directly or indirectly involved in the movements of the Federation and the allied societies.

Secretaries are reminded that reports intended for our next issue must reach this office not later than Friday next.

Proposed New Works.

The Local Government Board have decided to hold, or have recently held, as indicated by the appended dates, inquiries into proposed expenditure by public bodies as follows:—Water supply works and plant: Saint Ives B.C., £13,500 including the construction of a reservoir at Bussow Moor with a capacity of 22,000,000 gallons (September 8); Evesham R.D.C., £400, for Broadway (September 9); Faringdon R.D.C., £500, for Lechlade (September 11). Gasworks and plant: Leeds City Council, £65,000 (September 9); Hereford City Council, £2,000 (September 10). Electricity undertakings and plant: Darwen B.C., £4,300 (September 10). Wimbledon B.C., £6,000 (September 14); Clacton U.D.C., £500 (September 15). Sewerage, drainage, and sewage disposal works and plant: Leyton U.D.C., £3650 (September 15); Woodford U.D.C., £1,999 (September 7); Prescot U.D.C., £700 (September 11). Street improvements, new roads, public walks, and pleasure grounds: Tottenham U.D.C., £2,900 (September 13); Southampton B.C., £1,302 (September 4); Penmaenmawr U.D.C., £850 (September 8); Dalton-in-Furness U.D.C., £1,250 (September 8); Southgate U.D.C., £4,157 (September 8); Plympton Saint Mary R.D.C., £647 for Compton Gifford and £3,241 for Saint Budeaux (September 9); Turton U.D.C., £6,500 (September 9); Birkenhead B.C., £2,223 and £2,000 and £24,790 (September 9); Wallasey U.D.C., £430 (September 10); Darwen B.C., £13,050 (September 10). Various: Leyton U.D.C., £1,500, for underground convenience (September 15); Baildon U.D.C., £350, for public lighting, and £700 for depot (September 8); Aston Manor B.C., £400, for air-lift plant (September 8); Farnham R.D.C., £750, for engine-house, etc. (September 9); Wallasey U.D.C., £4,720, for extension of refuse destructor works (September 10).

Barnstaple.—The following plans have been passed by the Town Council:—Four cottages, Carlyle Avenue, for Mr. J. Rice; house, Sticklepath Hill, for Messrs. Slee and Son; Nos. 38 to 44, Charles Street, for Messrs. Cooke and Sons; alterations to conveniences at Bridge Chambers for the Bridge Trust; erection of a coal store, Raleigh Park, for the Water Company; four cottages, Kingsley Avenue, Yeo Vale, for Mr. J. Hill.

Belfast.—The L.G.B. have held an inquiry into the application of the Belfast R.D.C. to borrow £2,932 for building labourers' cottages, including cost of land, fencing, etc. The inspector intimated the objection of the board to a cost of £195 for each cottage, the idea being that the cost should not exceed £170. The question of reducing the cost is to be brought before the council.

Birstall.—Plans have been approved for the erection of sixteen first-class cottages on the Leyland estate by the Birstall Co-operative Society. The Carr House estate in Bradford Road is to be developed by a local firm of contractors, a start being made with two terraces of houses.

Blackburn.—Sir W. H. Hornby, Bart., M.P., has had plans prepared by Messrs. Briggs and Wolstenholme for the construction of a miniature rifle range at Brookhouse, Blackburn. The building will comprise a wide hall, with armoury and cleaning-room, lavatory accommodation, and small magazine-room. The range is to be 170ft. long by 40ft. wide



[*Photo: "The American Architect."*

THE UNION STATION, WASHINGTON, D.C.: THE PRESIDENTIAL ENTRANCE. D. H. BURNHAM AND CO., ARCHITECTS. (*See centre plate.*)

and 26ft. in height to the underside of the ridge, the roof being carried by steel principals. At one end, facing the targets, will be a small balcony approached by way of two staircases.

Buxton.—The U.D. Council are considering an extension of the baths.

Halifax.—Plans for the following new buildings have been passed:—Twelve houses, St. Bevan's Road, for Messrs. Shaw Bros.; 2 houses, Trimmingham Lane, for Messrs. E. and P. Wadsworth; and 12 houses, St. Anne's Road, Skircoat, for Messrs. W. and E. Richardson.

Hastings.—The guardians are about to erect a nurses' home, at a cost not exceeding £2,565, of which they are seeking to raise £2,500 by loan. The plans have been approved by the Local Government Board.

Hay.—A memorial to the late Archdeacon Bevan has been proposed, and public subscriptions are to be invited at a meeting to be held shortly.

Lee, Kent.—Representatives of a syndicate have been inspecting various places in Lee and Lewisham for sites for a proposed "Temple of Pleasure."

Llandudno.—Mr. G. A. Humphreys has submitted for the consideration of the building committee his sketch plans for the proposed Carnegie Free Library.

Luton.—At a meeting of Luton town council on September 1st, it was announced that Mr. Andrew Carnegie had promised £10,000 towards the building of a free library.

Manchester.—The City Council on September 2nd decided to apply to the Local Government Board for power to borrow £50,000 for permanent works, road-making, and laying out of parks. It was urged that exceptional measures were necessary in order to meet the antiicipatd distress from unemployment during the coming winter.

Ramsey, Hunts.—Lord De Ramsey is proposing to extend the reading-room at Ramsey at his own expense. The new room, which will be devoted to cards, chess, etc., is estimated to cost £300.

St. Pancras.—The Borough Council having applied for permission to modify the scheme to provide dwellings on the Prospect Terrace Area, Gray's Inn Road, so that 352 persons may be housed on the site, instead of the 144 persons originally proposed, a Local Government inquiry was held on August 23rd. Messrs. Joseph and Smithem are the architects.

Shrewsbury.—The Museum and Free Library Buildings are to be repaired, at a cost of about £1,000. Towards this the Shropshire Horticultural Society has given a sum of £500.

Sidmouth.—The U.D.C. propose to erect another bridge over the river Sid, at the bottom of Laun Vista.

Stafford.—It is rumoured that a new General Post Office is to be erected on the site of Messrs. Nevill's Yard, between the Green Bridge and the junction of the Newport, Lichfield, and Wolverhampton Roads.

Buildings in Progress and Completed.

Anston.—A new elementary school, erected here for the Yorks West Riding Education Committee, was opened on August 29th. The new building, containing a central hall with seven class-rooms—the accommodation being for 420 scholars—has cost £5,000.

Birstall.—The building trade here is fairly brisk. Messrs. J. and W. Nelson are erecting twenty-four houses in Leeds Road; Councillor A. Wallis has erected three houses and a shop in Low Lane; and six houses have been built in Huddersfield Road for Mr. J. Brooksbank. The new Roman Catholic church, and a new Sunday-school in connection with St. Mary's Mission at Howden Clough, are also in course of erection.

Bishop's Stortford.—An organ gallery is being constructed over a new entrance porch at St. Joseph's R.C. Church, Windhill, and when completed the organ will be removed from its present position to the new gallery. Other improvements to the church are also in contemplation.

Bolton.—The Empire Theatre and Hippodrome here, which was opened on August 24th, has been built by Mr. Thos. Hargreaves, of Rochdale (who is the proprietor), from designs by Messrs. Butterworth and Duncan.

Clandon.—A new small-pox hospital, which has been erected here by the Surrey Small-pox Hospital Committee, at a cost of £15,000, provides for the needs of a population of 432,000, excluding the Guildford, Croydon, and Richmond districts, which already have accommodation for this disease. The plans were prepared by Mr. F. G. Howell, the late County Surveyor, with the advice of Dr. Seaton, Medical Officer for the County. There is accommodation for eight women and six men, while there are two beds for special cases, and an isolation ward with three cubicles for men and two for women. The hospital has its own laundry, disinfector station, and mortuary, and the sewage is treated in a hydrolytic tank system devised by Dr. Seaton. Three concrete plateaux have been constructed in the grounds, on which temporary iron buildings may be quickly erected in case of an epidemic. About 5,000 young trees have been planted in the grounds.

Doncaster.—The tender of Messrs. H. Arnold and Son, Doncaster, has been accepted by the Town Council for the building of the Marsh Gate bridge.

Gerrard's Cross.—A new Free Methodist Chapel, of corrugated iron, has been erected here by Messrs. Cooper, of London, at a cost of £400. The foundation work was executed by Messrs. Bailey, of Gerrard's Cross.

Hales Owen.—The Worcestershire Education Committee are about to erect a new elementary school here. Messrs. Guest's tender for £7,250 was accepted for the work.

London.—Christ Church, Blackfriars Road, is now being repaired at an estimated cost of £1,500. The building has been in danger of collapse owing, it is said, to excavation, tunnelling, and drainage works in connection with sewers, tube railways, and factories, which have undermined the foundation. The church is an interesting structure erected in the eighteenth century.

Middlesbrough.—The Avenue Wesleyan Church and Schools at Linthorpe

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The Circulating Space or Passenger Concourse.

Photos: "The American Architect."

THE UNION STATION, WASHINGTON. D. H. BURNHAM & CO., ARCHITECTS.

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were opened on the 2nd inst. The church, which seats 600, has been erected from the plans of Mr. A. Forrester, Middlesbrough, whose design was accepted in a limited competition.

Much Hadham.—The church organ is being rebuilt by Mr. Halliday, organ builder, of Holloway.

Nottingham.—The steel-work in the new Hippodrome, with which rapid progress is being made, was tested last week, under the supervision of Mr. Arthur Brown, the City Engineer; Mr. J. E. Webb, the City Building Surveyor; and Mr. G. Endsor, steel draughtsman in the City Engineer's Department. The test was made by loading the circle and gallery tiers with bags of material corresponding approximately to the aggregate weight of an audience in those parts of the house. The steel-work, which came very satisfactorily through the test, has been constructed by Messrs. George Sands and Son, of Colwick, under the supervision of Mr. John Price, the Consulting Engineer, of Workington. The auditorium is 85ft. wide and 80ft. deep, and the circle contains 12 rows of seats.

Oadby.—The new almshouses of the Worshipful Company of Framework-Knitters were inspected by the Master, Mr. Alfred Corah, and a number of guests, on August 29th. The houses will be opened on October 26th. The old almshouses of the Company were situated in the Kingsland Road, London, but they were disposed of so that new homes might be built in country surroundings in Leicestershire, near to the hosiery trade centres of Nottingham and Leicester. Eleven cottages have been built on a site of four acres, there being a lodge at the entrance gates. The rooms are on one floor; they are light and airy; and are decorated with distemper in various tints. Each dwelling possesses a bath and a good scullery, and has a small garden. The grounds generally are being laid out as a small park. It is proposed to build a flat for old men with few friends, so that an attendant can look after them.

Perth.—The new Guild Hall, which was opened on August 29th, stands on the site of the old hall, which was demolished last year, after doing duty for more than a century. Two features of the old hall—namely, a decorated panel with the town arms, and framed panels, containing the names of benefactors of the Guildry for the last two hundred years—have been preserved. The work has been carried out under the supervision of Mr. A. G. Heiton, architect. The building contractors were Messrs. Fraser and Morton, Perth.

Redhill.—The new Horley Mead mixed school for 320 children was opened on August 26th. The buildings, of red brick with stone dressings, are on the ground level, the class-rooms being ranged round a central hall. The architects were Messrs. T. R. and Vincent Hooper, A.R.I.B.A., of Redhill; the general contractor being Mr. E. Worssell, of Redhill, and Mr. A. J. Amos was clerk of the works. Mr. T. Penfold, Reigate, supplied the stone-work; Messrs. Tamplin and Makovski, Reigate, executed the electric lighting; and Messrs. Haden and Sons, of Trowbridge, carried out the heating and ventilating.

Shirebrook.—A new Roman Catholic church in Langwith Road was opened by Bishop Brindle, D.S.O., of Nottingham, on August 29th. The building, which has seating accommodation for 360, has cost £2,200.

Our Plate.

We are enabled to give this week several views of the New Union Station at Washington, D.C., U.S.A., a building that has aroused considerable interest from the time the first sketch drawings were available. It is unfortunate that our own railway companies afford architects so few opportunities of designing their termini in such a fine monumental manner. Messrs. D. H. Burnham and Co. are the architects.

The Royal Commission on Sewage Disposal has just issued its fifth report, to which we hope to be able to give attention in our next week's issue.

* * *

With respect to the elevation and plan of the National Bank Building, Durban, Natal, which appeared on p. 31 of our issue of July 8th, where it was stated that Mr. Reginald G. Kirkby, A.R.I.B.A., was the architect, Mr. Clement H. Stott, M.S.A., etc., writes from Pietermaritzburg to inform us that the firm of Messrs. Stott and Kirkby should have been given as the architects, and that, Mr. Kirkby having left the Colony, the work has been completed under the supervision of Mr. C. H. Stott.

* * *

Mr. Frank Williams, of Hooley Villas, near Merstham, Surrey, will give a demonstration of his patent "Gripall" floor cramp at the "Builders' Journal" Offices, Caxton House, Westminster, on Thursday, September 17th.

Correspondence.

Out-of-work Architects.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Some time ago I sent a letter to one of your contemporaries suggesting that, in view of architects' registration, it might be possible to regulate the composition of an architect's office staff. For instance, an architect might not be allowed to employ a larger number of pupils than of draughtsmen. Your contemporary refused to publish my letter.

Something very much akin to this subject has been touched upon in your leader of last week, and in connection with this I would like merely to point out one instance which came under my notice. A certain F.R.I.B.A. in London made use of the five letters following his name to induce wealthy gentlemen to send their sons to him with a large premium. One pupil was admitted each year, and the office "staff" consisted of four pupils. At the end of four years the pupil was no longer required. This F.R.I.B.A. was in the habit of going in for competitions, and at such times would advertise for a draughtsman well up in some special class of work. One draughtsman was engaged in this way, and made his way from the far North to London. The competition drawings were completed in two months, and the draughtsman was then discharged; but before he left another draughtsman had arrived—also from the far North, to prepare drawings for another competition of a different nature. The F.R.I.B.A., after all, decided not to go in for this second competition, both draughtsmen were discharged, and the four pupils were left to

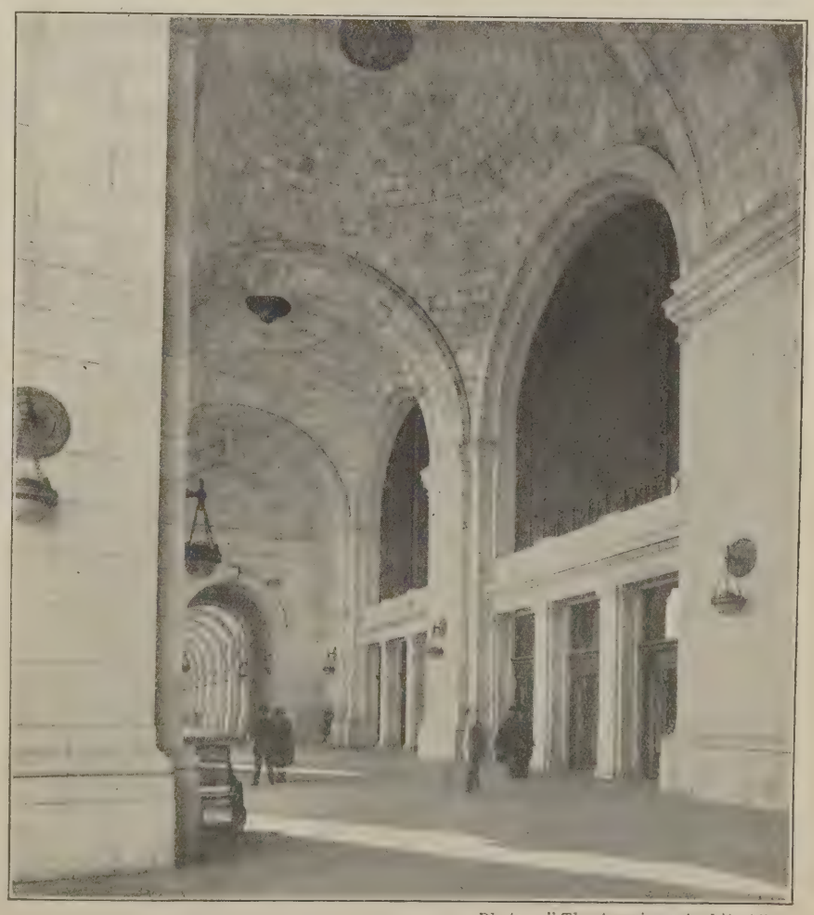


Photo: "The American Architect."

THE UNION STATION, WASHINGTON, D.C.: THE ENTRANCE PORTICO.
D. H. BURNHAM AND CO., ARCHITECTS. (*See Centre Plate.*)

carry out the "work of the office" until another suitable competition should turn up.

Possibly this sort of thing has something to do with the scarcity of vacancies for draughtsmen.—Yours truly,

A.B.I.R.F.

Tall Chimney Construction: An Epoch-making Invention.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The serial in your columns on this subject, though admirable, does not seem to embrace all the latest varieties, although it gives an exceedingly good description of the most noted ones. For instance, I may be allowed to mention a notable example that has just been erected in Brussels. In this, moulded concrete blocks of unique design envelope a skeleton metal reinforcement. The advantages thus obtained are—speed of construction (I believe that this example occupied, in actual execution, but little more than a month, from pile foundation to cap top); adaptability of the concrete block to a diminishing diameter from base, giving an exceedingly graceful and stable construction; a perfectly smooth interior; and an architectural appearance that is sadly wanting in the more common type of reinforced chimneys. This last consideration should appeal strongly to mill or power-house architects, who strive to give to reinforced concrete a beauty that most emphasises to the eye its peculiar characteristics.

I find, from an old work on the Monier system, that small smoke-stacks for industrial purposes have long been manufactured in section-lengths, with bell and spigot joints, and that when erected they are guyed similarly to steel stacks. Perhaps the latest invention in this kind, which has been recently introduced on the Continent, will give us section-lengths of chimney forms that can be easily and rapidly erected in a few days after the base containing the smoke flues is completed, and that will be capable of sustaining the superimposed weight of the stack proper. This reference is to the method of forming concrete shapes by centrifugal force. This procedure is already adapted practically to the construction of telegraph poles, etc. The inventor is Hermann Rentzsch, of the firm of Otto and Schlosser, of Meissen, Saxony. The invention is protected under the short appellation of "Schleudermast," or "slingmast." The process simply consists of whirling a semi-fluid mixture of fine concrete, intimately mixed with asbestos fibre, in a hollow form or mould, which, under the action of centrifugal force, causes such mixture to fly outward to the enclosed metal reinforcement, which has been placed beforehand in the mould; the less dense particles of residual water, etc., being confined to the inner circles of rotation, and afterwards removed by draining away such. In this way a concrete shape of greater density at its greatest diametrical perimeter is obtained. The practicability of this unique invention is by no means confined to the manufacture of telegraph and other poles, but it gives a ready means of making other shapes. At all events, builders can now count upon this method for the construction of concrete columns (plain and ornamental) in their entire length, ready for immediate erection in the building; a considerable saving being thus effected with respect to the cost of form-work and of filling in. I think that this invention must certainly rank among those that may be truly described as epoch-making.

Yours truly, JAMES A. SMYTH.

THE R.I.B.A., THE IRISH INSTITUTE, & THE ULSTER SOCIETY.

The Case for the Ulster Society.

In accordance with a promise given in last week's issue, we now produce what we assume to be the salient points made on behalf of the Council of the Ulster Society of Architects by its hon. secretary, Mr. N. Fitzsimons, F.R.I.B.A., who traverses certain statements made in an article in "The Irish Builder," from which extracts were made in our issue of July 29th. Mr. Fitzsimons's arguments may be thus summarised:—

(1) The Royal Institute of *British* Architects is obviously not "an *English* Institution," nor are its character and by-laws "the purely domestic concerns" of *English* architects; they are the concerns, primarily, of its Fellows and Associates in all parts of the globe, and, secondarily, affect all qualified architects, irrespective of membership, whose interests the Institute of British Architects claims to represent also in Great Britain and Ireland.

(2) Such action as has been taken on behalf of the Ulster Society was taken by Fellows and Associates of the Royal Institute of British Architects, and they are not prepared to admit that they have nothing to do with the affairs of the Institute of which they are members.

(3) The relationship of the Royal Institute of the Architects of Ireland to the Royal Institute of British Architects is that of an "allied society," precisely on the same terms as any of the other English or Scottish provincial societies are allied societies. The Irish Institute, as a body corporate, is not entitled to have "a representative of Ireland" on the Council of the British Institute, although such may be elected by vote of the Fellows and Associates of the British Institute, as one of the nine members of Council representing provincial societies, out of sixteen from which the selection may be made.

(4) The statement that "the British Institute has always recognised the status of the Irish Institute as representative of the profession in all Ireland, and the entire country as its sphere of influence," is untrue. By reference to the Kalendar of the British Institute, 1900-01, p. 185, it will be seen that as an allied society the Irish Institute is given, "until the development of *local* societies," the whole of Ireland for its province.

(5) It is misleading to say that the Ulster Society was founded under the auspices of the Irish Institute. The movement was a local one, and Sir Thomas Drew was requested, as being both President of the Irish Institute and Member of Council of the British Institute, to convene the first meeting. As Member of Council of the British Institute, he explained the desire of that body to have an organisation of the profession in the North of Ireland on the lines laid down in the Kalendar. The Society was thus formed on the distinct understanding that it should, as soon as fully organised, be accepted as an "allied society" by the British Institute. But the leading spirits in the promotion of the Ulster Society being anxious that a close working alliance for the common good should be formed with the Irish Institute, the by-laws were framed in such a way as to induce architects to join the Ulster Society through the Irish Institute, although the qualification for membership of the Society was higher than, at that time, required by the Institute. This alliance the promoters have since had cause to regret, as, owing to the position taken up by the Institute, the alliance soon proved absolutely unworkable. Sir Thomas Drew was elected first President of the Ulster Society solely because he was at the same time a distinguished architect and an Ulsterman practising in the province.

(6) When, in pursuance of the understanding at the initiation of the Ulster Society, a scheme for alliance of the Society with the British Institute was brought before the Council of the Irish Institute by the *two* representatives of the Society thereon (and not one only, as incorrectly stated), the Society discovered, by the antagonism of the Irish Institute, that the latter regarded neither the prior understanding nor the welfare of the Society, but merely its own importance, which the scheme appeared to menace. Purely with a view to obviate any unpleasantness, the Society acquiesced in deferment of the scheme.

(7) The Ulster Society was, in a manner that can only be characterised as deliberately, insulted, in the person of its President, who, by the request of the Council of the Irish Institute, allowed his name to be put in nomination for a Fellowship, to be ignominiously rejected. Severance of the alliance was the only answer that could be given.

(8) The suggestion that the question of fees was the instance of the severance is a misrepresentation of the facts. The scale referred to as having been adopted by the Ulster Society is as follows:—"Where buildings are of a very plain description, in the nature of warehouses, stores, or shedding, involving less than the usual trouble in design and drawing, and where no special construction has to be adopted to render them suitable for machinery or otherwise, a minimum charge of 4 per cent. may be made, and in no case is any less charge to be made, except under specially exceptional circumstances, the amount of which is to be regulated only on application to the Council of the Ulster Society of Architects, setting out fully the facts, in which case, if the Council so decide, a further deduction may be made of the amount which it may consider fair under the circumstances." Previous to its adoption, competition amongst architects had induced acceptance of fees considerably under the earlier standard; and it was felt that the scale must be made compulsory, so far as members of the Ulster Society were concerned. It was admitted that there is a certain class of work of a very plain character for which 5 per cent. was excessive but that for such the conditions should be carefully defined, and a rigorous minimum fixed. The proposal of the Society prior to action, was brought before the Council of the Irish Institute by an Ulster member as a matter of courtesy, and it was assented to that 5 per cent. could not be obtained for the class of work described, and that, if a less sum were not taken, the work would go out of architects' hands altogether. Subsequently an attack was made on the proposal of the Society at a meeting at which no representative of the Society was present.

The above paragraphs have been slightly condensed, and some expression of opinion have been omitted. Controversial matter is apt to run to undue lengths (as well as to undue heights and depths), and we prefer to see our columns more usefully occupied.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

London's By-laws for Reinforced Concrete.

The progress of reinforced concrete construction in London has been much hampered by the London Building Act; indeed, the building by-laws throughout the country have stood in the way of progress in regard to many forms of construction in which there are great advantages. Specialists have continually railed against these restrictions upon trade, but the professional public appear to have allowed interest in the matter to lapse to some extent because of the apparent futility of efforts made to secure revision in such matters. The Royal Institute of British Architects and other bodies have made recommendations to the London County Council for the alteration of the by-laws, so as to allow of the construction of steel-frame buildings in London. The London County Council has promoted Bills in Parliament to enable them thoroughly to overhaul, revise, and improve the London Building Act, but these Bills have had to be withdrawn because of opposition. The Council has very little power, under the present legal enactments, of permitting the construction of buildings by new methods. It can permit the erection of steel-frame and reinforced concrete buildings as temporary structures, but building owners are naturally averse from erecting expensive buildings without any surety that they will be permitted to stand. The present by-laws control to a considerable degree the interior construction of buildings, and the chief application of reinforced concrete in London has been in this direction—namely, for the construction of floors and interior columns. But the full advantages of both steel-frame and reinforced construction are not permissible of adoption, because the walls have to be as thick as with old-time methods of construction. Where the loads are entirely carried by a framework of steel or of reinforced concrete, the walls merely become panels, and may be made of small thickness, and of uniform thickness from top to bottom if need be. The chief advantage, of course, is in the direction of economy. It is known to our readers that there are some corporations to which the London Building Act does not apply, and, upon many sites in London, reinforced concrete has been extensively employed by railway and dock companies, and by the Government. The officials of the London County Council are, therefore, fully alive to the advisability, and, indeed, the necessity, of revising the Building Act in respect to promoting the adoption of new and improved methods of construction which have been in process of evolution for the last few years. At the last meeting of the London County Council before the recess, the Building Act Committee brought up the following report:—"In accordance with the undertaking given in the Council by our chairman, we have carefully considered the question of the amendment and consolidation of the London Building Acts. We are of opinion that the existing building laws of London require amendment in several directions, and that there is a pressing need for their consolidation, but we do not see our way to recommending the Council to deal with the important questions involved until some definite decision is come to with regard to the Housing and Town Planning Bill, now before Parliament, and, if the Bill become law, until the Council has had an opportunity of considering the effect of its provisions. The Bill as it stands not only affects Part II. of the London Building Act, 1894, which regulates the formation and widening of streets and the erection of buildings abutting upon streets, but possibly other parts of that Act. In the circumstances, we think that it would be useless to attempt to promote legislation in the next Session of Parliament for the general amendment of the Building Act, though we propose proceeding with the consideration of the general question at the earliest possible moment. There is, however, one important matter which should be dealt with in the Session of Parliament of 1909, viz., the use of steel construction and reinforced concrete in buildings. This method of construction was not contemplated in the Act of 1894, and there is no doubt that a change of the law in this direction is necessary in order to meet modern building requirements, and we have been strongly urged by the Royal Institute of British Architects, the Institution of Civil Engineers, and the Surveyors' Institution to promote legislation with that object. Under the London Building Act, 1894, the walls of all buildings must be of the thickness prescribed by the first schedule of the Act, with the effect that the walls of buildings mainly constructed of steel or reinforced concrete have to be of a greater thickness than is necessary for stability, thus unnecessarily diminishing the floor-space of the buildings." The report concludes with the following recommendation:—"That application be made to Parliament in the Session of 1909, with a view to the amendment of the London Building Act, 1894, so as to facilitate the use of steel or reinforced concrete in the construction of buildings, and to make any necessary provision with regard thereto." It is obvious, therefore, that certain members of the staff have been engaged upon the drafting of regulations for reinforced concrete and steel-frame construction. We trust, however, that the mistake of keeping their proposals secret until the Bill is placed before Parliament—a mistake that has been made by the London County Council in its previous attempts to get the London Building Act improved—will not be again made. The proposed amendments or new regulations should be placed before the professional societies concerned for full consideration, and their suggestions should be attended to, and if necessary conferences should be held between the representatives of the societies concerned so as to come to a compromise before the London County Council submits its Bill to Parliament. In this way really serious objections would be met, and professional men would be fairly well satisfied. We cannot understand why officials should so often regard the public—whom they are supposed to serve—as malefactors who are seeking to do injury to themselves and others. Whereas constructional specialists may be open to some little suspicion of trying to push their systems into undue prominence, or to secure undue advantages in their favour, and perhaps may occa-



THE WOMEN'S HOSTEL, BIRMINGHAM: VIEW OF SECOND FLOOR DURING CONSTRUCTION ON THE COIGNET SYSTEM.



THE WOMEN'S HOSTEL, BIRMINGHAM: THE DINING HALL.

sionally boom unsuitable methods of construction, the architects and engineers of this country are desirous of promoting sound and efficient construction, and surely the officials should not try to ride roughshod over them, but should endeavour to work harmoniously with, and to defer to the opinions of, their elected representatives, such as the councils and committees of the professional societies, etc. If municipal bodies, in drawing up new proposals for amending by-laws, will only meet the professional societies in an open manner and consult with them, we feel sure that work of very great utility can be done, and the construction of buildings in the future can be materially improved, while the cost of building operations to the community might be reduced by many millions of pounds per year. A thoroughly sensible model Building Act for London would do inestimable good in serving as an example for all other centres in this country, and especially for municipal authorities at home and abroad. It is within the power of the officials of the London County Council, and of the London Building Act Committee, to win great credit for themselves by solving what is a serious problem, which they can do by calling to their aid the architectural and engineering professions.

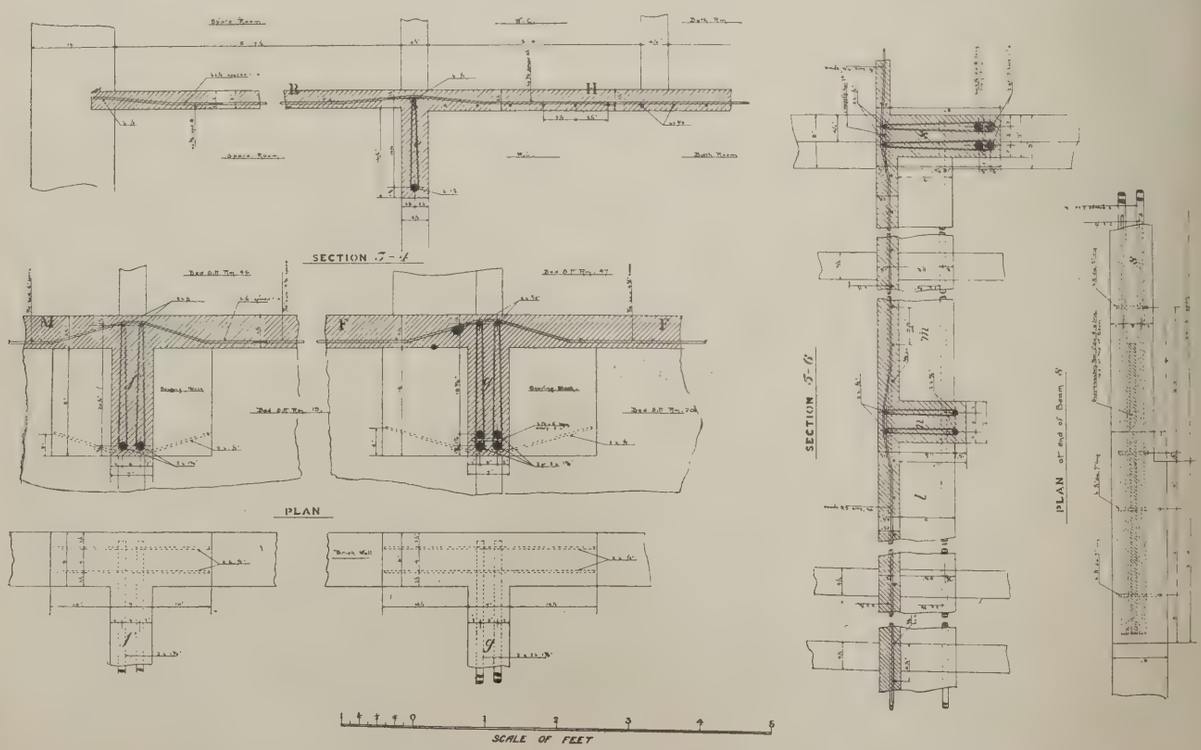
WOMEN'S HOSTEL AT BIRMINGHAM

This building is a sort of superior Rowton House for Women. One of the features of the building is a large dining hall, of which we give a photograph showing columns in reinforced concrete supporting the main beams.

We, in addition, publish the front elevation, a section and plan of the first floor, and a photograph showing the second floor in course of construction, in which the main and secondary reinforced concrete beams and the meshwork of the slabs come out plainly. We also give a detail of the reinforced concrete floor construction.

The building is being erected quite close to the Birmingham University, and is now nearing completion. The architects are Messrs. Buckland and Farmer, of Birmingham, and the contractors are Messrs. Richard Fenwick, Ltd., also of Birmingham, who are licensees for the Coignet system of reinforced concrete construction, which is employed throughout for the construction of floors and columns, as also for an elaborate main staircase. The outer walls are of brickwork. The total area of flooring amounts to about 13,000 sq. ft. The floors have been designed for a superimposed load of 1 cwt. per sq. ft., and to show a minimum of projecting beams. The best materials have been used, including Leighton Buzzard sand.

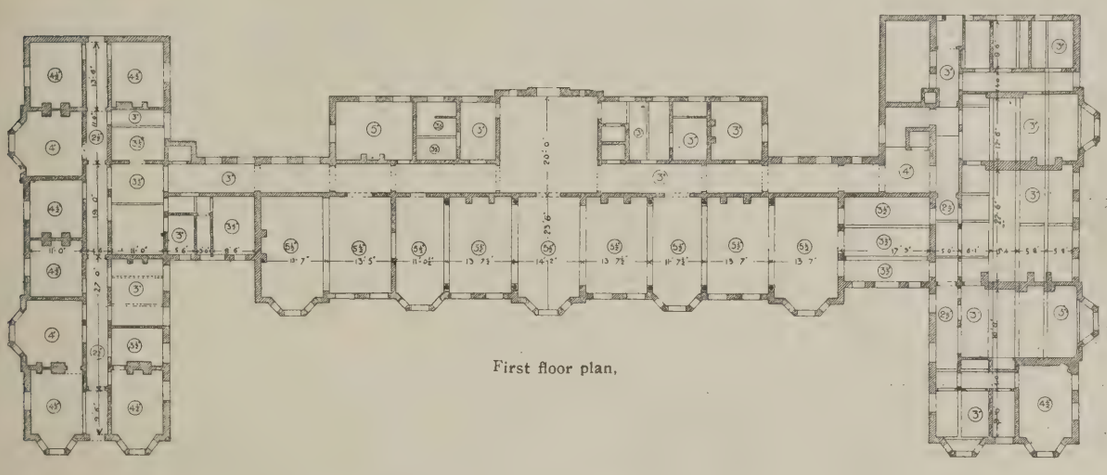
Various floors were recently tested before a large assembly of Birmingham architects who had responded to a special invitation. Although the deflection allowed was 1/600 of the spans, the deflections recorded in several of the beams only amounted to about 1/2000. In one particular case the entire surface of the floor, measuring about 30ft. by 30ft., was loaded, and the deflection noted was not above 1/2000 of the span of each beam.



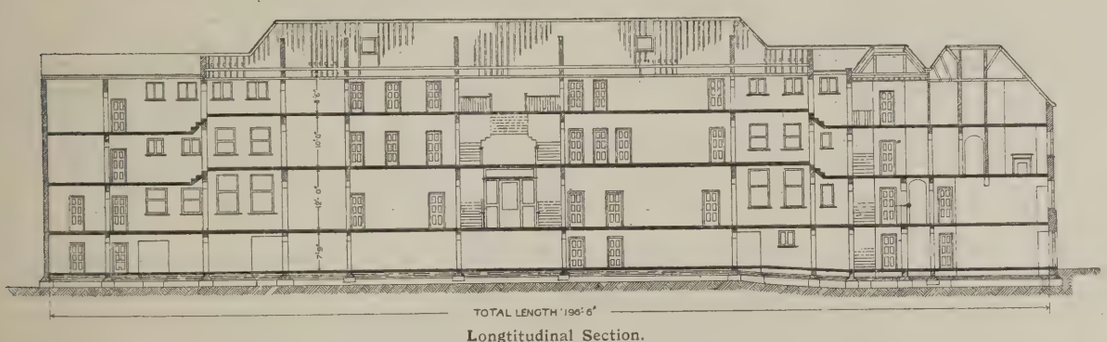
THE WOMEN'S HOSTEL, BIRMINGHAM: DETAIL OF FLOOR CONSTRUCTION ON THE COIGNET SYSTEM.



Front Elevation.



First floor plan.



Longtitudinal Section.

THE WOMEN'S HOSTEL, BIRMINGHAM. BUCKLAND AND FARMER, ARCHITECTS.

Views and Reviews.

The Practice of Concreting.

The first edition of Mr. Potter's Treatise of Concrete was published in 1877. A second edition in two volumes was issued in 1891. Now, after 17 years' further practical and continuous experience, the author has issued a third edition of the work in one volume. The book records opinions resulting from 39 years' practical experience, and is a most valuable work. Mr. Potter expresses his conclusions and opinions straightforwardly, and he admits that they do not always coincide with the views of other practitioners; but, being the result of such wide experience, they must carry great weight. We feel that the objections that may be made will seldom rest upon Mr. Potter's facts and conclusions, but upon his attempts to find scientific reasons for them. A famous judge once advised a newly-appointed judge to give his conclusions but never his reasons, for the former might be right, whereas the latter would very likely be wrong. This allusion is perhaps hardly fair to Mr. Potter, but it gives some idea of what we mean. The nature of cements and aggregates varies so much under various conditions, the manufacture of the former has been so much altered in accordance with the requirements of engineers and chemists and by improved methods, that it is very difficult to trace thoroughly the reasons for any phenomena. The results of practice are, however, very different to laboratory experiments, and Mr. Potter's experience and conclusions are very valuable as a general guide for users of cement, and this work deserves to be carefully and closely studied by all interested in the subject.

Mr. Potter has completely recast the book; the chapters and the treatment are very different to former editions, much additional information has been added and the older matter thoroughly revised; the type has been entirely reset and is very clear. In the second edition there was much information upon the history of the subject. This has been gathered together by Mr. Potter and put into much better shape in this edition, and forms one of the most interesting features of the work. He says in his preface: "It will be found that concrete in the abstract, and many applications which are assumed to be of quite a novel character, bear out the old adage that 'There is nothing new under the sun,' which is quite true." Reinforced concrete—the subject of the moment—is in nowise different in this respect, as Mr. Potter shows. He might have extended the information, because he hardly gives proper weight to the work and ideas of some pioneers, for instance, W. B. Wilkinson, of Newcastle, François Coignet, and Brannon. There are also misprints in respect to the names "Lecomte" and "Thusane" (*sic*). The book merits great praise, and deserves to be considered a standard text-book on the subject of practice in concrete work. It is interestingly written and well illustrated. The author is a pioneer in concrete work, and one of our greatest authorities on the subject.

"Concrete: Its Uses in Building." By Thomas Potter. Third Edition, revised and enlarged. London: B. T. Batsford, 94, High Holborn, W.C. Price 7s. 6d. net.

FORMS FOR REINFORCED CONCRETE.—II.

(*Continued from p.* 120, *No.* 705.)

At the conclusion of the first part of this article we referred to the attention which was directed a good many years ago to the construction of concrete walls *in situ*. This seems to have had its origin in the efforts of Mr. Tall, a bricklayer, who took out patents in 1865 for a form of shuttering for constructing monolithic concrete walls. He used a wooden frame with movable panels, very similar to those which we have described, and great attention was attracted to his method by a commission from the Emperor of the French to build several concrete cottages at the Paris Exhibition in 1867. Tall managed to advertise his methods in various ways, and sold a number of his patented appliances. His success brought others into the field. Osborne's apparatus was somewhat similar to Tall's. Drake's apparatus was constructed of sheet-iron rivetted on a framework of angle and T-iron. Lish's framework was also made of iron. The absurd statements made by these early pioneers as regards strength of concrete and the want of knowledge displayed by users resulted in a number of accidents, which brought concrete into disfavour, and the material had a decided set-back as regards its use for the construction of walls. The regulations which we still find in by-laws requiring the thickness of concrete walls to be one-third greater than a brick wall under the same circumstances were probably the outcome of the disfavour into which the material was brought at this period.

Forms for Beams and Floors.

As regards the construction of forms for beams and floors, we have to consider two main types, namely, where the supporting beams are of steel, and where they are of reinforced concrete. The former is the earlier type of floor construction, and the methods of centering customary are simpler than those adopted where the construction is of reinforced concrete throughout.

As a rule, when the main or subsidiary beams are of steel some method is devised for the suspending of the timber from the joists, so as to leave an unencumbered space below, which gives great convenience in the building operations. A bearer must be placed between the joists upon which the boarding may rest, and this bearer may be suspended by slings from the top, or by brackets from the lower flanges of the joists. Sometimes the bearer is cut to length and placed between the joists, resting on their lower flanges. Fig. 7 shows the former method, and Fig. 8 the latter.

Fig. 7 shows a simple type of centering for flat floors carried on the top flanges of beams.

Centering for similar floors resting on the bottom flanges is shown in Fig. 8. Such centering is easily hung from the joists by hook bolts or other suitable device.

Where an arched floor between joists is adopted, the variation shown in Fig. 9 is often used.

Figs. 8, 9, 10, 11, 12, 13, 14, show various methods of suspending the centering for concrete floors sustained by joists. Fig. 10 was one of the earliest methods adopted in this country.

Fig. 11 shows an improved form of bracket or clip that goes upon the lower flanges of the joists for taking the bearer;

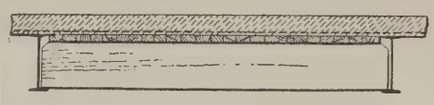


Fig. 7. Form for Slab carried on tops of Joists.



Fig. 8. Form for Slab carried on Bottom Flanges of Joists.

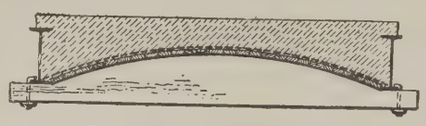


Fig. 9. Form for Arched Floor.

this was recently patented by Mr. Thomas Potter. This type of hanger consists merely of a piece of bent iron, and the panel boards are sustained thereby, or by bearers resting upon these hangers.

Figs. 12, 13, 14, 15, and 16, show somewhat similar methods adopted in Germany.

Fig. 17 shows an arrangement for constructing a reinforced concrete floor where steel joists are used for the main beams. This design is by Mr. William F. Kearns, and is to be commended.

Fig. 18 shows a centering method adopted by the Expanded Metal Co., Ltd., for their channel arch floor, where, again, the centering is supported on the joists.

Sometimes the centering is of a permanent nature, being left in position after the work is completed. We need not illustrate the types of floors in which terra-cotta slabs or tubular lintels are placed between steel beams for sustaining the concrete, as such floors only come within a very wide definition of reinforced concrete. Fig. 20 shows Mr. Thomas Potter's method of using a permanent centering of curved corrugated sheet-iron.

In some systems the boarding is entirely done without, and the concrete retained upon wire meshwork closely woven. Sometimes it is found convenient to adopt such a practice when the centering is of an elaborate character due to the ceiling being moulded, or of peculiar shape. For instance, at St. Charles' College Chapel at Notting Hill, London, constructed by Messrs. D. G. Somerville

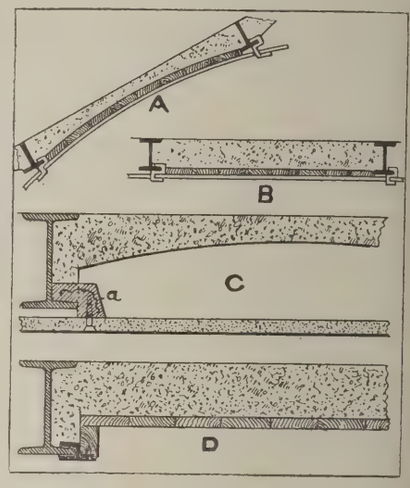
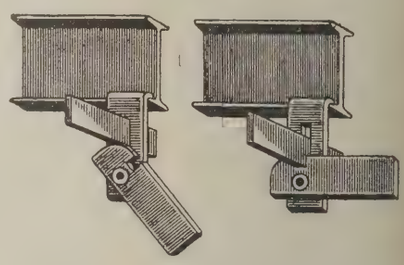


Fig. 11. Potter's System of Supporting Forms for Floors



OPEN. CLOSED.

Fig. 12. German Clip for Suspending Floor Forms.

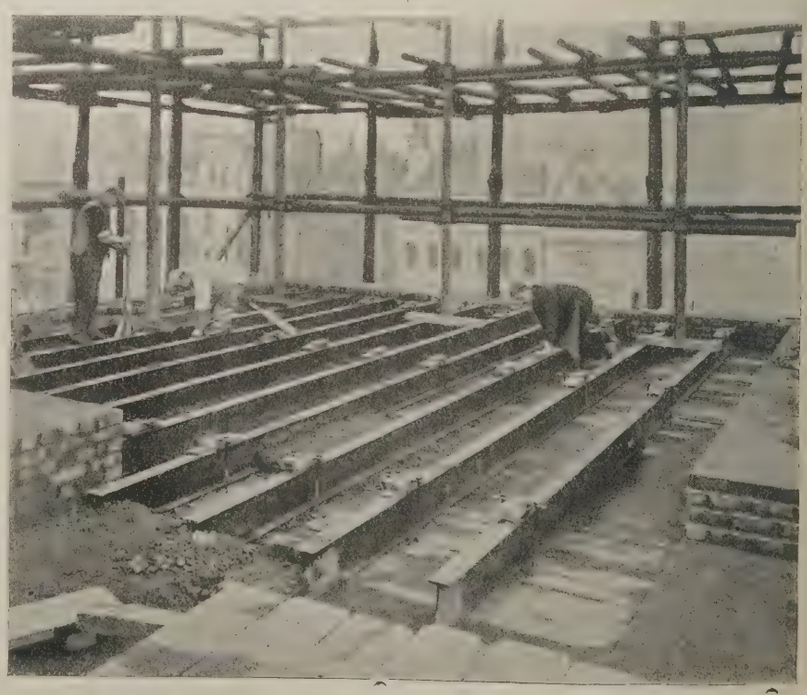


Fig. 10. Floor at the New Public Offices, Westminster, in course of construction, showing ordinary method of suspending forms for joists.

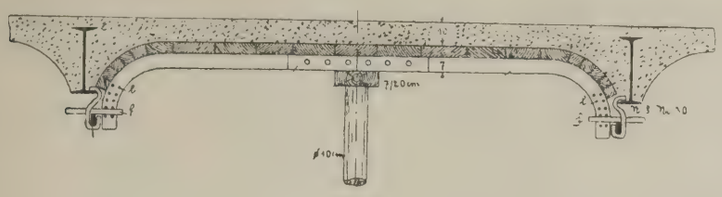


Fig. 13.



Fig. 14.

Details of German Method of Supporting Centering of Floors.

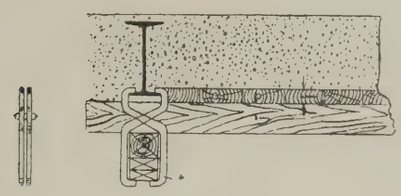


Fig. 15.



Fig. 16.

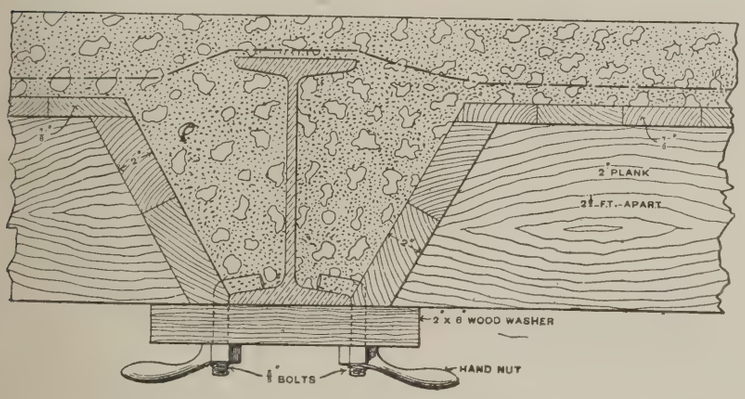


Fig. 17. Form for Concrete Floor between Steel I-Beams. Designed by William F. Kearns.

and Co., and illustrated in our issue for March 25th last, a good deal of expense was saved in the centering for the construction of the dome by placing sheets of expanded metal of light lathing quality to form the curved pendentives instead of elaborately finishing the centering. The expanded metal naturally accommodated itself to the proper curve when the weight of concrete came on it.

As regards the second main type into which we have divided the centering, namely, that in which the beams are of reinforced concrete, we find a number of

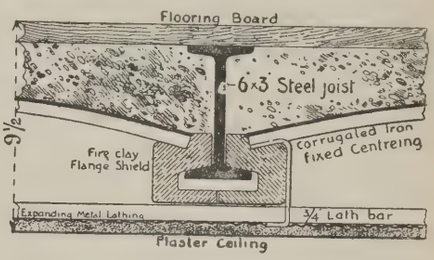
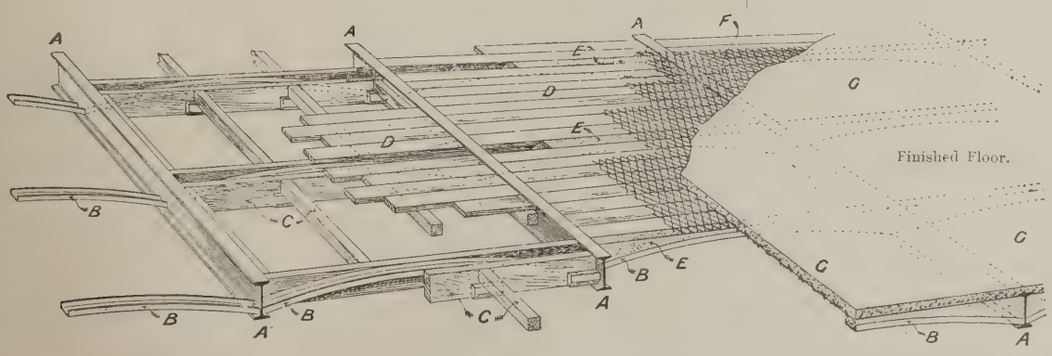


Fig. 20. Permanent Corrugated Iron Centering for Floors.

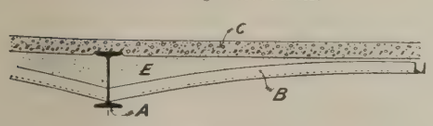
methods in vogue. Not only are the beams of reinforced concrete, but in such construction the columns, as a rule, are also of reinforced concrete. In dealing, therefore, with the construction of the centering for the beams and floor slabs we must consider them in relation to the forms for the columns.

The main difference in this division of our subject is that the whole of the centering is, as a rule, sustained by means of props or struts from beneath. The beams supporting the floor slabs are given shape by forms of the nature of boxes placed between the columns and the walls. The boards for the slabs are laid between these boxes, generally supported by cross bearers or joists resting upon the sides of the beam boxes. The undersides of the beam boxes and the cross bearers are supported at intermediate points by struts,



A—Rolled Steel Floor Girders.
B—Arched Steel Channels.
C—Temporary Wood Centering.
D—Temporary Lagging Boards.
E—Concrete Filling over arched channels.
F—Expanded Metal Tension Bond.
G—Finished Concrete Floor, with Expanded Metal Core resting on arched ribs.

Section through Steel Girder.



Span of Arches from 8 to 20 feet.

Section through Steel Channel Arch.

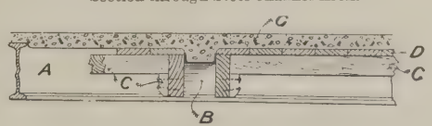


Fig. 18.

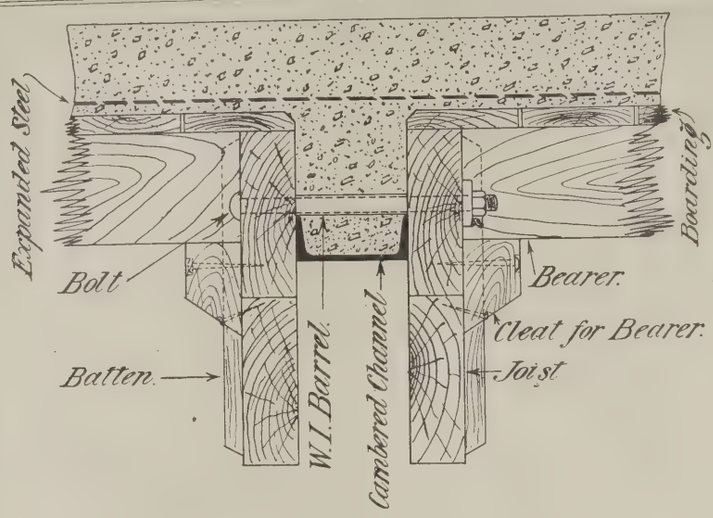


Fig. 18a. Detail of Fig. 18.

though the former rest sometimes at their ends upon the walls or on the column forms, while the ends of the cross-bearers rest upon the beam boxes. There are different opinions about the matter, but, as a general rule, it seems to be considered preferable to use light joists such as 2in. by 8in., or 2in. by 10in. for bearers rather than to use timber which is heavy to handle.

The struts may be vertically upright, or may be inclined, the latter being adopted where it is desired to maintain a clear space underneath. At the top or bottom of each strut there should be hard wood wedges, which are not only useful in setting and removing, but permit of testing to see whether there is any deflection of the beam or slab, which is a provision for safety. These wedges should be loosened 24 hours in advance of the struts.

The undersides of beams are not, as a rule, ornamented with mouldings formed *in situ*. Not only would this add to the cost, but concrete floors are, as a rule, in work where some ornamentation is required, plastered on the underside, the mouldings being run in plaster. To avoid rough edges on the beams, however, and both for the sake of improving the appearance and for convenience in removing the centering, the edges of beams are almost always chamfered; the chamfers are made by lightly tacking small triangular strips of wood in the bottom of the beam moulds or boxes.

Before dealing with the construction in detail of various systems of centering for floors, we may refer generally to the fact that columns in reinforced concrete are always brought up preliminary to the construction of the forms for the beams and the floor slabs. This allows them to set for a little while previous to the construction of the latter.

The beams and the slabs are, as a rule, concreted altogether at one time, the concrete being applied over the whole surface and into beam boxes in one operation, though the concrete is often tamped in the boxes in layers of a few inches in thickness—but the whole work should be done in one operation. It may be mentioned here, that in constructing the centering it is advisable to leave one of the boards in position under each floor slab, and also the bottoms of the beams are very often allowed to remain in position with props under them for some time after the rest of the centering has been removed. If the centering, for instance, has been struck at three weeks, the underside of the beams would be left in position for about another week or two. In designing the centering, therefore, this should be borne in mind.

The sides of all the forms for beams should be held tightly together by wedges or clamps, in order to prevent the pressure of the concrete bringing them away from the bottom boards.

Fig. 21 shows a handy clamp for beam or column forms. Iron clamps are perhaps more employed for column forms, and wood clamps are usually adopted for retaining the sides of beams.

In Fig. 21 the hook is a plain piece of flat iron measuring ¼in. by 1¼in., with the end bent round to form a flat bearing, as shown. The dog is a square piece of iron with one end turned round in the same way, and a hole, slightly larger than the flat iron rod, punched through it. This is tightened by hammering on the lower end, the outward pressure on the boards of the form at the upper end, as shown in Fig. 22, causing it to bind and prevent it slipping back.

It may here be stated that the tops of reinforced concrete columns are usually splayed, so as to form brackets, which virtually deepen the beams over the supports, a detail that must be arranged for in the centering.

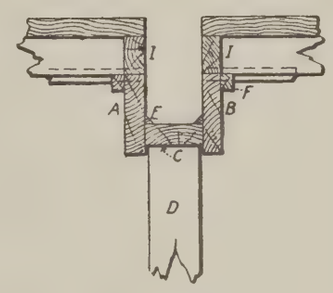


Fig. 23. Cross-section through Main Beam.

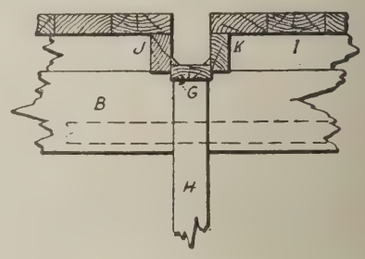


Fig. 24. Section through Secondary Beam, showing form of Main Beam in Elevation.

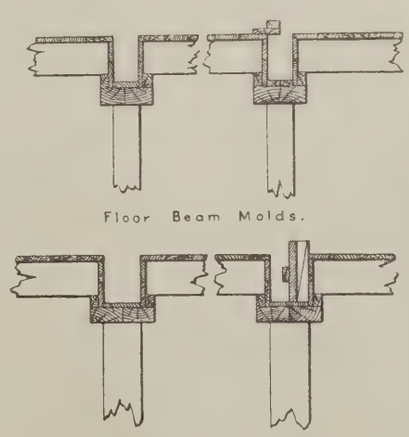


Fig. 25. Forms for affording Expansion Joints.

Figs. 23 and 24 show the type of centering that has been used by Hennebique constructors. B are the side-boards; C is the bottom board, sustained by the prop D; E is a triangular slip nailed to the side-boards to form a chamfer on the soffit of the beam. At the top of the side-boards A and B battens or cleats (F) are nailed to carry the ends of the bottom boards, (G) with the subsidiary beams likewise supported at intermediate points by struts (H). Upper boards (I) are placed on the main girder forms, and on the sideboards (J and K) of the secondary beams. Finally, laggings or top-boards sustain the floor slab. The sides of the beam forms are held by iron clamps, like that shown in Fig. 21.

Fig. 25 shows forms of centering similar to the foregoing, except in regard to the arrangements for producing expansion joints by nailing temporary strips over the beam boxes, these strips being removed after the concrete has hardened, and before the adjoining slab is constructed. Planes of weakness were also provided for in the main girders, and these were produced by building them in two parts in the same mould, by putting a partition board, held in place by wedges, while one-half was concreted, as shown. When the concrete had hardened, the board and wedges were removed, and the second half was concreted.

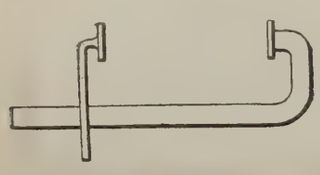


Fig. 21. Clamp.

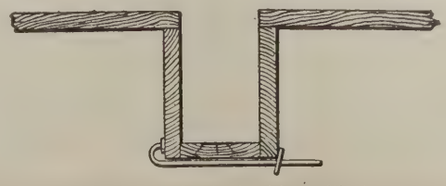


Fig. 22 Showing Clamp fixed in position.

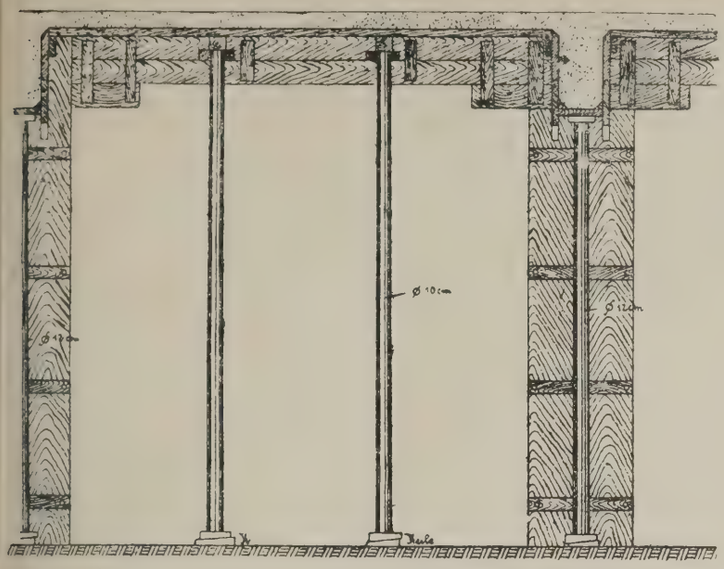


Fig. 26. German Centering.

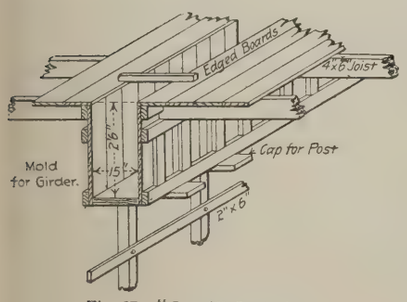


Fig. 27. "Panel" Centering.

Fig. 26 shows a similar method of centering used in Germany. The struts in this case are of round timber. The simple way in which the splays at the tops of the columns are obtained should be noted. Elaboration and finished workmanship in the construction of forms is to be avoided.

For the construction of floors there are two types of forms, known as the "Core Box" and "Panel" construction. In either case the forms should be so constructed that changes in depths or widths can be made without cutting the forms to pieces. As a general rule, it is more economical to use the panel form for the floor slabs rather than the box type; but, where the beams and girders are fairly uniform, and great speed is required, the box type is preferable to the panel type. Figs. 23, 24, 25, 26, and 27 belong to the panel type. Fig. 27 shows a girder and slab form of the panel type, the construction of which is very clearly shown by the view.

(To be continued.)

Leek U.D.C. have rescinded one of their minutes of the Paving and Sewering Committee to the effect:—"That written notice be given to all architects, builders, and plumbers in Leek that no projection either of spouts, pilasters, window boards, or ornaments of any kind will be allowed which in any degree rest upon or overhang the footpath in any street, and if any such are made proceedings will be at once taken to enforce compliance with the law."

TANK AT WEST HARTLEPOOL.

This tank has been erected for the West Hartlepool Pulp and Paper Company, and was designed on the Coignet system. The dimensions of the tank, and the details of the construction are shown on the drawings. The tank was erected on the top of an old brick building that is used as an engine-house, and before it was built there was a great deal of vibration noticeable, but since the construction of the tank it is a remarkable fact that the vibration has been entirely eliminated. The brickwork could not be depended upon to give equal support to the tank throughout the length of each wall, and therefore a main beam was built along each wall, and reinforced symmetrically, so as to resist tension either above or below if the walls gave slightly at either the ends or the centre. The end main beams were made

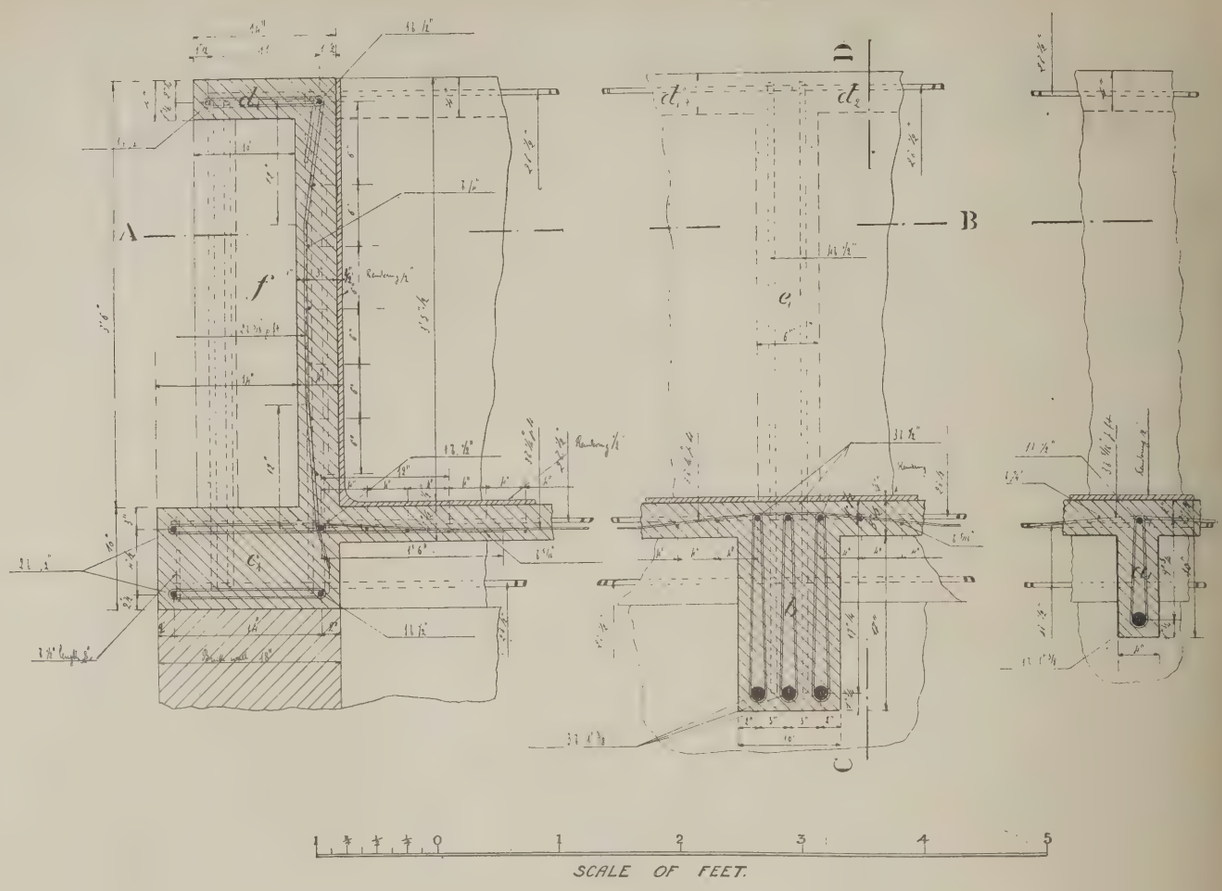


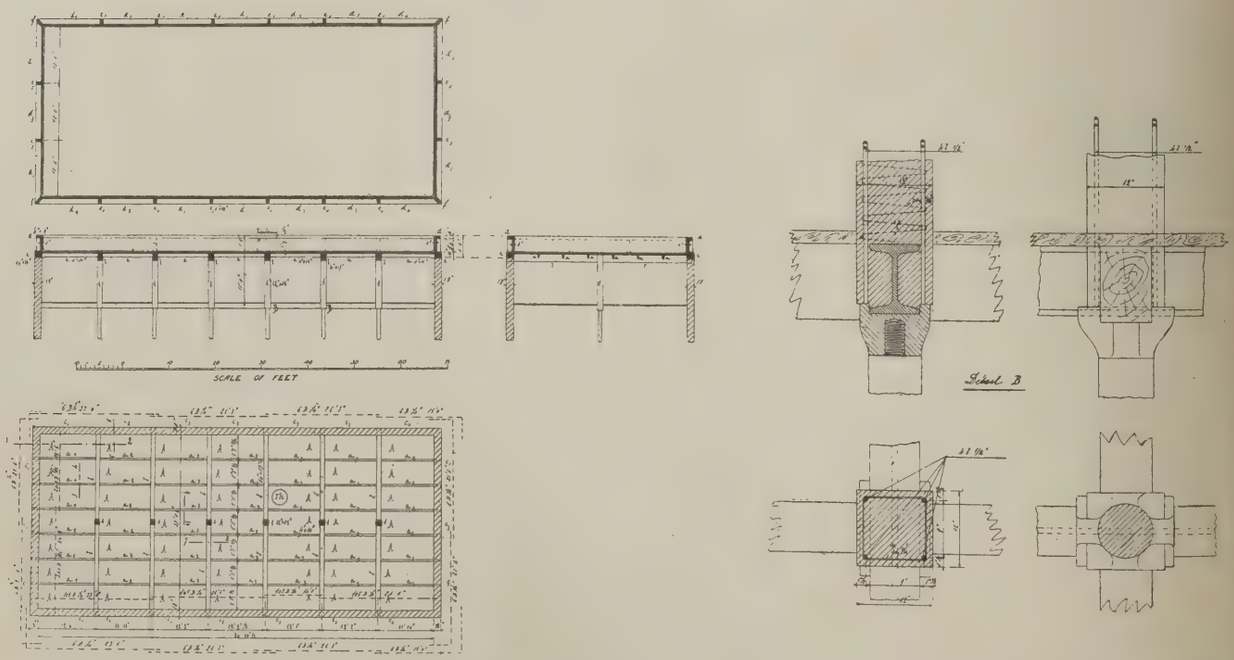
General View of the Tank.



View Underneath the Tank.

TANK FOR PULP AND PAPER CO., WEST HARTLEPOOL, ON THE COIGNET SYSTEM.



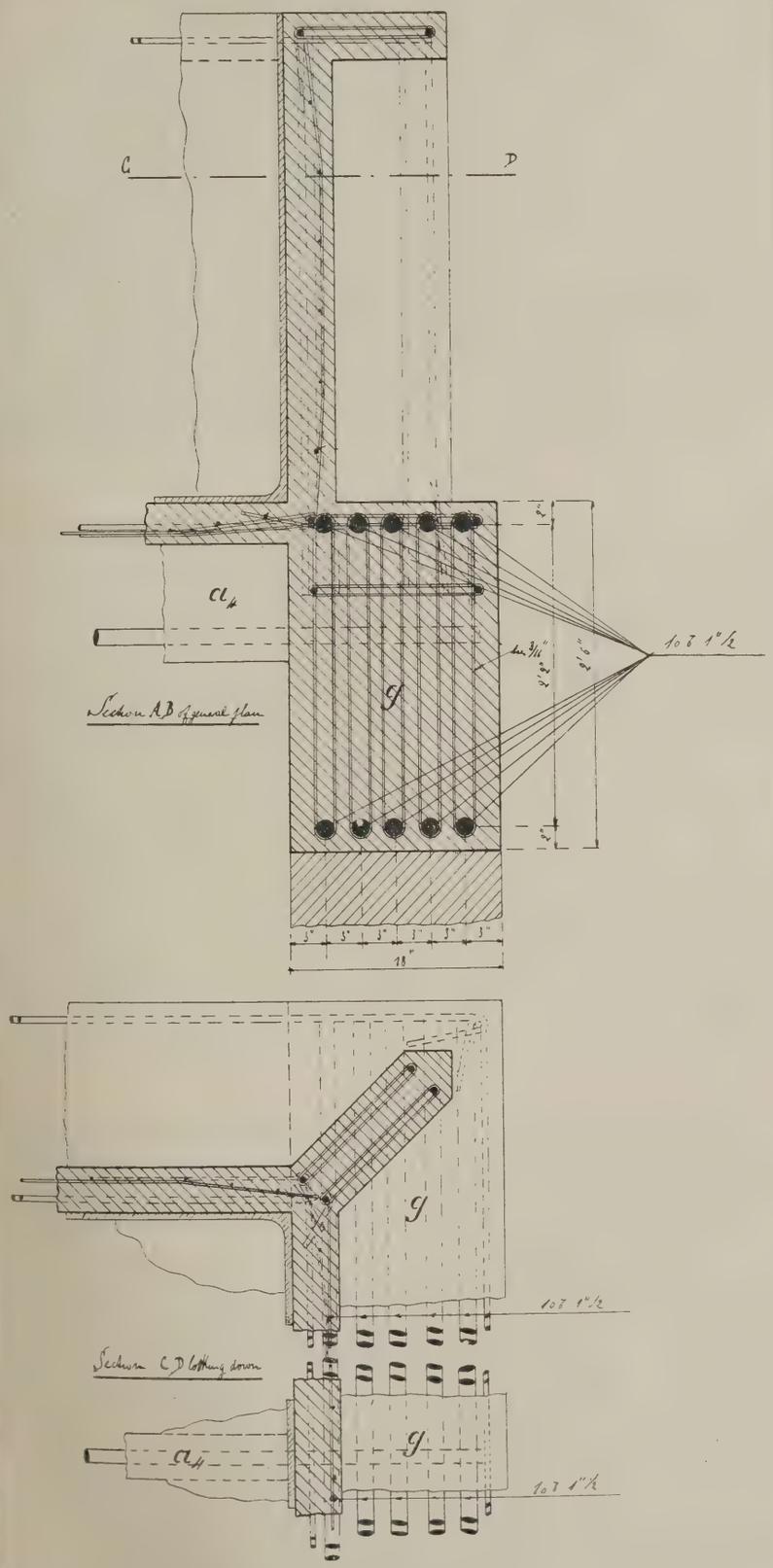


TANK FOR THE PAPER AND PULP CO., WEST HARTLEPOOL, ON THE COIGNET SYSTEM. PLANS AND DETAILS.

much larger than those along the sides, because it was desired to make provision for the possible cutting of openings in the walls at a future date. The bottom of the tank is also supported by reinforced concrete stanchions built on top of cast-iron columns, the detail of the connection shown on the diagrams being interesting. It will be seen that the stanchions rest simply upon the iron cap plates without any tie except the grillage of beams and the slab bottom of the tank and the floor below.

We publish an illustration showing an external view of the tank completed, and a view from beneath, showing the underside of the tank.

The contractors and licensees for this work were Messrs. Watt Bros., of West Hartlepool. They have also executed a considerable amount of work on the Coignet system, including a new shop for Messrs. Robinson and Sons, at West Hartlepool, extensive ore bins for the Central Zinc Co., and flooring and panelling for the Skinningrove Iron Works.



TANK FOR PAPER AND PULP CO., WEST HARTLEPOOL, ON THE COIGNET SYSTEM: DETAILS

Concrete and Steel Notes.

The first steel frame skyscraper on the Broadway, New York, which was of nine storeys only, and for which the plans were filed on April 17th, 1888, or just a little more than twenty years ago, is to be demolished in order to make way for a 38-storey building, which will extend over the original site and on to additional land, bringing the total frontage on the Broadway to 81.9ft., and on New Street to 80.2ft. The new Tower building will be of brick and terra-cotta, and will be provided with thirteen passenger elevators and one for freight. The cost is set down at 3,475,000 dols., or about £700,000. Mr. W. C. Hazlett is the architect of the new building, which will be owned by the Broadway and New Street Company.

The supersession of wood by reinforced concrete and otherwise is the subject of a suggestive communication from New Zealand, where, it is mentioned, there is much difficulty in getting good sleepers for railways. The writer thinks that reinforced slag might be put to this use. Some substance, he observes, would need to be supplied to take the spikes, but this should not be difficult to find. There is also in New Zealand an endless demand for fencing posts, and the price is rising every year. "Americans use reinforced concrete for this purpose. Slag would make a lighter post than concrete, and gate posts might also be moulded into any form and made handsome enough to take the place of stone park gates."

Italy's cement industry, it is reported, is now flourishing and developing, in consequence of the favourable conditions it obtains in Italy as a result of reinforced concrete being employed wherever it may replace iron and steel, and also wood, structures. Notwithstanding the very large output of the Italian works, cement, especially of the higher qualities, is still being imported from abroad, particularly from France—the value of the imports last year amounted to more than £50,000. At present there are in Italy some 20 large companies manufacturing cement, with an aggregate capital of over £1,000,000. The activity in the cement industry is likely, according to a correspondent of the "Times," to increase, as large quantities will be required for the extensive harbour works which have been decided upon.

London County Council's annual report for the year ended March 31st, 1907, which made a somewhat belated appearance on Thursday last, contains very little that is of interest from the builder's point of view. The report of the Building Act Committee is, like the rest of the reports, largely statistical. It sets forth in detail the number of applications under the Building Acts during the year (2,235, of which 411 were refused), the number of dangerous structures reported (3,513), the number of summonses issued against owners (588), the number of works surveyed (35,992), and the fees charged for surveying them (£50,883 3s. 7d.), and so forth. The information given by the Housing Committee, and with respect to other building interests, is of similar character. An appendix affords a useful synopsis of the Acts of Parliament passed in the Session of 1906 giving further powers to the Council.

REINFORCED CONCRETE STAND, YORK RACECOURSE.

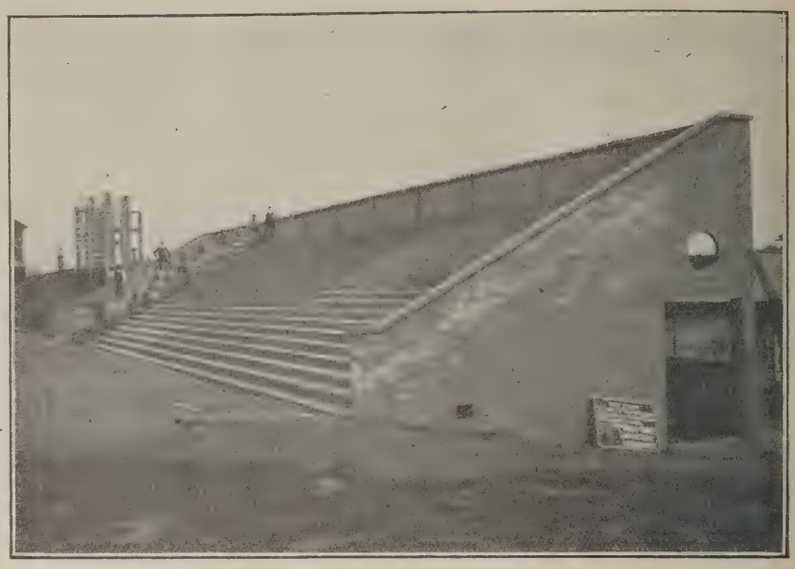
The spectators' stand constructed in reinforced concrete which we here illustrate is situated on the York racecourse. This particular structure is known as the "2s. stand," and was erected for the York Race Committee. It is constructed throughout of reinforced concrete, designed on the Kahn system by the Trussed Concrete Steel Co., Ltd., of Caxton House, Westminster, S.W. The details of the design are shown by the working drawings that are here reproduced. The reinforcement employed was Kahn "trussed" bars. The work of construction was completed in six weeks from the date of signing the contract, an example of rapid progress. The contractors for the work of construction were Messrs. William Moss and Sons, of Loughborough, and the architect was Mr. Walter H. Brierley, of York.

The stand was designed for a superimposed load of 1½ cwt. per sq. foot, and the general view shows a test in progress after the completion of the structure. It was loaded with a distributed load of 2¼ cwt. over one complete bay, and the maximum deflection recorded under this heavy load was only $\frac{1}{32}$ in. The steps of the stand are supported on inclined beams sustained by spirally reinforced columns supported in square independent foundations. The ends of the stand are filled in with reinforced concrete walls, but the back is open as shown in one photographic view, a row of stanchions or columns being here plainly visible. The stanchions under the centre of the stand are cross-braced for security.

Reinforced concrete is particularly serviceable for the construction of permanent stands for spectators, and we may here note that three other race stands have recently been dsigned and constructed on the Kahn system by the Trussed Concrete Steel Co., Ltd.

EXPANSION OF CONCRETE FLOORS.

Mr. George Harry Gascoigne, of 47, Victoria Street, Westminster, has patented a block for nullifying the effect of expansion in buildings, having for its object to provide means whereby the ferro-concrete, etc., of buildings with which this device is employed may be enabled to expand without unduly straining the walls or pushing them out of position. The invention consists in arranging a number of blocks of suitable construction, each of which is formed with a breakable nib or extension in an opening in the wall, and at the end or side of the floor or ceiling. In carrying out this invention the safety locks, which may be made of burnt clay, concrete, plaster, or other suitable material, are made channel-shaped for the reception of the floor or ceiling, and are provided with nibs or flanges extending along their length. The blocks are placed in a chase or suitably shaped opening in the wall with their open faces inwards to receive the floor, so that the angular nib is up against the side of the chase. The nibs or flanges are connected to the body portion of the block by a narrow portion or neck to enable the nibs to be more easily broken off should the floor expand. It is claimed that it will be readily understood from the foregoing description that, should any expansion occur in the floor or ceiling due to any cause whatsoever, no damage will be done to the walls of the building.



General View of the Stand.

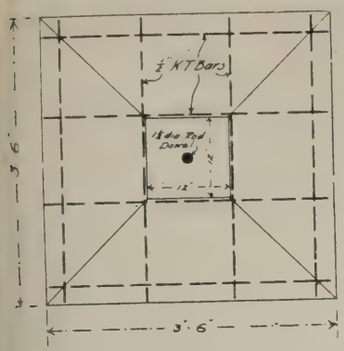


View of the Stand from the Back.

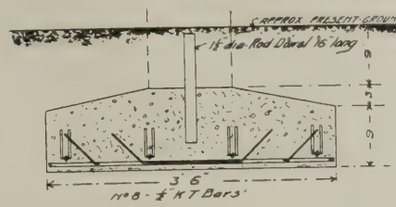


View Underneath the Stand.

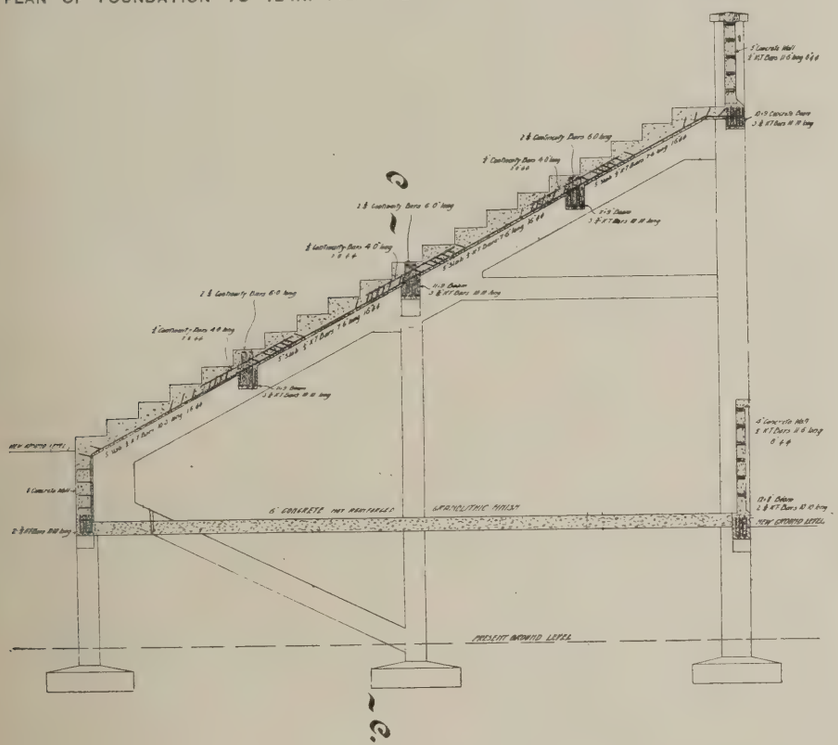
STAND AT YORK RACECOURSE ON THE KAHN SYSTEM.



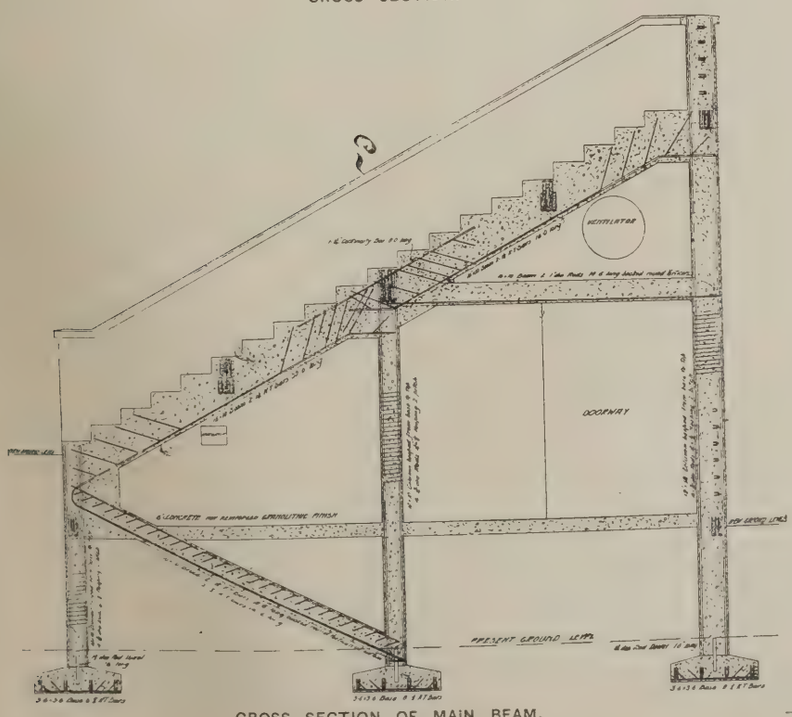
PLAN OF FOUNDATION TO 12-IN. PIERS.



SECTION OF FOUNDATIONS TO PIERS.



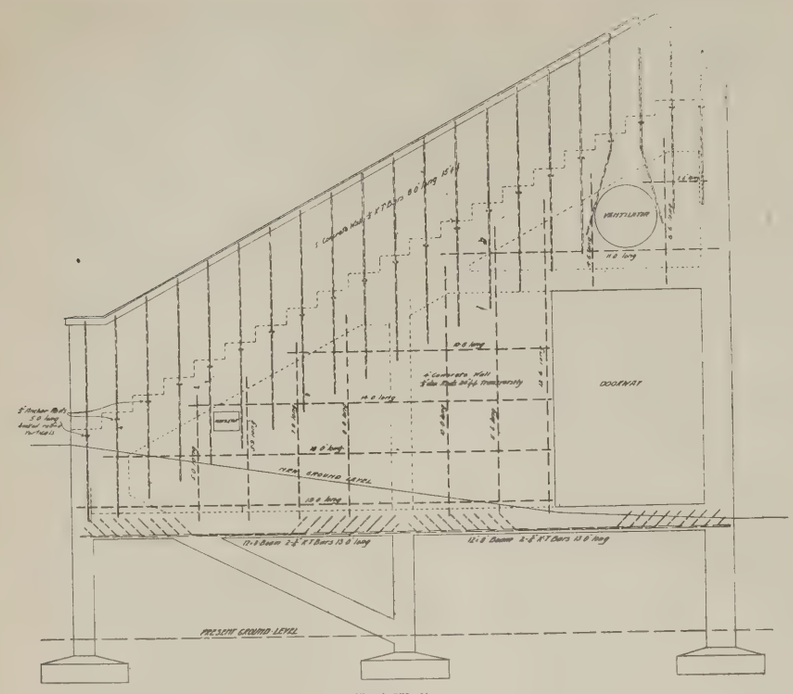
CROSS SECTION.



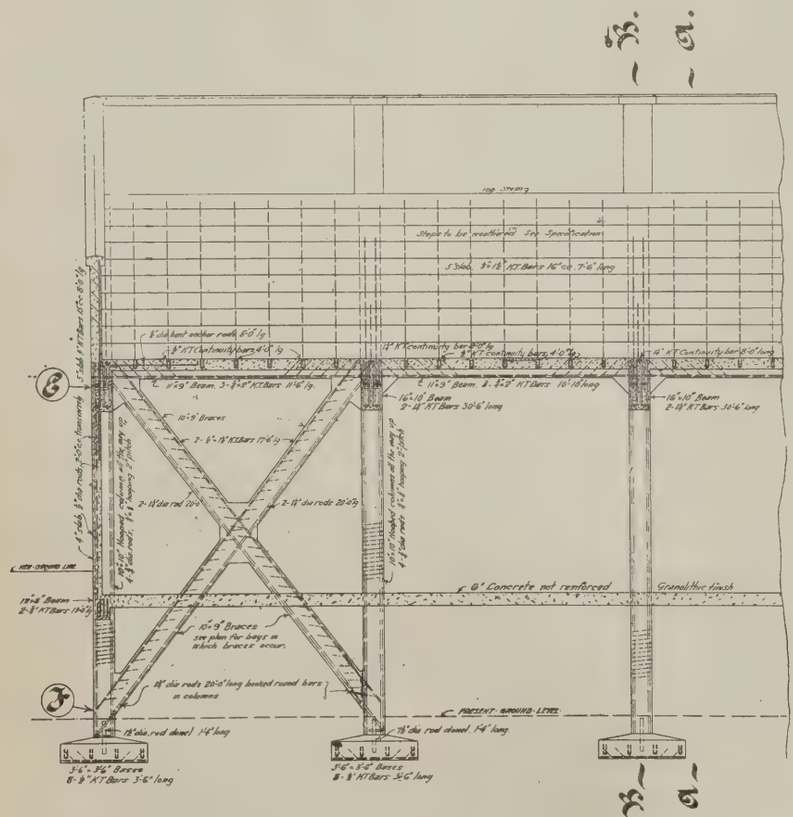
CROSS SECTION OF MAIN BEAM.

A NICE POINT IN CONTRACT LAW.

A judgment given by Master Chitty in the High Court of Justice on July 21st, 1908, has now been printed, and a copy has been forwarded to us by a correspondent, who thinks that the matter is of sufficient interest and importance to warrant notice in these columns. Briefly stated, the facts are as follows. A lady employed a builder to erect a lodge and stabling, and the case hinged on the rival claims of (A) the trustee under a deed of assignment of the builder, and (B) the Patent Victoria Stone Company to certain moneys paid into court by the lady client, who thus sought relief against the rival claimants. The main issue to be determined by the Court was, therefore, Which of the two parties, A and B, had the better claim to the money? Among the items in the bills of quantities was this: "288 superficial yards 2½-in. granolithic paving on 4-in. brick foundations, laid complete by the Patent Victoria Stone Company at prime cost 4s. 6d. per yard super." The architect certified that the money for this work (£72) should be paid to the Stone Company, not to the builder. Master Chitty said that if this were an action brought by the specialist against the building owner, the Court, taking an ordinary common-law view of the matter, would have had no hesitation in deciding that the specialist had no claim against the building owner, the specialist being no party to the contract between the building owner and the builder, and therefore having no right to rely on Clause 28 of the R.I.B.A. Contract, by which, in the present instance, the architect was governed. The Court thought, however, that the present case was covered by that of Hobbs v. Turner, in which the Master of the Rolls held that Clause 28 "was obviously framed for this particular class of work." "If," said the Master of the Rolls, "the builder entered into a contract for any of this class of work, he might make himself liable to the tradesman or artist; but as he was acting under the general scope of the contract, he would be acting as the agent of the building owner, and would create priority of contract between the building owner and the tradesman or artist. That could only be got rid of by the tradesman or artist contracting with the builder in such a way as to debar himself from resorting to the building owner. Nothing of that kind occurred here." The effect of that ruling, Master Chitty inferred, "seems to be that if this is a provisional sum, there is, under this Clause 28, a power to compel the building owner to pay these sums to the merchant direct." The Court confessed to having had very great difficulty in ascertaining what a provisional sum is, "and there seems to be," he says, "no very clear understanding in the profession as to exactly what it is, whether it means a sum of money that has to be provided for a particular purpose, or whether it means a sum that has to be provided for a particular class of work that is only inserted provisionally—that is to say, provided the architect requires the work to be done." He thought that the item in dispute was, in substance and effect, a provisional sum. "Here is a contract by the builder to employ these people, and a contract by the building owner to pay the builder so much money for the purpose of his paying it to the Patent Victoria Stone



End Wall.



Longtitudinal Section.

STAND AT YORK RACECOURSE, ON THE KAHN SYSTEM.

Company. There is a provision in the contract by which notice—namely, the certificate of the architect under Clause 28—may be given to the merchant of that purpose, and I am very much inclined to think that the merchant might make out that when he gets the certificate of the architect that this payment is to be made to him, that is a notice of the trust, and entitles him to say to the builder, if the builder has got the money, 'You have got that money in trust to pay me.'" A difficulty in the builder's way was that he could not enforce payment of this sum against the building owner. He is only entitled to pay on certificates, and for this particular item he got no certificate. The Court felt that substantial justice would be done in holding that the merchant was entitled to the money, as against the creditors of the builder. Possibly there may be an appeal. The correspondent to whom we are indebted for a copy of this important judgment contends that the primary reason for fixing a p.c. sum is in order that the architect may have the sole control of the sum given, and of the particular work to which it applies. He adds the obvious truism that while there are architects who prefer to place all the responsibility of the employment and payment of the special artist or tradesman upon the general contractor, and who do not avail themselves of the power given them under Clause 28, there are others who prefer to avail themselves of that clause. It remains to be seen whether, supposing there is an appeal, this judgment is upheld, and whether, in case it stands, it will tend to greater uniformity of practice by the more general adoption of the power that now seems to be given under Clause 28 of the R.I.B.A. Contract Form.

Two misprints that occur in last week's issue have been noted. In the article on "Finishing Verges and Gable Ends," page 161, column 3, in the fifth line, under "Soakers and Cover Flashing," "gauge the lap" should read "gauge + lap." On page 166, column 1, in the sixteenth line from the end of the article headed "Roofing with stone slates," "curved fittings" should read "curved firrings."

* * *

The International Rubber Exhibition at Olympia will be opened by Sir Henry A. Blake on September 14th. It will demonstrate the processes through which rubber passes from the sap fluid of the tree into various manufactured articles.

* * *

Mr. Leonard Stokes, F.R.I.B.A., has been nominated by the president of the Institute to serve on the Royal Commission to report on the preservation of ancient monuments in England, and has accepted the nomination. The commission, of which Lord Burghclere is chairman, is expected to begin its sittings in October.

* * *

An "Ideal Home Exhibition" will be included in the series of autumn shows at Olympia. It will be under the patronage of the Queen, and exhibits from her Majesty's technical schools at Sandringham will be shown. There will be six sections, dealing with costruction, decoration, and sanitation, heating and lighting, furnishing, music and recreation, food and cookery, and hygiene and cleaning. A model homestead, with growing vegetables, etc., will cover an acre of space, and will contain apiaries, poultry runs, and everything appertaining to a small holding.

Coming Events.

Monday, Sept. 28.
ARCHITECTURAL ASSOCIATION.—School of Architecture Evening Schools open.

Monday, Sept. 28, to Friday, Oct. 2.
IRON AND STEEL INSTITUTE.—Autumn Meeting, at Middlesbrough.

Wednesday, Sept. 23.
ROYAL SANITARY INSTITUTE.—J. Priestley, M.D., etc., on Sanitary Law, 7 p.m.

Friday, Sept. 25.
ROYAL SANITARY INSTITUTE.—J. Priestley, M.D., etc., on Sanitary Law, 7 p.m.

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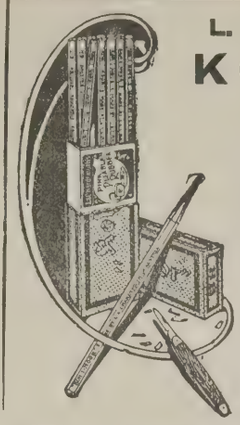


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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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At all newsagents and bookstalls	8	8
By post in the United Kingdom	10	10
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Advertisements for the above can be received up till 12 noon Tuesday at

CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Acrise and Paddlesworth (Kent).—For an enlargement to Acrise and Paddlesworth Council School near Folkestone, Kent, for the Kent Education Committee. Mr. Wilfred H. Robinson, M.S.A., architect:—

F. W. and J. Clark, Folkestone	£1,047 17 0
R. Mills, Uphill, near Folkestone	1,035 0 0
R. Webster, Folkestone	966 0 0
J. J. Clayson, Lyminge, Kent	903 0 0
G. Browning, Canterbury	894 0 0
F. J. Gates, Herne, near Canterbury	845 18 6
J. Gosby, Folkestone	825 0 0
C. Jenner, Folkestone	819 0 0
Barden and Head, Maidstone	797 0 0
O. R. S. Marx, Folkestone	775 0 0
S. A. Wise, Hythe, Kent	775 0 0
G. Castle and Son, Folkestone	769 0 0
W. H. Agar, Folkestone	697 0 0
Eeles Bros.,* Elham, near Canterbury	686 10 0

*Accepted.

Beckenham (Kent).—For additions, alterations, and decorations to private residence. Mr. G. St. Pierre Harris, architect, 8, Laurence Pountney Hill, E.C., and Orpington, Kent:—

F. P. Duthoit	£1,547
J. Arnaud and Son	1,484
T. Crossley and Son	1,475
W. Blay	1,440
T. D. Graty	1,397
R. A. Lowe and Co.*	1,379

*Accepted.

Brighton.—For the renovation of part of Warren Farm Road, for the Guardians. Messrs. G. Burstow and Sons, surveyors, 16, Gloucester Place, Brighton:—

E. G. Churchill	£1,096 12 6
F. Woollard	546 0 0
J. Parsons and Sons,* Hove	417 0 0

*Accepted.

Crewe.—For erecting a Sunday school, for the Trustees of the Trinity Wesleyan Church, Mill Street. Mr. Francis P. Halsall, A.R.I.B.A., Victoria Chambers, Chapel Street, Southport:—

I. H. and J. Jervis	£2,353 17 0
C. Gresty	2,113 5 6
H. Jones	2,054 5 0
J. Williams and Sons	2,030 12 0
Greenhalgh and Co.	1,993 0 0
W. Micklewright and Sons	1,972 0 0
Birchall Bros.	1,951 4 0
Platt Bros.,* Shavington, near Crewe	1,806 10 0

*Accepted.

Dinnington.—For sewage and sewage disposal works. Messrs. Berrington, Son and Watney, engineers, Wolverhampton, and at Westminster:—

Johnson and Sons	£13,500 0 0
Bateman	12,597 0 0
Ward and Tetley	11,450 11 5
Pinder Bros.	11,320 0 0
Macdonald	10,610 0 0
Mitchell and Son	10,597 16 0
Waring and Sons	10,300 0 0
Crawford.* Uddingston	10,250 0 0

*Accepted.

Doncaster.—For the erection of a new bridge and making of a road in Marshgate, for the Corporation:—

A. Thorne and Son	£66,192
Whitaker Bros.	62,198
C. Baker and Sons	60,648
J. O. M. Dixon	58,219
Logan and Hemingway	57,325
Cleveland Bridge Co.	55,181
T. Lamb	55,137
T. Wrigley	54,884
Kellett's, Limited	54,598
Bott and Stennell	54,402
J. Scott	53,752
J. Moffatt	53,231
Widnes Foundry Co.	52,698
W. Muirhead and Co.	52,384
H. Lovatt	51,983
B. Firth	51,948
Holmes and King	49,994
H. Arnold and Son*	47,790
H. M. Nowell	46,986

*Accepted.

Stapleton (Bristol). — Accepted for building a chapel to accommodate 420 persons at the workhouse at Stapleton, for the Bristol Board of Guardians.

S. Lovell, 54, Cotham Road, Bristol, £1,120.

Lowest of 16 tenders received; highest £1,645. Architect's estimate, £1,500.

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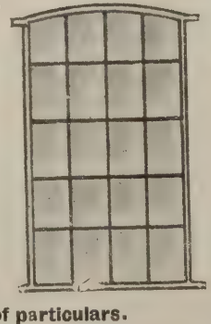
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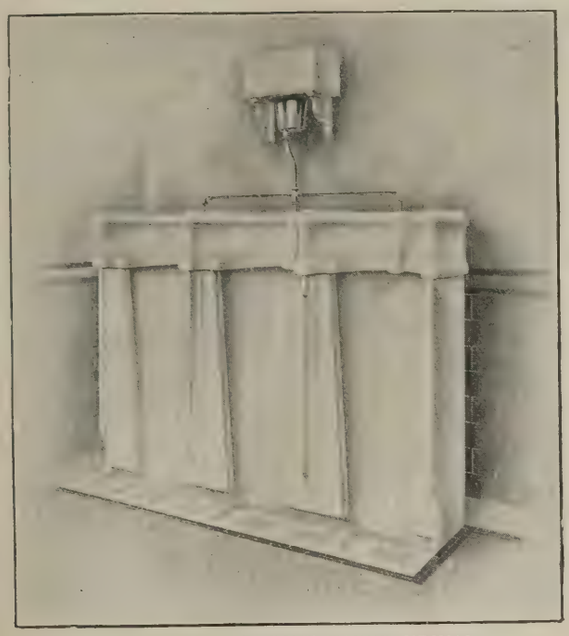
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(*Tenders continued from page vi.*)

Forfar.—Accepted for the work of altering and improving Wellbraehead School, for the Burgh School Board:—

J. M'Lean and Son, masons	£1,526 0 0
A. Hay and Co., joiners	1,037 9 0
W. Milne and Sons, plumbers	429 0 0
J. Doig, plasterer	289 18 6
A. and C. Shepherd, slaters	213 10 0
W. Milne and Sons, heating	188 0 0
J. Prophet, painter	110 0 0
P. Small, smith	59 15 0

Ilford.—Accepted for extensions to electricity works, Ley Street, for the Urban District Council. Mr. H. Shaw, M.I.C.E., engineer and surveyor, Town Hall, Ilford.

Myall and Upson, Connaught Lane, £2,049 1s. 3d.

Melton Mowbray.—For new sewerage works, for the Urban District Council:—

F. W. Southorn, Nuneaton	£18,550 16 0
Firth and Co., Leicester	18,088 2 10
Johnson and Langley, Leicester	17,663 0 0
Johnson Bros., Hereford	17,611 0 0
A. J. Cottle, Sheffield	16,662 3 5
Pritchard and Co., London	16,638 19 5
J. H. Price and Co., Nottingham	16,475 3 5
T. and H. Denman, Melton Mowbray	16,206 15 5
A. E. Nunn, London	16,176 3 6
J. and A. Brazier, Bromsgrove	15,486 12 4
Moran and Son, London	15,389 0 0
Moss and Son, Loughborough	14,035 14 0
E. Clarke,* Melton Mowbray	13,987 14 1

*Accepted.

Mere (Wilts.).—For laying 14 miles of cast-iron mains, for the Rural District Council. Mr. W. Phelps, C.E., engineer, Charlton Road, Shepton Mallet. Mr. J. McKenzie, town surveyor, Castle Street, Mere:—

Robus	£6,925
Tilt	3,814
Bird and Son	3,424
Coles Bros.	3,103
Lander	3,070
Williams and Farley	3,022
Shooter	2,900
Cooper and Co.	2,600
Wright and Son	2,590
Carder	2,560
Smith and Marchant	2,240
Guppy and Chant,* Sherborne, Dorset	2,150
Vagg and Son†	1,519
Dismore and Son†	1,505

†Sections B and C only.
*Accepted.

Mere (Wilts.).—For about 450 tons of cast-iron pipes and specials from 6in. to 2in. in diameter, for the Mere (Wilts.) Rural District Council. Mr. William Phelps, C.E., engineer, Charlton Road, Shepton Mallet:—

Holwell Iron Co., Melton Mowbray	£2,915
Jordans, Newport, Mon.	2,857
A. G. Cloake, Holborn Viaduct	2,823
Stanton Ironworks, near Nottingham	2,692
Watson and Co., Falkirk	2,649
Oakes and Co.	2,631
Clay Cross Iron Co., Chesterfield	2,610
Staveley Iron Co., Chesterfield	2,590
Cochrane and Co., Dudley	2,521
Isca Foundry Co., Newport, Mon. (part only)	2,148

Molesey (Surrey).—For construction of a storage reservoir and other works, for the Metropolitan Water Board:—

T. Turner	£279,225 10 11
J. Moran and Son	245,596 0 0
Kirk and Randall	239,426 0 0
R. H. B. Neal, Limited	232,000 0 0
S. Pearson and Son	229,133 13 6
Monk and Newell	227,973 8 0
G. Trentham	227,154 14 8
J. Mowlem and Co.	224,898 0 0
J. Aird and Sons	215,074 8 3
A. E. Nunn and Co.	213,302 1 3
T. Docwra and Son	212,993 11 3
J. Moffat	211,386 10 9
J. Byrom, Limited	210,952 16 3
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J. Scott	207,107 6 3
W. Scott and Middleton	205,882 17 8
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E. Nuttall and Co.	167,856 13 7
Rawlingsons and Co.	161,834 15 3
R. McAlpine and Sons,* 25, Victoria Street, S.W.	152,727 7 9

*Accepted.

Wells (Somerset).—Accepted for erection of new laundry buildings and alterations to boiler-house at the asylum at Wells, for the sub-committee of the Somerset and Bath Asylum. Messrs. George T. Hine and Co., architects, 35, Parliament Street, S.W.

H. W. Pollard and Son, Bridgwater, £5,450.

Bankruptcies.

BROADBANK, CALEB GEO., house decorator, 5, Park Road, and Wellesley Road, Ashford. First meeting, O.R.'s, Canterbury, Sept. 5. P.E., Guildhall, same, Sept. 10, at 10.

BUGGS, HY. JNO. WAYNE, carpenter, Harold Road, and Wm. Jno. Anderson, bricklayer, 14, Ontario Road, late builders (late trading as Buggs and Anderson), Harold Road, Kirkley. R.O., Aug. 27. First meeting, O.R.'s, Norwich, Sept. 12, at 12. P.E., Town Hall, Great Yarmouth, Sept. 15, at 11. Adj., Aug. 27.

BURGE, EDWARD, and HERBERT, WM. KENNAWAY, builders (trading as E. Burge and Co.), 22, Rockbourne Road, Forest Hill, late Thorpewood Avenue, Sydenham. Adj., Aug. 25.

DARVILL, EDWD., builder, late 2, Engaine Street, Southfields. R.O., Aug. 26. First meeting, 132, York Road, S.E., Sept. 9, at 12. P.E., C.C., Wandsworth, Oct. 15, at 12.

EMMOTT, JNO. SPENCER, painter and paperhanger, 119, Redcliffe Street, and 7, Lawkholme Crescent, Keighley. R.O., Aug. 28. First meeting, O.R.'s, Bradford, Sept. 10, at 11. P.E., C.C., same, Oct. 21, at 10. Adj., Aug. 28.

HANBURY, GEO., master plasterer, Vale Farm Cottage, Thornaby-on-Tees, late 45, St. Cuthbert's Road, Stockton-on-Tees, and High Street, Yarm. First meeting, O.R.'s, Middlesbrough, Sept. 7. P.E., C.C., Stockton-on-Tees, Sept. 9, at 10.30.

HUNT, ALF. (trading as A. Hunt), builder, late 69 Marshall Road, Woodseats, Sheffield. R.O., Aug. 27.

JAVENS, JAS. JOSEPH, late joiner and builder, lodging at Park Road, Carlton, late trading at same address. First meeting, O.R.'s, Nottingham, Sept. 8. P.E., C.C., same, Oct. 9, at 10.30.

MARSHALL, JNO. THORNTON, builder, Buckingham. R.O., Aug. 27. Adj., same day.

RICHARDSON, WM. HY., and WM. SLATER SOMERFIELD, plumbers and glaziers (trading as Richardson and Somerfield), Bearwood Hill Road, Burton-on-Trent. Adj., Aug. 25.

ROWLAND, WM. HY., painter and decorator, Red Hill Oil and Colour Stores, Coventry Road, Hay Mills. First meeting, 191, Corporation Street, Birmingham, Sept. 7. P.E., C.C., same, Sept. 17, at 2.30.

SAYCE, JNO. GEO., builder and contractor (trading as J. G. Sayce), 114, Sycamore Road, Smethwick. Adj., Aug. 20.

SKINNER, ERNEST YOUNG, surveyor, 95, Gresham Street, E.C. First meeting, Bankruptcy Court, Sept. 8. P.E., same place, Sept. 29, at 11.30. Adj., Aug. 26.

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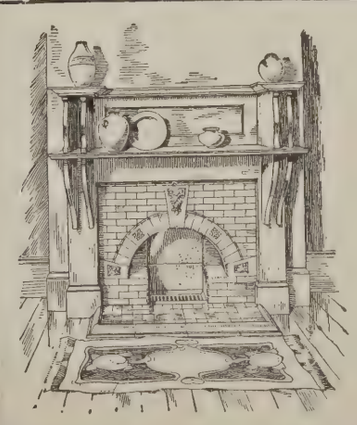


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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

September 10. LOCKWOOD.—Erection of a detached cottage, in Woodside Road, Lockwood. Plans may be seen and bills of quantities obtained at the offices of the architects. Tenders to be sent not later than September 10, to J. B. Abbey and Son, architects and surveyors, 34a, New Street, Huddersfield.

September 10. CARDIFF.—Pulling down and rebuilding Nos. 18 and 19, Church Street, Cardiff, for Cross Brothers (Limited). Plans, etc., can be seen, and bills of quantities obtained at the offices of the architect on a deposit of two guineas. Sealed and endorsed tenders to be delivered not later than September 10, to Veall and Sant, architects, Cardiff.

September 11. ELLAND. — Erection of five houses in Workhouse Lane, Elland. Plans and particulars may be seen at the office of Fred. F. Beaumont, architect, Southgate Chambers, Halifax, up to September 11.

September 11. KENDAL.—Erection of additions to the rear of 100, Highgate, Kendal, for Mrs. Newell. Plans and specifications can be inspected and bills of quantities obtained on application to Stephen Shaw, F.R.I.B.A., architect, Kendal, until September 11, upon which day sealed and endorsed tenders are to be sent to the architect.

September 12. CHOPWELL.—Erection of four houses and shops, for F. Rupp, at Chopwell. Plans and specifications may be seen upon application to the architect. Tenders to be delivered on or before September 12, to D. M. Spence, architect and surveyor, Shotley Bridge.

September 12. YNYSYBWL.—Erection and completion of twelve or more houses at Church Street, Ynysybwl. Plans and specifications may be seen with Wm. May, 13, Robert-street, Ynysybwl, to whom sealed and endorsed tenders are to be sent on or before September 12.

September 12. BIRMINGHAM.—Erection of a fire station for the watch committee of the corporation. Applications for forms of tender and bills of quantities may be made on or before September 12, at the office of the architect, Thomas G. Price, M.S.A., Union Chambers, 63, Temple Row, Birmingham. A sum of three guineas will be required as deposit. Drawings may be seen on and after September 12 at the office of the architect. Fair wages clause.

September 12. TUNSTALL. — Erection of 48 workmen's dwellings, at Tunstall, for the Sunderland Rural District Council. Plans and specification may be seen at the office of Joseph Spain, A.R.I.B.A., architect, 12, John Street, Sunderland, from whom bills of quantities can be obtained on payment of two guineas, which will be returned on receipt of a bona fide tender. Whole tenders only will be received, and must be delivered, endorsed "Workmen's Dwellings, Tunstall," not later than noon, September 12, to J. C. Wilson, clerk to the council, Rural District Council offices, 17, John Street, Sunderland. Fair wages clause.

September 12. MILTON REGIS (Kent).—Erection of an enlargement, to provide accommodation for about 260 scholars, to the council school, at Ufton Lane, Milton Regis, Kent, for the education committee. Plans and specification, prepared by the committee's architect, Wilfrid H. Robinson, M.S.A., may be inspected at the offices of the committee, on or after September 3, between the hours of 10 a.m. and 4 p.m. Any person desiring to tender, and to receive a copy of bills of quantities, must send his name to Fras. W. Crook, secretary, Caxton House, Westminster, S.W., accompanied by a deposit of £1, not later than noon on September 3. The deposit will be returned, provided a bona fide tender shall have been submitted, and not withdrawn. Tenders, on the form supplied, with bills of quantities, in a sealed envelope, endorsed "Milton Regis Ufton Lane Tender," must be delivered to the school correspondent, J. Filmer, Albion House, London Road, Sittingbourne, Kent, not later than noon on September 12.

September 14. STOURBRIDGE.—Erection of a public mortuary in Bell Street, for the Urban District Council. Plans, specification, and all particulars can be obtained upon application to the surveyor. Tenders to be delivered, endorsed "Tender for Mortuary," not later than September 14, to Frederick Woodward, surveyor, town hall, Stourbridge.

September 14. FLEET.—Erection of an operating threatre at the cottage hospital, Fleet (Dr. Gilbert Wickham Memorial.) Plans and specifications may be seen at the office of John Love, M.S.A., The Terrace, Fleet, to whom tenders must be sent by 4 p.m. on September 14.

September 14. ROYTON.—Erection of buildings for the new public baths, Park Street, Royton, for the Urban District Council. Bills of quantities, drawings, and other particulars, can be obtained on application to Ernest Woodhouse, F.R.I.B.A., 88, Mosley Street, Manchester, on payment of a fee of two guineas. Tenders, in sealed envelopes, and endorsed "Tender for Public Baths," are to be delivered not later than noon, September 14, to Thos. Bleasdale, clerk to the council, town hall, Royton, near Oldham

September 14. LYDBROOK (near Ross).—Erection of a public elementary school at Lydbrook, near Ross, for the Gloucestershire Education Committee. Plans and specifications may be seen at the office of M. H. Medland, architect, 15, Clarence Street, Gloucester. Bills of quantities and form of tender may be obtained from E. A. Pryer, surveyor, 15, Clarence Street, Gloucester, upon payment of two guineas, which will be returned on receipt of a bona-fide tender. Sealed tenders, endorsed "Tender for School at Lydbrook," must be delivered not later than 9 a.m. on September 14 to H. W. Household, secretary to the Education Committee, County Education Office, Gloucester.

September 14. HERTFORD.—Erection and completion of a new county record and strong room at Hertford, for the County Council. Persons desiring to tender may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between the hours of 10 a.m. and 4 p.m., except on Saturdays, when they may be seen from 10 a.m. to 12 noon. A copy of the schedule of works (quantities) and a form of tender can be obtained at the county surveyor's office upon payment of two guineas, which sum will be returned upon receipt of a bona fide tender and the documents which have been supplied. Sealed tenders, endorsed "Tender for New Record and Strong Room, Hertford," must be delivered not later than 5 p.m. on September 14, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Such security for the due execution of the works as the county may require must be given by the contractor.

September 15. EXETER.—General reparation and joiners' work at the infirmary and offices, for the guardians of the poor. Specifications and drawings may be seen, and full particulars obtained at the office of the architect, R. M. Challice, 14, Bedford Circus, Exeter. Sealed and endorsed tenders must be sent at or before noon on September 15, to Arthur Snell, clerk to the guardians, New Buildings, Castle Street. (See also "Painting and Plumbing.")

September 15. SLIGO.—Erection of new offices and residence in Sligo for the Hibernian Bank, Limited. Plans and specification can be seen at the office of the architects. Quantities have been prepared by William Butler, building surveyor, 58, Mountjoy Square, West, and will be supplied by him on payment of £2 2s. Estimates to be sent in sealed envelope endorsed "Estimate for New Bank Premises, Sligo," to William H. Byrne and Son, architects, 20, Suffolk Street, Dublin, on or before September 15.

September 15. OXFORD.—Erection of the new church of St. Stephen, Lonsdale Road, Summertown, Oxford, for the building committee. Plans, specification of works, and conditions of contract may be seen, and form of tender, with bills of quantities obtained, at the office of A. Mardon Mowbray, architect, 117, St. Aldate's Street, Oxford, during office hours, on payment of five guineas, which will be returned on receipt of a bona fide tender. The contractor will be required to enter into a bond, with two responsible sureties, for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed. Tenders, sealed and endorsed "Summertown New Church" to be delivered not later than noon on September 15, to Rev. C. J. Burrough, Summertown Vicarage, Oxford.

September 15. WIGGINTON-HOPWAS (near Tamworth).—Enlargement of Wigginton-Hopwas council school (near Tamworth), by 120 places, and alterations and improvements to the existing buildings, for the Staffordshire education committee. Persons desirous of tendering should atply to Graham Balfour, director of education, county education offices, Stafford. Quantities w be supplied upon receipt of a deposit of £1 1s., which should accompany the application to tender.

September 16. STOKE-UPON-TRENT.—Erection of new buildings in connection with the cottage homes of the union, at Penkhull, for the guardians. Plans, specification and bill of quantities prepared by A. R. P. Piercy, architect and surveyor. Bills of quantities, with form of tender, may be obtained at the union offices on application, and a deposit of £3 3s. Tenders endorsed "Cottage Homes" must be sent not later than 9 a.m. on September 16, to C. Daniel, clerk to the guardians, union offices, Stoke-upon-Trent. The tender will be provisionally accepted subject to the approval of the Local Government Board. Fair wages clause.

September 17. AUDLEY (North Staffs.).—Erection and completion of a new council school for about 280 children at Wood Lane, Audley, North Staffs., for the education committee. Persons desirous of tendering should apply by September 17, to Graham Balfour, director of education, county education offices, Stafford. Quantities will be supplied upon receipt of a deposit of £1 1s., which should accompany the application to tender.

September 17. BALLYMAHON (Ireland).—Erection of 75 single labourers' cottages, for the Rural District Council. The works are to be completed within six months after they have been laid out by the Council's architect under a penalty for delay. Plans and specifications and tender forms for the works can be obtained from the clerk to the Rural District Council on payment of 5s. Tenders are to be lodged at his office by 11 a.m. on September 17. The limit per cottage is £122.

September 18. PORTH (Glam.).—Erection and completion of two shops for J. Preece, Hannah Street, Porth. Plans and specification may be seen at the residence of W. D. Thomas, architect and surveyor, Tydfil House, Porth, Glam. Tenders, sealed and endorsed "Tender for Shops," to be sent not later than September 18, to J. Preece.

September 19. HAMMERWICH (near Lichfield). —Erection of new offices and cloakroom, also alterations and improvements at the Hammerwich council school (near Lichfield). Persons desirous of tendering should apply by September 19, to Graham Balfour, director of education, county education offices, Stafford. Quantities will be supplied upon receipt of a deposit of £1 1s., which should accompany the application to tender.

September 19. CANTERBURY.—Alterations and additions to the Pavilion at the St. Lawrence Cricket Ground, Canterbury, for the Kent County Cricket Club. Copies of the quantities can be obtained on depositing the sum of £5 with the architects, at whose office the plans and specification may be seen. Tenders should be sent on forms supplied, not later than 9 a.m., September 19, to Jennings and Gray, architects, 4, St. Margaret's Street, Canterbury.

September 19. SWAYTHLING.—Erection of two additional classrooms at Swaythling council school, for the Southampton county council. Persons desirous of tendering may see plans, specifications and conditions of contract, and obtain bills of quantities and other information, at the office of J. W. Taylor, county surveyor, The Castle, Winchester, between the hours of 9 a.m. and 5 p.m. (Saturdays 9 a.m. and 1 p.m.). A deposit of two guineas will be required for bills of quantities and form of tender. Deposits must be made by cheque, payable to the Hants. county council, and crossed "Bank of England." Tenders to be endorsed "Additions Swaythling Council School," and delivered not later than 10 a.m. on September 19, to H. Barber, clerk to the county council, The Castle, Winchester.

September 21. SUTTON COLDFIELD.—Erection of a school to accommodate 200 children in the Green Lanes, Chester Road, for the Corporation. Specification and quantities may be obtained from Crouch, Butler, and Savage, architects, 39, Newhall Street, Birmingham, on deposit of two guineas. Tenders, marked "Green Lanes School," to be delivered on or before September 21, to R. A. Reay Nadin, town clerk, council house, Sutton Coldfield.

September 21. SOUTHWICK.—Erection of a new police station at Southwick, in the county of West Sussex, for the county council. Specification, and plans, together with conditions of contract, may be seen at the office of the county surveyor, between the hours of 10 a.m. and 5 p.m. Quantities will be supplied on application and deposit of £1. Tenders,

endorsed "Tenders for Police Station at Southwick," to be addressed and sent to reach the county surveyor, 22, Worthing Road, Horsham, on or before September 21.

September 21. WEST EALING.—Erection of new school, Cranmer Avenue, West Ealing, for the education committee. Drawings and specification may be seen, and forms of tender, together with bill of quantities and other particulars, obtained from Charles Jones, M.Inst.C.E., borough engineer, town hall, Ealing, W., any day during office hours upon payment of a deposit of £5 5s. Sealed tenders, in the envelopes provided, endorsed "Tenders for Lammas School," must be delivered not later than noon on September 21, to J. B. Johnson, secretary, education office, town hall, Ealing.

September 21. CORFE MULLEN (near Wimborne).—Erection of a pumping station, buildings, tanks, cottages and other work connected therewith, at Corfe Mullen, near Wimborne, in the county of Dorset, for the corporation of Poole. Drawings may be inspected and copies of the conditions, specifications, bills of quantities and forms of tender obtained upon application to the engineer, William Matthews, 39, Victoria Street, Westminster, and after the payment to the town clerk, of £2 2s. Tenders will be received up to 9 a.m., September 21, by Charles Lisby, town clerk, municipal offices, Poole.

September 22. SOUTH SHIELDS.—Alterations at Laygate divisional police station, for the Corporation. Drawings may be seen and bills of quantities obtained from S. E. Burgess, M.I.C.E., borough engineer and surveyor, Chapter Road. Sealed tenders must be delivered at the office of the town clerk, Court Buildings, South Shields, not later than 4 p.m., on September 22, endorsed "Tender for Alterations, Laygate Police Station."

September 22. MORTLAKE.—Erection of a new ward block, etc., at the isolation hospital, South Worple Way, Mortlake, S.W., for the Barnes U.D.C. Drawings and specification can be seen and bills of quantities and forms of tender obtained on application to G. Bruce Tomes, Assoc.M.Inst.C.E., surveyor to the council, council house, High Street, Mortlake, S.W., to whom tenders, sealed and endorsed "Tender for Proposed New Block, etc.," must be sent not later than noon on September 22. The sum of one guinea will be required as a deposit.

September 23. NEWBRIDGE (Mon.).—Erection of thirteen villas at Newbridge, Mon., for the North Road building club, Newbridge. Plans and specifications may be seen at the office of A. J. Bowen, architect, Crown Street, Crumlin. Sealed tenders, endorsed "Tender for Villas," to be sent to T. A. Thomas, Bryn-Awel, Abercarn, Mon., not later than September 23.

September 24. ASHFORD.—Construction of a brick-foundation, timber and iron-covered cowshed for 20 cows, at Henwood Farm, Hythe Road, Ashford, Kent, for the Urban District Council. Plan and specification may be seen, form of tender, and any other information obtained, on application to William Terrill, surveyor, 5, North Street, Ashford, Kent. Sealed tenders, endorsed "Cowshed," to be sent to John Creery, solicitor, 11, Bank Street, Ashford, not later than 5 p.m. on September 24.

September 26. NETHERNE.—Erection of an isolation hospital and cottages, for the staff, for the Surrey County Council. Application for bills of quantities, accompanied by a deposit of £2, to be made to the architect, George T. Hine, F.R.I.B.A., 35, Parliament Street, Westminster, S.W., on or before September 12. Tenders, endorsed "Tender for Buildings," to be delivered not later than noon on September 26, to M. E. Reed, clerk to the committee, County Hall, Kingston-on-Thames.

September 28. NEWCASTLE-UPON-TYNE.—Construction and erection of a two-storey shed about 303 feet long and 66 feet wide, together with an approach bridge, in connection with the quay improvement, for the Corporation. The contract includes the steelwork, brickwork, reinforced concrete floor, rock asphalt pavings, roof coverings, sliding doors, glazing, etc. On and after September 10, and payment of £2 2s. to the city treasurer, town hall, Newcastle-upon-Tyne, a copy of the general conditions, specification, bill of quantities, and form of tender can be obtained, and the drawings inspected, at the city engineer's office, two hall. Prints of any of the ten plans may be obtained on payment of 2s. 6d. each to the city treasurer, which sum will not be returned. Tenders, addressed to the city engineer, town hall, Newcastle-upon-Tyne, and endorsed "Two-Storey Shed," to be received not later than 10 a.m. on September 28.

September 28. NEWBRIDGE (Co. Kildare).—Erection of 12 "B" married soldiers' quarters in Newbridge Barracks, co. Kildare, Ireland, for the war department. Plans and specification may be inspected at the office of the director of barrack construction, Newbridge, on September 14, 15, and 16. Bills of quantities and form of tender will be forwarded on application, addressed to the director of barrack construction, Pall Mall, London, S.W. The application must be accompanied by ten shillings, which is not returnable, and must be received not later than September 19. Tenders, in sealed envelopes, marked "Tenders," are to be delivered not later than noon on September 28, to H. De la Bere, director of army contracts, war office, Whitehall, London, S.W. Bills of quantities are to accompany the tender in separate sealed envelopes, similarly addressed and marked "Bills of Quantities for Work Proposed at Newbridge Barracks, Ireland," and also with the contractor's name and address.

October 2. WALLINGFORD (Berks.).—Erection of a new school for 250 scholars at Wallingford, Berks., for the education committee. Persons desirous of tendering are required to send their name to the secretary on or before September 14, together with a deposit of £3 3s., for bills of quantities, which will be supplied by post. Plans, specification, and form of contract will be open for inspection at the education secretary's office on and after September 14, between the hours of 10 and 5. Tenders must be delivered on the form and in the envelope provided, not later than first post on October 2, to the secretary to the education committee, The Forbury, Reading.

October 2. WALTHAM ST. LAWRENCE (Berks.).—Erection of a new school, for 200 scholars, at Waltham St. Lawrence, Berks, for the education committee. Persons desirous of tendering are required to send their names to the secretary, on or before September 14, together with a deposit of £3 3s., for bills of quantities, which will be supplied by post. Plans, specification, and form of contract will be open for inspection at the education secretary's office on and after September 14, between the hours of 10 and 5. Tenders must be delivered on the form and in the envelope provided, not later than first post on October 2, to the secretary to the education committee, The Forbury, Reading.

No date. USWORTH.—Erection of a brick chimney 130 ft. high. Plans and specifications may be seen on application to the engineer, Usworth Colliery office.

No date. TREDEGAR.—Erection of 40 houses to be built on Mile Field, Tredegar, for the Tredegar workmen's building society. Plans and specifications may be seen at the office of the architect, A. F. Webb, High Street, Blackwood.

No date. SHEEPRIDGE (near Huddersfield). — Erection of new Wesleyan Sunday school, and alterations to the present chapel, Sheepridge, near Huddersfield. Persons desirous of tendering are requested to forward their names to Garside and Pennington, architects, Pontefract, and Castleford, when bills of quantities and other particulars will be forwarded.

ENGINEERING.

September 10. EASTNEY (Portsmouth). — Repairing main pumps and engines at the Eastney pumping station, for the Corporation. Specification may be seen and form of tender obtained at the borough engineer's office at the town hall. The form of tender is to be completely filled in and sent under cover not later than 10 a.m. on September 10, to Alexander Hellard, town clerk, town hall, Portsmouth. Fair wages clause.

September 10. ROTHERHAM.—Heating the Alma Road council schools, for the Corporation. Plans of the schools and further particulars may be obtained at the office of the architect, J. Platts, Rotherham, until September 10. Tenders, sealed and endorsed "Tender for Heating Alma Road Council Schools," to be sent not later than September 10, to Spurley Hey, director of Education, education offices, town hall, Rotherham. Fair wages clause.

September 10. MILFORD HAVEN.—Supply and erection at the gasworks of the following appliances, etc., for the Urban District Council. 1. Exhauster and engine capable of passing 6,000 cubic ft. of gas per hour. 2. Rotary washer-scrubber capable of dealing with 100,000 cubic ft. per 24 hours. 3. Purifier, 8 ft. square, and 5 ft. deep. 4. 3,468 yds. of cast-iron S. and F. gas mains in the following sizes—i.e., 6 in., 4 in., 3 in., by 9 ft. Full particulars may be obtained from R. J. Calderwood, gas and water manager to the council. Sealed tenders, endorsed "Contract No. —" (as the case may be), addressed to the chairman of the gas and water committee, must be received not later than 1 p.m. on September 10, by Thomas H. Lewis, clerk, Milford Haven.

September 12. BOLTSBURN.— Sinking two shafts at Boltsburn lead mine, for the Weardale Lead Co. The company supply machinery and enginemen to pump the water and draw the work. Specifications and conditions on application. Tenders will be received up to September 12.

September 12. MARAZION (Cornwall).—Erection of water storage, etc., at Marazion Council school, for the Cornwall Education Committee. Plans and specification may be seen by appointment at the school, or the office of Sampson Hill, architect to the committee, Green Lane, Redruth, from whom all particulars relating to the work may be obtained. Sealed endorsed tenders are to be sent on or before September 12, to F. R. Pascoe, secretary, education office, Truro.

September 12. DOWNPATRICK.—Improvements and alterations to the Downpatrick waterworks, for the Rural District Council. Specification may be seen at the office of the clerk to the council, on any weekday, except Saturday, from 10 a.m. to 4 p.m. Sealed tenders, containing names of two solvent sureties, willing to join in a bond for the due performance of the contract, will be received up to 8 a.m. on September 12, by R. L. Morrow, clerk of council, clerk's office, Down Union.

September 12. BALLINASLOE.—Supply and erection of a steam laundry plant, for the joint committee of Ballinasloe Asylum. Plans and specifications prepared by the engineer, Geoffrey B. Meenan, 5, Charleville Road, Rathmines, Dublin, from whom copies may be obtained on payment of £1 1s., returnable on receipt of a bona fide tender. Contractors will be required to enter into a bond for the due performance of the work. Tenders to be endorsed "Tender for Laundry Plant," and delivered not later than September 12, to J. St. L. Kirwan, resident medical superintendent, board-room, Ballinasloe Asylum.

September 14. STONEHAVEN.—Executing the following works, for the Stonehaven Harbour Trustees. 1. Excavation of rock (about 1,600 cubic yds.) in new harbour basin. 2. Erection of a stair in new basin. Specifications and schedules of rates may be obtained from the clerk, or James Barron, M.Inst.C.E., 216, Union Street, Aberdeen, on payment of 5s. Tenders to be lodged on or before September 14, with Jas. B. Cunningham, clerk, Stonehaven.

September 16. MANCHESTER.—Providing and fixing a low-pressure heating apparatus at the Grange Street Municipal School, Grange Street, Manchester, for the education committee. Plans may be seen and a copy of bills of quantities (including specification) obtained at the education offices, Deansgate, Manchester, on a deposit of one guinea. Tenders, enclosed in the envelopes provided, must be delivered not later than 9 a.m. on September 16, to William Henry Talbot, town clerk. Cheques to be made payable to the accountant, education offices, Deansgate, Manchester.

September 28. NEWCASTLE-UPON-TYNE. — Construction and erection of about 180 tons of steelwork for the bridge over the Ouseburn, in connection with the quay extension, for the Corporation. On and after September 10, and on payment of £2 2s. to the city treasurer, town hall, Newcastle-upon-Tyne, general conditions, specification, bill of quantities, and form of tender can be obtained, and drawings inspected at the city engineer's office, town hall. Blue prints of any of the eight plans can be obtained on payment of 2s. 6d. each to the city treasurer, which sum will not be returned. Tenders, addressed to the city engineer, town hall, Newcastle-upon-Tyne, and endorsed "Bridge over Ouseburn," to be received not later than 10 a.m. on September 28.

October 1. HOLSWORTHY.—Construction of an impounding reservoir, service reservoir, and filter beds, and the laying of cast-iron mains, and other work at Holsworthy, for the Urban District Council. Plans may be seen at the office of the engineer, I. Chadwick, Bletchley, Bucks, or at the office of the solicitor. Copies of specification, quantities, and form of tender may be obtained from the engineer on payment of £3 3s., which will be returned upon receipt of a bona fide tender. Sealed tenders, endorsed "Holsworthy Waterworks," to be delivered on or before October 1, to W. C. R. Peterson, solicitor, clerk, Holsworthy, Devon.

IRON AND STEEL.

September 14. HINDLEY.—Supplying 1,000 yds. 6 in. open socket and spigot c.i. pipes, also 1,000 yds. open socket and spigot steel pipes, for the Urban District Council. Specification and forms of tender may be obtained from H. O. Timmins, gas engineer. Sealed tenders, endorsed "Gas Main," to be delivered on or before September 14, to Thomas Robey, clerk to the council, council offices, Hindley.

September 15. ACTON.—Supplying and fixing 342 ft. of 6 ft. unclimbable wrought-iron railings, and one pair of gates, for the Urban District Council. Plans and specifications can be seen, and bills of quantities obtained at 57, High Street, Acton, during office hours. Tenders to be delivered not later than 3 p.m. on September 15, to Wm. Hodson, clerk to the council, 242, High Street, Acton, W.

September 19. STOCKTON-ON-TEES. — Provision of fire-escape stairs at the workhouse, for the guardians of the union. Forms of tender and full particulars can be obtained from John Rodham, 16, Finkle Street, Stockton-on-Tees. Sealed tenders, duly endorsed, must be delivered not later than September 19, to Fred Byers Watson, clerk to the guardians, Nelson Terrace, Stockton-on-Tees. (See also "Sanitary.")

October 5. TOLWORTH.—Providing and erecting one double and two single wrought iron gates at the hospital premises in Red Lion Lane, Tolworth, for the joint board. Specification to be seen on application to the superintendent of the hospital. Tenders must be sent in sealed envelopes, marked "Tender for Gates," not later than October 5, to Jas. Edgell, solicitor, clerk to the board, union offices, Kingston-on-Thames.

PAINTING & PLUMBING.

September 10. STROOD.—Painting, etc., all outside wood, iron and stone work at the union workhouse at Strood, in accordance with specification to be seen at the office of the architect, G. E. Bond, 384, High Street, Rochester. Sealed tenders, endorsed "Tender for Painting," must reach J. E. Povey, clerk to the Guardians, union workhouse, Strood, not later than 10 a.m. on September 10.

September 10. AUDENSHAW. — Decorating chapel, and painting all outbuilding at the cemetery, for the Urban District Council. Specification can be seen with, and any information obtained from, Wm. Heathcote, cemetery lodge, Audenshaw. Tenders must be sent in by September 10, addressed to the chairman, cemetery committee, Cemetery Lodge, Audenshaw.

September 11. WHITBY.—Painting outside wood, stone and ironwork at the workhouse, for the guardians of the poor. The specification may be seen at the workhouse. Tenders to be sent not later than September 11, endorsed "Tenders for Painting," to Wm. Seaton Gray, clerk, 38, Flowergate, Whitby.

September 15. EXETER.—Painting, at the infirmary and offices, for the guardians of the poor. Specification and drawings may be seen and full particulars obtained at the office of the architect, R. M. Challice, 14, Bedford Circus, Exeter. Sealed and endorsed tenders must be sent at or before noon on September 15, to Arthur Snell, clerk to the guardians, New Buildings, Castle Street. (See also "Building.")

September 18. EASTBOURNE.—Painting, with three coats of best oil colour all the outside wood and iron work at the Princess Alice Memorial hospital, where previously painted, for the committee of management. Tenders to be sent on or before September 18, addressed to J. H. Campion Coles and H. H. Coles, hon. secs., Princess Alice hospital, Carew Road, and endorsed "Tender for Painting." Tenders must also state the time within which the work will be completed, such time not to exceed 28 days from the acceptance of tender.

ROADS AND CARTAGE.

September 14. SPENNYMOOR.—Making back Grainger Street and back Fenwick Street, South, for the Urban District Council. Plans, specifications, etc., may be seen and forms of tender obtained, on application to C. R. Spencer, surveyor to the council, Silver Street, Spennymoor. Tenders, endorsed "Back Grainger Street," and "Back Fenwick Street," respectively, to be sent not later than September 14, to F. Badcock, clerk to the council, council offices, Spennymoor.

September 14. BROADSTAIRS.—Steam rolling and scarifying required in connection with the repair of roads within the district for the ensuing twelve months, for the Urban District Council. Further particulars and form of tender may be obtained on application to Howard Hurd, C.E., town surveyor, Broadstairs. Sealed tenders, endorsed "Steam Rolling and Scarifying," must be delivered by noon on September 14, to Lionel A. Skinner, clerk to the Council, Council Offices, Broadstairs.

September 14. URMSTON.—Paving, flagging, draining, and other improvement works in Manor Avenue, and Windermere Road, and in certain side and back streets, all in Urmston, for the Urban District Council. Plans, sections, and specifications may be seen and quantities and forms of tender obtained from the surveyor to the council, James Heath, council offices, Urmston, on payment of £1 1s. Sealed tenders must be delivered, endorsed "Tender for Private Street Works," not later than 4 p.m. on September 14, to T. J. Rowland, clerk to the council, council offices, Urmston.

September 14. LEEDS.—Paving and flagging the following streets, for the Corporation:—Darfield Road (part), Darfield Avenue, Conway Place (part), Sandhurst Place (Part), Hawkins Place (part), Duxbury Street (part), Highbury Lane, Hope Place, Ingram Road (part), Tilbury Place. Drawings may be seen at the city engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained and copies of the documents forming the contract inspected on application at the highways office, 155, Kirkstall Road, Leeds. Sealed tenders, endorsed "Tender for Private Street Works," and addressed to the highways committee, must be delivered at the town clerk's office, town hall, Leeds, not later than 10 a.m. on September 14.

September 14. STREATHAM.—Making up and paving the following new streets, viz.:—(a) Thrale Road, Streatham. (b) Part of Crowborough Road, Streatham, between Chillerton Road, and Ramsdale Road. (c) Part of Ramsdale Road, Streatham, between Rectory Lane and Crowborough Road, for the Council of the Metropolitan borough of Wandsworth. Specifications and drawings may be seen, and forms of tender obtained at the borough engineer and surveyor's office, New Streets Department, 53, East Hill, Wandsworth, between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving —— Road," must be delivered to Henry George Hills, Town Clerk, Council House, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on September 14. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

September 15. CELLARDYKE.—Re-causewaying part of James Street, Cellardyke, for the Kilrenny town council. Specifications may be obtained on application to Guthrie and Maxwell, town clerks of Kilrenny, town clerk's office, Anstruther, with whom sealed tenders must be lodged not later than September 15.

September 17. GREENWICH.—Supplying a cargo of about 350 tons Channel Island or genuine Guernsey granite spalls for stone breaking, for the guardians of the union. Forms of tender can be obtained on application to Samuel Saw, clerk to the guardians, clerk's office, Woolwich Road, Greenwich, and must be returned on or before noon on September 17.

September 18. NEWTON ABBOT.—Making up the following roads: — Abbotsbury Road, Fisher Road, Chelston Road, Abbotsbury back roads, for the Urban District Council. Drawings and specifications may be seen and form of tender, together with schedule of quantities and other particulars, obtained from Coleridge D. White, surveyor, town hall, Newton Abbot, any day during office hours upon payment of a deposit of 10s. 6d., for each road. Sealed tenders, in the envelope provided, endorsed "Tender for Making up ————," must be delivered not later than 5 p.m. on September 18, to Francis Watts, clerk to the council, Courtenay Street, Newton Abbot.

September 21. BARNES.—Paving the carriageways of Church Road, High Street, and The Terrace, Barnes, and High Street, Mortlake, an area of about 15,500 sq. yds., with creosoted Swedish deal blocks laid on a concrete foundation, for the Urban District Council. Plans, sections, and specification can be seen and copies of the schedule and form of tender obtained on application to G. Bruce Tomes, Assoc.M.Inst.C.E., surveyor to the council, the council house, High Street, Mortlake, S.W., to whom tenders, sealed and endorsed "Tender for Wood Paving," must be sent not later than noon on September 21.

September 22. ITCHEN.—Execution of street works in a number of roads, for the Urban District Council. Plans, specification and conditions may be seen upon application to T. A. Collingwood, surveyor, council offices, Portsmouth Road, Woolston, Hants, from whom also bills of quantities and form of tender may be obtained on the deposit of £3 3s. Tenders, endorsed "Tender for Street Works," to be delivered on or before September 22, to W. Henry Bell, clerk to the council, clerk's office, Woolston.

September 23. CHISWICK.—Making up parts of Netheravon Road and paving footpaths in Grove Park Gardens, for the Urban District Council. Persons desirous of tendering may obtain forms of tender by application to E. Willis, A.M.I.C.E., surveyor, town hall, Chiswick, where the plans, specifications, forms of contract and bond, and other documents may be inspected between the hours of 9 a.m. and 1 p.m. Tenders, on the prescribed forms, to be delivered in sealed envelopes (endorsed "Tender for Private Street Works"), together with a schedule of prices, not later than 8 p.m. on September 23, to Ernest F. Collins, clerk of the council, town hall, Chiswick, W.

September 24. FORMBY.—Making up the undermentioned roads within the district with tar-macadam, for the Urban District Council:—Cropton Road, Formby Street, Willow Grove, York Road. Specifications, quantities, and forms of tender may be obtained from the surveyor to the council, A. W. Pattison, on receipt of 10s. 6d., Plans will be on view at the council offices, Formby. Tenders, endorsed "Private Street Works," to be delivered not later than noon on September 24, to Ernest H. Bond, clerk to the council, council offices, Formby.

SANITARY.

September 10. RADCLIFFE.—Construction of public conveniences and approach thereto at the Market Place, Radcliffe Bridge, for the Urban District Council. Drawings and specifications may be seen, and quantities obtained on application to the council's engineer, at the council's offices. Tenders endorsed "Public Conveniences," should be delivered not later than September 10, to S. Mills, clerk, council offices, Radcliffe.

September 15. BROMLEY.—Erection of a public convenience for ladies (above ground), comprising four closets and three urinettes, for the Corporation. Plans and specification may be seen at the borough engineer's office on payment of 10s. 6d., which will be returned if a bona fide tender is received, and not afterwards withdrawn. Tenders, endorsed "Public Convenience," must be delivered not later than 3 o'clock on September 15, to Fred H. Norman, town clerk, Bromley, Kent.

September 16. BILSTON.—Execution of sewering for the Urban District Council. Plans and specifications may be seen and bills of quantities and form of tender obtained on application to the engineer and surveyor. Tenders, with quantities attached, sealed and endorsed, to be delivered not later than noon on September 16, to J. P. Wakeford, Assoc.M.Inst.C.E., engineer and surveyor, town hall, Bilston

September 19. EASTBOURNE.—Erection of a public convenience, for the Corporation, the work to be commenced in October. Plans may be seen, and specification, general conditions and form of tender obtained at the borough surveyor's office. Tenders, endorsed "Redoubt Convenience," to be delivered not later than September 19, to A. Ernest Prescott, borough surveyor, town hall, Eastbourne.

September 19. STOCKTON-ON-TEES. — Erection of additional lavatory accommodation at the workhouse, for the guardians of the union. Forms of tender and full particulars can be obtained from John Rodham, 16, Finkle Street, Stockton-on-Tees. Sealed and endorsed tenders to be delivered not later than September 19, to Fred Byers Watson, clerk to the guardians, Nelson Terrace, Stockton-on-Tees. (See also "Iron and Steel.")

September 23. CHISWICK.—Construction of an underground convenience in Chiswick High Road, for the Urban District Council. Persons desirous of tendering may obtain forms of tender by application to E. Willis, A.M.I.C.E., surveyor, town hall, Chiswick, where plans, specifications, forms of contract, and bond, and other documents, may be inspected between the hours of 9 a.m. and 1 p.m. Tenders, on the prescribed form, in sealed envelopes (endorsed, "Tender for Underground Conveniences"), together with a schedule of prices, to be delivered not later than 8 p.m. on September 23, to Ernest F. Collins, clerk of the council, town hall, Chiswick, W.

September 28. PRESTWICH.—Work and materials required in the construction of sewage inlet channels, detritus chambers, sprinkler filter beds, and storm bed, etc., for the Urban District Council. Detail drawings, specification, and instructions by the engineer, Sydney H. Morgan, A.M.Inst.C.E. Drawings may be seen and copies of the specification, bill of quantities, and general conditions of contract obtained at the office of Sydney H. Morgan, A.M.Inst.C.E., council offices, Prestwich, Lancashire, between 10 a.m. and noon, and from 2 p.m. to 4 p.m. each day, except Saturdays and Sundays, upon payment of two guineas. The successful contractor will be required to enter into a bond, with approved sureties, for the due performance of his contract. Tenders, endorsed "Tender for Sewage Works Extensions, Contract No. 2," must be sent not later than noon on September 28, to Lewis A. Orford, law clerk to the council, council offices, Prestwich.

MISCELLANEOUS.

September 10. GOSPORT.—Supplying of the following materials, etc., for the year ending September 29, 1909, for the U.D.C.: — Broken stone, for macadamising; kerb, channel, and setts; artificial paving stone; stoneware drain pipes; cement and lime; castings; ironmongery; disinfectants; brooms, etc., forage; repairs to picks, etc.; repairs to harness, etc.; shoeing horses, etc.; printing; coal and coke; hospital necessaries; repairs to firemen's boots; stable requisites. Specifications and forms of tender may be obtained from the surveyor to the council, H. Frost, town hall, Gosport. Tenders, sealed and endorsed "Tender for ————," as the case may be, should be delivered with any necessary samples at the offices of the council, not later than noon on September 10. Fair wages clause.

September 11. LEEDS.—Supplying, lettering, and fixing gravestones, at the Leeds, Holbeck, Hunslet and Harehills Cemeteries, for the Corporation. Forms of tender and all particulars may be obtained, and copies of the documents may be inspected, on payment of a deposit of one guinea, at the office of W. T. Lancashire, city engineer. Tenders, properly endorsed, should be received at the town clerk's office not later than 10 a.m. on September 11.

September 11. DUBLIN.—Building, plumbing, heating, and electric lighting works at the State Apartments, Dublin Castle, for the board of public works. Plans and specifications can be seen at the office of the secretary, and of the overseer of works, Dublin Castle. Forms of tender will be supplied on application to H. Williams, secretary, office of public works, Dublin. Envelopes containing the tenders and the detailed estimates must be endorsed "Tender for Building, Plumbing, Heating, or Electric Lighting Works, Dublin Castle," as the case may be. Tenders will be received not later than 10 a.m. on September 11.

September 15. TAUNTON.—Supplying, 1, Portland cement and lime; 2, stoneware pipes, etc.; 3, manhole covers and frames; 4, bricks; 5, petroleum and oils; 6, disinfectant; 7, blue lias paving curb and channel; 8, general stores and ironmongery, etc., etc., for the term of one year, commencing on October 1, 1908, for the council. Particulars and forms of tender, together with any other information, may be obtained upon application to David Edwards, A.M.Inst.C.E., borough engineer and surveyor, municipal buildings, Taunton. Sealed tenders, endorsed "Tender for Requirements," to be addressed to the town clerk, Municipal Buildings, not later than September 15.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxvi.

REFINED Detail, architect's assistant, fully qualified, 10 years' experience, best work—school, municipal, domestic work. Give part time evenings to competition work; specimens; highest references.—Apply Classic, Box 4533, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant (7 years), thoroughly qualified in ferro-concrete work, London and Paris experience, requires permanency at home or abroad.—Apply Box No. 4562, BUILDERS' JOURNAL Office.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECTURAL draughtsman and general assistant requires engagement; age 30; 14 years' experience in ecclesiastical and domestic work; salary according to position offered.—Fimo, 171, Seaview Road, Liscard, Cheshire. 4530

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT (age 29), desires post as traveller calling on architects, builders, etc. (north preferred).—Address Box 4497, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying: prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4498

ARCHITECT'S Assistant requires situation immediately; 7 years' varied experience; capable draughtsman, tracer, colourist, perspectives, details, specifications; assist quantities, supervision. Take charge; good education; 25th year; 35s. weekly.—Box 4522, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ASSISTANT A.R.I.B.A. (29), thirteen years' London Provincial experience; testimonials, references, working drawings, details, specifications, supervision perspectives, office work; well up in management; salary 2 guineas.—Apply A., 31, Cotswold Road, Westcliff-on-Sea, Essex. 4512

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant, experienced in working drawings, details, surveys, etc.; first-class references; specimens of work; orders taken for water colours, perspectives, deed plans for conveyancing, drawings, designs, etc.—Aubrey Pritchard, Bryndenden, Rhyl, N.W. 4549

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references.—Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

CARPENTER and joiner, 32, wide experience, all branches of building, take charge; good references; very energetic; good manager and timekeeper.—Pearson, 53, Hartham Road, Isleworth, W. 4552

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

CONTRACTS.—Estimator, measurer, etc. (London and country experience), requires position. Successful in tendering. Can guarantee brisk business. Make most of measured accounts, and practically and efficiently help with management. Country preferred. Small salary. — Estimator, Durston House, The Grove, Deal. 4564

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

FOREMAN, decorator good colourman, grainer and paperhanger; able to estimate; thoroughly experienced in management of men, for general jobbing work; age 42; wages £2 per week.—Box 4524, BUILDERS' JOURNAL Office.

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GOOD shopfitter and case-maker requires constant job; abstainer; refs. if required. Indoor hand. — Box 4388, BUILDERS' JOURNAL Office.

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

IMPROVER or junior assistant (23), varied experience, neat draughtsman, surveying, assist with quantities; excellent references; small salary return for first-class experience. — Apply Box 4559, BUILDERS' JOURNAL Office.

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good references.—H. Cruse, Boxford, Newbury, Berks. 4537

MACHINIST seeks permanency; work spindle, planer, tenoner, morticer, dovetailer, sharpen saws, make cutters, take charge of small plant; country job preferred. — Machinist, 39, Cathnor Road, Shepherd's Bush, W. 4504

PAPERHANGER, practical, wants piecework; builders' flats, hotels, and clubs.—S. Jamer, 48, Carlisle Street, N.W. 4539

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

QUANTITY surveyor and draughtsman requires engagement; 15 years' experience; taking-off, etc., working drawings, specifications, supervision, passed final examination, Quantity Surveyors' Association; provinces preferred; low salary.—Box 4544, BUILDERS' JOURNAL Office.

WRITER, grainer, paperhanger, and painter. Builders' painting taken (piecework if desired). Any distance. Reliable and energetic. Estimates. Life experience. Moderate.—H. Rivers, Evesham Road, Reigate. 4563

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ARCHITECT'S pupil, vacancy in busy West-end architect's office; small premium required but must be fond of drawing.—Stanley-Barrett and Driver, 23, York Place, Baker Street, W. 4521

WANTED, for a permanency in the office of an old-established firm of surveyors in the city, a youth of good appearance and education, with previous office experience, who can write a good hand, quick and accurate.—Apply, in own handwriting, with copies of testimonials, stating salary asked, to Box 4457, BUILDERS' JOURNAL Office.

Patent Licences.

TO BRASS FOUNDERS AND COCK MANUFACTURERS.

The Proprietor of Letters Patent No. 13043 of 1903 for "Improvements in Valves and Taps," is desirous of entering into negotiations with firms in Great Britain for the granting of licenses on reasonable terms. Particulars will be furnished on application by Mewburn Ellis and Pryor, 70 and 72, Chancery Lane, W.C. 4527

PATENT.—The proprietor of patent No. 3338, dated 10th February, 1904, relating to improved ceiling and flooring, desires to enter into arrangements, by way of license or otherwise, on reasonable terms, for the purpose of developing and practically working the same in this country. Enquiries should be addressed to W. P. Thompson and Co., Chartered Patent Agents, 322, High Holborn, London, W.C. 4558

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WANTED, a jobbing builder's business in London suburbs preferred. Apply, stating all particulars, to Box 4415, BUILDERS' JOURNAL Office.

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AN Architect and Surveyor practising in Essex is anxious to collaborate or enter into partnership with another architect practising within easy distance of Chelmsford. — Apply "Essex," Box 4508, BUILDERS' JOURNAL Office.

YOUNG architect, with small capital, seeks position in good office, with view to partnership. Capable all-round man. Excellent references.—Box 4547, BUILDERS' JOURNAL Office.

Dissolution of Partnership.

MR. A. E. TUTTE, architect and surveyor, having dissolved partnership with Mr. Cook (Cook and Tutte) and closed the offices at 394, Commercial Road, Portsmouth, has opened offices at 91, London Road, Portsmouth. 4496

September 16, 1908. Volume 28, No. 710

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Our New Departure.

This week we publish official reports of the transactions of various associations connected with the National Federation of Building Trades Employers of Great Britain and Ireland. In arranging with the Federation to present a monthly record of the movements in which this growingly-powerful and influential organisation is chiefly concerned, we believe that we are increasing considerably the use and interest of this journal, by placing our readers and ourselves in the forefront of an important movement. In order to realise its title at all adequately—and, in fact, in order to justify its existence—the "Builders' Journal" must strive to represent as completely as possible all the interests involved in the great industry of building. There are two ways in which this may be done. It may be done casually and heterogeneously, or methodically. The latter way seems to us to be the more correct and by far the more effectual. For some time past, we have issued, in regular succession, a section on fire prevention, another on concrete and steel construction, and a third dealing specially with the interests of contractors. To the last-named of these three eminently successful sections, we are now making, by the publication of these official reports, what we conceive to be a valuable addition; for we feel that we are entitled to claim that now, for the first time, by the inclusion of this feature, the interests of builders of all denominations are represented with a fulness never previously attempted by any trade journal. We believe that by concentrating attention first on one section and then on another, as we are doing, we secure an intensiveness and a thoroughness of treatment that would not be possible if the same information were presented in the ordinary scrappy and scattered way. But we wish it to be quite clearly understood that in making this further important addition to the business side of building, we have not the smallest intention of abating one jot or tittle of our interest in architecture pure and simple. The reason why we have no special section for that supremely important subject should be perfectly obvious. Architecture pervades the paper in every issue, in every section, and in almost every item; the architect is after all the real master builder, without whose art and skill and influence building would become a thing of naught. Him, therefore, we shall continue to serve as fully and as faithfully as heretofore, and we believe that our new departure will be recognised and appreciated by the architect as a substantial acknowledgment of the comprehensiveness of his outlook. At all events, it is offered as an addition to, and by no means in substitution for, the features that have secured for this journal the high estimation in which it is held by the profession.

Blaspheming Buildings.

The rather desultory newspaper correspondence on the "disfigurement of the country," by the existence of unlovely buildings, has drawn from Mr. Thackeray Turner the suggestion—not his own, as he acknowledges—that the ugliness of many modern buildings would have been avoided if only suitable building materials had been used, and that it is the materials and not the designs, which we should aim at influencing. He contends that some modern buildings "swear at you as you pass." Of course Mr. Thackeray Turner is too polite to return the compliment, with interest. A remedy suggested by another correspondent is that local societies should be formed, who would study the subject and make a list of suitable and unsuitable materials for their district, and circulate the list, in the form of leaflets, to architects and builders. This suggestion strikes us as being almost pathetic in its Arcadian simplicity. It discounts the stubborn practical-mindedness of most architects and builders. It strikes us, therefore, that these local societies must remain comparatively ineffectual until they had succeeded in abolishing the railways and other means of transit by which the obnoxious materials are brought in from outlandish parts. This reform would greatly curtail the opportunities of the "numberless people who," Mr. Turner informs us, "spend their leisure time in travelling about the country and enjoying its beauty, but also grieving over its disfigurement." It would be cruel to rob them of a grievance that we are convinced is as dear to them as are the beauties of the country; and it is extremely doubtful, after all, whether, in the net result, there would be any really substantial reduction in the total volume of blasphemy addressed either from or towards buildings of dubious congruity.

Anarchy in Architecture.

The lay press does not, as a rule, contribute to the discussion of architecture much that is really luminous. It is, therefore, the more gratifying to find in last Wednesday's "Times" a leading article that certainly stands outside the stupendous category of ignorant essays in criticism. It deals trenchantly with what, in its title, is called "The New Architecture of London," and one can forgive the rather dogmatic and ex-cathedra tone of a writer whose obvious mastery of principles entitles him to form and to express rather positive opinions: to which, of course, he will not expect everybody to yield unequivocal assent. Few will find fault with his main propositions—that thirty years ago there was hardly a sign of the new movement; that the ambition to be "scholarly" made for imitation rather than for originality; that the new desire for beauty is producing a profusion of ornament and rash experiments in style; and that, as old principles no longer apply and new ones have not yet been established, our architecture is at present in a state of anarchy. But this rather dogmatic dictum is not likely to pass unchallenged: "The tone of architecture is to express the uses of a building in terms of beauty; and an original architecture is likely to arise only when the architect cannot get away from this problem, when use dictates his design and his employers will not be content with it unless he makes it beautiful." Probably the writer is substantially correct in his statement of the problem; and his insinuation that the architect is apt to evade it unless his client insists on a true solution strikes one as being rather too severe on the architect, and somewhat too flattering to the client. It seems to reverse their positions. The client who has sufficient enlightenment to insist on having his building beautiful must always depend on the taste and ability of the architect for the achievement of that most desirable result. A public whose æsthetic taste is in advance of that of its specially-trained intelligences is simply impossible. But if the writer merely means—as we assume that he does mean—that the architect is strongly influenced, for good or ill, by the general standard of culture and refinement, then, of course, his statement is a mere truism, somewhat obscurely expressed. But the article, as a whole, is excellent and suggestive reading, and the architect will, in particular, rejoice in its general tendency towards cheery hopefulness—a seductive

quality that, though we have barely succeeded in indicating it in this brief summary, certainly pervades the article.

Cheap Cottages and Cheaper Criticism.

One of the most valuable results of a cottage exhibition is the criticism it challenges. In this respect, at all events, the exhibition at Walker Gate, Newcastle, has been uncommonly successful; the hardy northerners being strong and tenacious of their opinions, and being by no means backward in expressing them with characteristic vigour and bluntness, Mr. Henry R. Aldridge, organising secretary of the exhibition, has been constrained to reply to what he calls the "acute controversy" that has followed in letters appearing in the Newcastle press, and on speeches delivered at the recent meeting of the Newcastle and Gateshead Trades Council. He brushes aside as frivolous a charge of "jerry building" that appears to have been based on the smallness of some of the rooms, and on the adoption of cavity walls, and he points out, rather instructively, that Newcastle and Carlisle stand almost if not entirely alone amongst English cities in the retention of the old by-law stipulating that 14in. solid walls shall be built. His impatience at the free-and-easy use of the expression "jerry-building" is not only amply justified in the present case, but may safely be extended to the majority of instances in which it is used. It has been used so wantonly and ignorantly as a cheap sneer that it has lost all significance, except as an indication of malice and incompetence on the part of the user. The smallness of the rooms of the Walker Gate cottages is the only complaint about them that, says Mr. Aldridge, is "fairly general." It may, therefore, be inferred to be generally fair. There is, as he acknowledges, a strong preference for large rooms. It is a wholesome asperation; but the difficulty is to give effect to it in cottages that are destined to be let at from 6s. 6d. to 8s. 9d. a week. Mr. Aldridge is, therefore, fain to confess that, in spite of the Walker Gate exhibition, "the problem of housing the poorest workman still remains unsolved." It is easier to diagnose the disease than to supply the remedy.



BRUGES FROM THE QUAI VERT.

FROM A WATER COLOUR SKETCH BY EDWARD HASTIE.

This is one of the most picturesque of the views for which the old Flemish City is famous. The old stone bridge—one of the many which give the name to the town—is quiet and silent now, but over its cobbled road have passed many generations of Burghers in the bustling times when Bruges was one of the marts of the world. In the distance—the old Belfry "thrice rebuilded" still "watches o'er the town."

Garden Cities Galore.

Garden Cities for the middle classes, on the Nuns' Moor and on the Fenham Estate, near Newcastle, are being built, a northern newspaper correspondent points out, "not by a wise manufacturer for his workpeople, nor by a reform association for experiment, but by ordinary builders to make money." Such enlightened enterprise near Newcastle seems extraordinary to this correspondent; but surely it is common enough elsewhere. In the south, at all events, garden cities (a curiously inept expression, by the way) created by private enterprise have come into existence in every suburb, without exciting our special wonder; but we are not quite sure whether they have yet been discovered by the enterprising newspaper correspondents who would probably be amazed to find that the much-abused speculative builder has created many a leafy and lawny residential estate that would put Letchworth to the blush.

Labelling Buildings.

It has been once more suggested—this time by that devoted lover of London, Mr. J. Ashby Sterry—that our interesting buildings ought to be labelled. Mr. Sterry, like the rest of us, has been of late frequently asked by visitors (of whom hundreds of thousands have been attracted to London by the Franco-Exhibition) to disclose the identity of the buildings that naturally excite the curiosity of the sightseers from abroad, or from the provinces, who, indeed, can hardly be more ignorant in such matters than the average Londoner. It is not every building that bears its character in its face, so to speak, as unmistakably as did the Old Bailey. This grim old structure, with its frowning walls and its ostentatious display of heavy iron fetters over one of the doorways, revealed its character clearly enough, but still left the stranger in some doubt as to its name. Hence we overheard an American lady remark as she gazed at it, "Waal, I guess this is the town jail; but why don't they put its name up?" Mr. Sterry thinks that every public building should be inscribed with its function, the date of its erection, and the name of its architect. There can be no doubt as to the convenience of such a provision; but we must own to serious misgivings as to the concrete interpretation of the idea. A regulation uniform label and a prescribed position for it would not be equally suitable for all buildings. Some it might adorn, others it would disfigure. And if the form and position were left to individual discretion, we should certainly get some startling effects. Superscriptions as are already in existence on London buildings make us yearn rather for the extinction than for the extension of a practice that lends itself easily to barbarous effects.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Oct. 7	BOAT SHELTER, INVERNESS. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct. 31	*COUNTY HIGH SCHOOL FOR GIRLS, ROMFORD.—Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	COUNTY HALL AND OFFICES, CARDIFF. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.

** This competition has been unfavourably reported upon by a Correspondent.*

Bury New Secondary School—We are informed by Mr. Robert Wilkinson, the Director of Education:—"That the number of application for copies of conditions and instruction, etc., has been so great that we have been compelled to require a deposit for one guinea for plans of the site, which sum will be returned on the submission of a bona-fide set of plans." Will intending applicants kindly note?

The new Grammar School for Malton.—Mr. Paul Waterhouse, M.A., F.R.I.B.A., of London, the assessor appointed by the North Riding County Council to select plans for the erection of a new grammar school for Malton and district, has given his decision. Four architects entered the competition, and Mr. Waterhouse recommended plans prepared by Mr. W. H. Brierley, of York, for approval. Messrs. Bottomley, Son and Welburn, of Middlesbrough, were second, and will receive £10. Messrs. Clarke Moscrop, and Feetham, of Darlington, were third, and Mr. C. H. Channon, of Malton, was fourth.

HOUSES AT NORTH FINCHLEY.

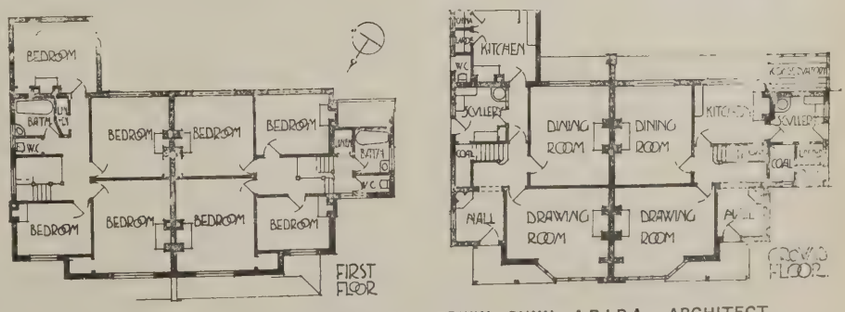
These houses are on the south side of Torrington Park. In the external design an attempt was made to give breadth, by the continuous treatment of the long roof covering bays and porches; but this arrangement, owing to the usual absurd requirements of the local bylaws in regard to parapets, was only partially successful. The double-gable form of the main roof was adopted with the object of minimising the prominence of the party wall parapet. The facing bricks used are red sand-faced, flare-burnt bricks (from Pigott, of Edmonton), with considerable variation in colour, and set with a wide mortar joint. The roofs are covered with unsorted "Sovereign" Broseley tiles, of all shades, from brindle to bright red, giving a mottled effect hardly sufficiently shown by the photograph. The front gables are rendered in cement with a floated face, and distempered. The detail is everywhere of the simplest. Internally, the newels and handrail of stairs are of oak, with square deal balusters painted white. The best door furniture is of hammered bronze, by Mr. J. Gibbons. The dining-room and drawing-room fireplaces of one house have "Bond" stoves, and a Medmenham tile surround was used in the drawing-room, where the ceiling has modelled plaster pateræ by Messrs. G. and A. Brown. All the walls are distempered with Hall's washable distemper. The contractor was Mr. W. A. Marriott, of North Finchley, and the architect Mr. Edwin Gunn, A.R.I.B.A.



Front Elevation.



View from the Garden.



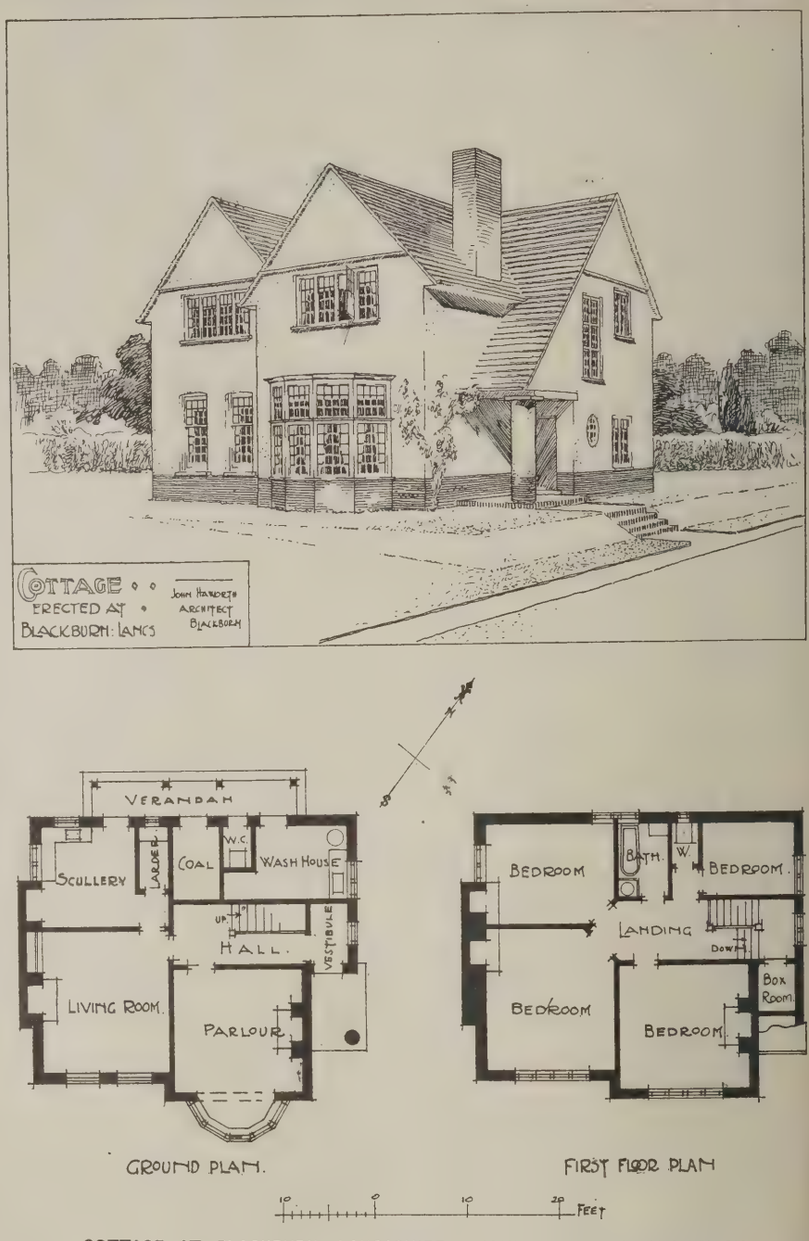
TWO HOUSES AT NORTH FINCHLEY, EDWIN GUNN, A.R.I.B.A., ARCHITECT.

THE ARCHITECTURAL PROFESSION OF TO-DAY.—I.

In a recent issue of this journal we had occasion to draw attention, in general terms, to the present congested state of the architectural profession and to the appalling dearth of work among its members. We now propose to discuss in detail, from week to week, until the subject has been exhausted, the many obstacles to the advancement of his art and to his own welfare which beset the architectural practitioner of to-day. With the object of obtaining suggestions for the possible remedy of, at least, some of the grievances to which, in due course, reference will be made in these columns, we cordially invite the hearty co-operation and assistance of those of our readers who may be willing to help by supplying us with notes or comments on any points that may arise during our review of a subject which is, necessarily, one of paramount interest to all architects. Contributions, embodying suitable comments or suggestions relative to the questions under discussion, which may thus find their way to the editorial office, will be much appreciated and carefully considered. There is no doubt that the protracted period of commercial depression now being experienced in this country is slowly but surely causing many architects to realise the full significance of the unfortunate fact that, to a very considerable proportion of its members, the architectural profession, at its best rarely a lucrative one, is ceasing to afford the means of obtaining a modest livelihood. Public buildings of an architectural character, which formerly, as a matter of course, were designed by qualified architects, are now, more often than not, entrusted to public officials variously described as county or borough "architects," "engineers," and "surveyors." But whatever his designation, the designer's lack of systematic training and artistic ability is usually clearly perceptible in buildings erected under "official" auspices.

Whether this modern tendency to so often place important work in the hands of (as artists) incompetent officials is due, as many architects believe, to the sublime ignorance and indifference of the general public concerning the art of architecture, or whether, on the other hand, as some official "architects" assert, it arises because the artistic quality of the designs produced under the system of salaried employment is very often as good as that usually obtained through the medium of an independent architect can be, for the moment, disregarded. For whatever may be the cause, the broad fact remains that a very considerable proportion of the architectural work in London and the large provincial cities and towns, has been allowed to drift beyond the control of those who have devoted the best years of their life to the serious study of architecture. Again, the want of taste and lack of artistic discrimination characteristic of our nation is shown by the very general commendation of the huge edifices, designed in a style typical of bedizened vulgarity and usually entirely free from any suspicion of refinement or restraint, such as those with which, amongst others, firms of building speculators and furniture makers aided by a staff of architectural draughtsmen, are accustomed to attract an admiring public. But, strange to say, despite the immense amount of work thus regularly filched from the properly trained and experienced architect, the ranks of an already seriously over-crowded calling, are being constantly augmented by the steady influx of a large number of, in many cases, imperfectly educated and otherwise undesirable youths fresh from the so-called "Architectural Schools" or the builders' yard. Now the sole possibility of earning more than a bare living in architecture that will be open to many of these recruits lies in the adoption of methods of obtaining work which, we hope and believe, are very properly despised and ignored by the average practitioner. We allude to the system of directly advertising for work, touting for commissions, and working for less than the authorised scale of charges.

Probably no self-respecting architect will admit that men guilty of these malpractices, and acts of disloyalty to the general body, have any right to be regarded as members of his profession, but as, unfortunately, a certain section of the public thinks otherwise, and is therefore often quite content, and indeed eager, to secure the services of these tradesmen-architects, it is useless to attempt to ignore, or regard as though they were non-existent, some of the greatest hindrances to the success of the well-qualified and honourable practitioners of the day. Over and over again, attention has been drawn to the almost criminal folly of those parents and guardians who, probably attracted by the allurement of that egregious *deceptio visus*,—five per cent.,—persist in encouraging their sons and wards to become members of a profession in which, probably to a far greater extent than in any other calling, qualifications of a very diverse and manifold nature are essential to the attainment of even an ordinary amount of success.



COTTAGE AT BLACKBURN, LANCASHIRE. JOHN HAWORTH, ARCHITECT.

The materials used are roughcasted walls with red brick base, the mortar joints wide. The roof is covered with Cumberland green slates and the woodwork is painted green.

We unhesitatingly recommend all such fatuous advisers of the young aspirants to the architectural profession, to "read, mark, learn, and inwardly digest" the object lesson offered by the irrefutable evidence of the general poverty which is to be found among members of the artistic fraternity. If the "blind leaders of the blind," whose conduct we are attacking, will take the trouble to consult the returns of all the persons now in receipt of Civil List pensions, their views as to the emoluments open to the votaries of art, literature, and science may be considerably modified. In a list of this nature, issued quite recently, will be found the names of the widows or daughters of many men, eminent in their day, whose dependants are now in receipt of small pensions "in consideration of their destitute condition," or "their inadequate means of support," and further striking examples of the penury too often associated with an artistic profession are to be found in the records of the Architects' Benevolent Society.

But inasmuch as the note of warning, although often raised, has hitherto been regarded as the voice of one crying in the wilderness, it has surely now become the bounden duty of all practising architects to give effect to that proclivity for self-preservation, which underlies all creature existence, by doing their best to formulate a practical working arrangement under which the inrush of undesirable embryonic architects may be effectively checked.

Should not some reasonable limit be placed upon the number of students who propose to become members of the profession through the instrumentality of the schools of architecture which have been either more or less recently instituted, or are now in course of formation throughout the country? Could not the absurdly low standard of general knowledge at present required for the entrance examinations to many of these "seats of (architectural) light and learning" be raised to the permanent advantage of the profession and possibly, who knows, to the welfare of rejected candidates themselves?

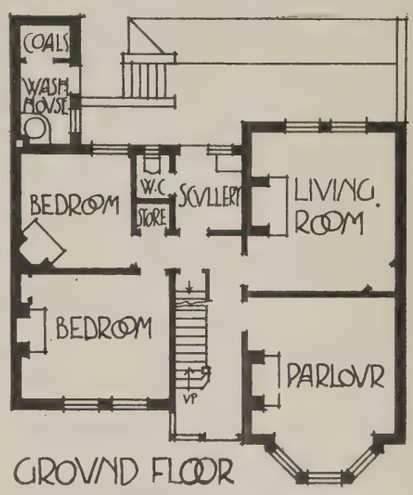
Again, it is not little less than scandalous that members of the profession who have neither any work passing through their hands, nor any tangible prospect of obtaining employment in the near future, should nevertheless be permitted to entice an unlimited number of premium bearing pupils into their work-denuded offices?

The adoption of some protective measure, whereby the professional status of architects would be ensured, and their prospects of obtaining a livelihood rendered less uncertain, ought not to present insuperable difficulties to men who, otherwise, may soon find themselves engaged in a dire struggle for their very existence. But to ensure the success of any attempt to strengthen the position of architects by means of combination and consolidation, members of the profession must, perforce, set aside their internal jealousies, dissensions, and divergent views. No measure of reform can be carried unless *whole-hearted* and *loyal* support be accorded to a policy based upon the fundamentally sound principle of securing, as far as possible, the welfare of the greatest number of those whom it is intended to benefit.

The difficulty of coping with the dangers which surround the architectural profession is increased by the fact that obstacles to progress and reform lurk both within and without the fold. Within, in consequence of the weakness and vacillation of architects themselves (of which we have hitherto heard so little) and without, through the ignorance and apathy of the public (of which we have heard so much). Evidence of the internal weakness of the profession is easily produced; for, most assuredly, any other body of professional men, having due regard to its own interests, would *long* ago have succeeded in closing its ranks to all but the properly educated and trained practitioner—would have limited, as is the case in legal fraternity, the number of articled pupils allowed to each member of the profession—would have seen to it that architectural appointments to county, city, or borough councils, were made only from among men possessing the requisite artistic qualifications, and, further, would have *insisted* that the holders of these appointments should be compelled, as a condition of service, to limit their architectural output to such buildings as naturally fall within the sphere of their official duties.

It may well be that the effect of the troublous time through which the architectural profession is now passing will serve to bring home to a large number of its erstwhile somewhat apathetic members, the absolute necessity of adopting and that soon, some means of strengthening and controlling the profession, (1) to enable its membership to be kept within reasonable limits, (2) to prevent the disgraceful practice of "underselling" followed by certain architects, and to ensure, in the future, the retention, by the architectural profession of work which at present is allowed to be diverted into the hands of building surveyors, engineers, and tradesmen.

(To be continued.)





HOUSE AT MILL HILL. EDWIN GUNN, A.R.I.B.A., ARCHITECT.

This house was built in 1905 to meet rather peculiar requirements. The first floor plan is generally similar to the ground floor, save that a bath room, w.c. and linen closet are above the scullery. The roofs are covered with Collier's sand-faced tiles, which have now weathered beautifully. There are extensive cellars under the whole house.

Proposed New Works.

The Local Government Board have decided to hold, or have recently held, as indicated by the appended dates, inquiries into proposed expenditure by public bodies as follows: — Water-supply works and plant: Margam U.D.C., £4,040 (September 17); Porthcawl U.D.C., £2,500 (September 16). Electricity works and plant: Holyhead U.D.C., no amount stated (September 16); Bury B.C., £72,000, including the provision of a new generating station at Chamber-hall (September 16); Stoke-upon-Trent Corporation, £15,365, including the extension of the supply to Fenton (September 15). Gas undertakings and plant: Huthwaite U.D.C., £250 (September 16); Glyncorrwg U.D.C., £1,300 (September 17). Sewerage, drainage, and sewage disposal works and plants: Malden and Coombe U.D.C., £800 (September 15); Luton R.D.C., £4,000, and £1,800 for Houghton Regis and Dunstable (September 22). Street improvements, new roads, public walks, and pleasure grounds: Fleetwood U.D.C., £1,360 (September 22); Crewe B.C., £296 (September 16); Chorley B.C., £3,772 (September 23); Hoylake and West Kirby, £668 (September 24); Nottingham City Council, £22,000 (September 17). Various: Gloucester City Council, for equipment, etc., of farms, £3,800, £5,000, £1,000, £2,200, and £2,400 (September 17); Penybont R.D.C., for urinals and store, £120 and £153 (September 18); Lancaster Borough Council, £650 for public lavatories and £7,065 for new town-hall site (September 15); Beeston U.D.C., £100 for public urinal (September 15); Wandsworth housing scheme (September 14).

Belfast.—The Corporation have decided to construct an open-air swimming pond in the Alexandra Park.

Birmingham.—The Erdington District Council has purchased from the Birmingham Corporation the George Road Reservoir and 33 acres of land, to be laid out as a recreation ground. A new village at Bordesley has been commenced by the Ideal Benefit Society erecting workmen's dwellings.

Bishop's Stortford.—Plans have been pased by the Urban Council for additional class-rooms at the College in Maize Green Road, and for a house in Thornfields Road for Mr. R. H. Carnell.

Bradford.—Two sewage proposals that have been under consideration by the Sewage Committee of the Bradford City Council both refer to the construction of an aqueduct to convey sewage across the valley of the Aire to the precipitation tanks on the far side of the Esholt estate. The estimated expense respectively is £75,000 and £45,000. On the ground mainly of economy (although the more costly scheme was favoured by the waterworks engineer, and had been submitted for the approval of the Local Government Board), the less expensive scheme has been adopted for recommendation to the full council. The plan now proposed embodies a steel trough upon earthen embankments, with masonry viaducts across the canal and the river, in contradistinction to an all-masonry aqueduct.

Bradford.—New Sunday-schools in connection with the Muff Field Chapel have been erected here, at a cost of £4,800, of which £2,662 has already been raised.

Bridlington.—The Board of Education have held a formal inquiry and inspected two sites suggested for a new elementary school in the Old Town.

Bromsgrove.—The Worcestershire Education Committee are about to build a secondary school at a cost of £4,000, to accommodate 150 children.

Buckhaven, Fifeshire.—A new hospital is to be erected by Lady Eva Wemyss in memory of the late Mr. Randolph Wemyss, late Provost of Buckhaven.

Burslem.—The Town Council are considering the purchase of a site in Moorland Road for a new central school for elementary and other education.

Cardiff.—The Board of Guardians are about to borrow £2,068 for alterations to the Workhouse laundry, and £850 for extensions to the hospital at the headquarters' homes.

Chingford.—The R.D.C. have passed plans for the following:—Two houses in Westward Road, for Mr. A. E. Cole; two houses in Pretoria Road, for Mr. W. Jaggard; ten houses in Royston Avenue, for Mr. T. West; one house in Connaught Avenue, for Mr. H. Marshall; 14 houses in Beresford Road, for Messrs. T. and W. Baker; alterations to existing buildings, 118, Station Road, for Mr. T. R. Bishop; alterations to existing building, the Avenue Cafe, Station Road, for Messrs. Martin Bros.; additions to the Wesleyan Church for the trustees.

Eastbourne.—The Buildings Committee of the Town Council have passed plans for the following buildings:—W. Llewellyn (R. W. Hamblyn, architect, Wm. Llewellyn, builder), pair houses, Langney Road; L. P. Newman, pair houses, Milton Road; C. C. Cottrill (F. G. Cooke, architect), detached house, Baslow Road; The Guardians of the Poor (F. G. Cooke, architect), addition, Avenue House; Leach (G. Bainbridge and Son, builders), shop front, 1, Gildridge Road; W. S. Routledge (A. A. Oakden, architect, Peerless Dennis and Co., builders), addition, Nevill House, St. Anne's Road; House; Leach (G. Bainbridge and Son, builders), addition, Stavely Cross, Stavely Road; E. H. Myddleton-Gavey (P. D. Stonham, architect, M. Martin and Sons, builders), detached house, Darley Road; Devonshire Park Co. (J. W. Woolnough, architect, T. Dunlop, builder), additional lavatory accommodation, Devonshire Park; B. Moss (W. Rawlings, builder), addition to Gymnasium, York Road; Eastbourne Steam Sanitary Laundry (Mitchell and Ford, architects, M. Martin and Sons, builders), addition to Laundry, Carlton and Latimer Roads; W. H. Speed (Mitchell and Ford, architects, M. Hookham, builder), addition, 7, Gildridge Road; Rev. W. N. Willis (F. G. Cooke, architect), alterations to St. Vincent's, Meads Road.

Evesham.—The plans of Messrs. Buckland and Farmer, Birmingham, have been adopted by the Worcestershire Education Committee for the erection of a secondary school here at an estimated cost of £8,653.

Hanley Castle.—The Worcestershire Education Committee are contributing £2,000 for the enlargement of the Grammar School.

Hunslet Moor.—A new public elementary school is to be built at an estimated cost of £15,419.

King's Norton.—The Worcestershire Education Committee are about to erect a school here, from plans prepared by Messrs. Pritchard, at an estimated cost of £14,350.

Lye.—A new school is to be erected here by the Worcestershire Education Committee.

Malton.—The plans of Mr. Walter H. Brierley, F.R.I.B.A., F.S.A., have been placed first in the competition for the new Grammar School, and recommended by the assessor to the North Riding County Council for acceptance. It is anticipated that the work of erection will soon be commenced.

Malvern Link.—The Worcestershire Education Committee are about to erect a new school here.

Manchester.—A new church house is to be erected, for which purpose a limited company, with a capital of £50,000, is being formed to provide the necessary funds. Mr. John Brooke, A.R.I.B.A., is preparing plans for the new building, which is to comprise suitable rooms for the Bishop of the Diocese, for the purpose of interviews, etc.; a large council room, with committee rooms; a large hall on the ground floor capable of seating 1,000 persons; adequate accommodation for the different diocesan organisations; and, if sufficient support is forthcoming, the provision of a church club, and a similar one for ladies, both to be fitted up on the most modern lines. Portions of the building that are not required will be let out for commercial purposes.

Newquay.—St. Michael's Church, a chapel-of-ease to St. Columb Minor, though holding 500 people, is inadequate for the needs of this growing seaside resort. A site for a new church has been bought for £545, and plans are being prepared for a new church to seat 1,000 people, and to cost about £10,000.

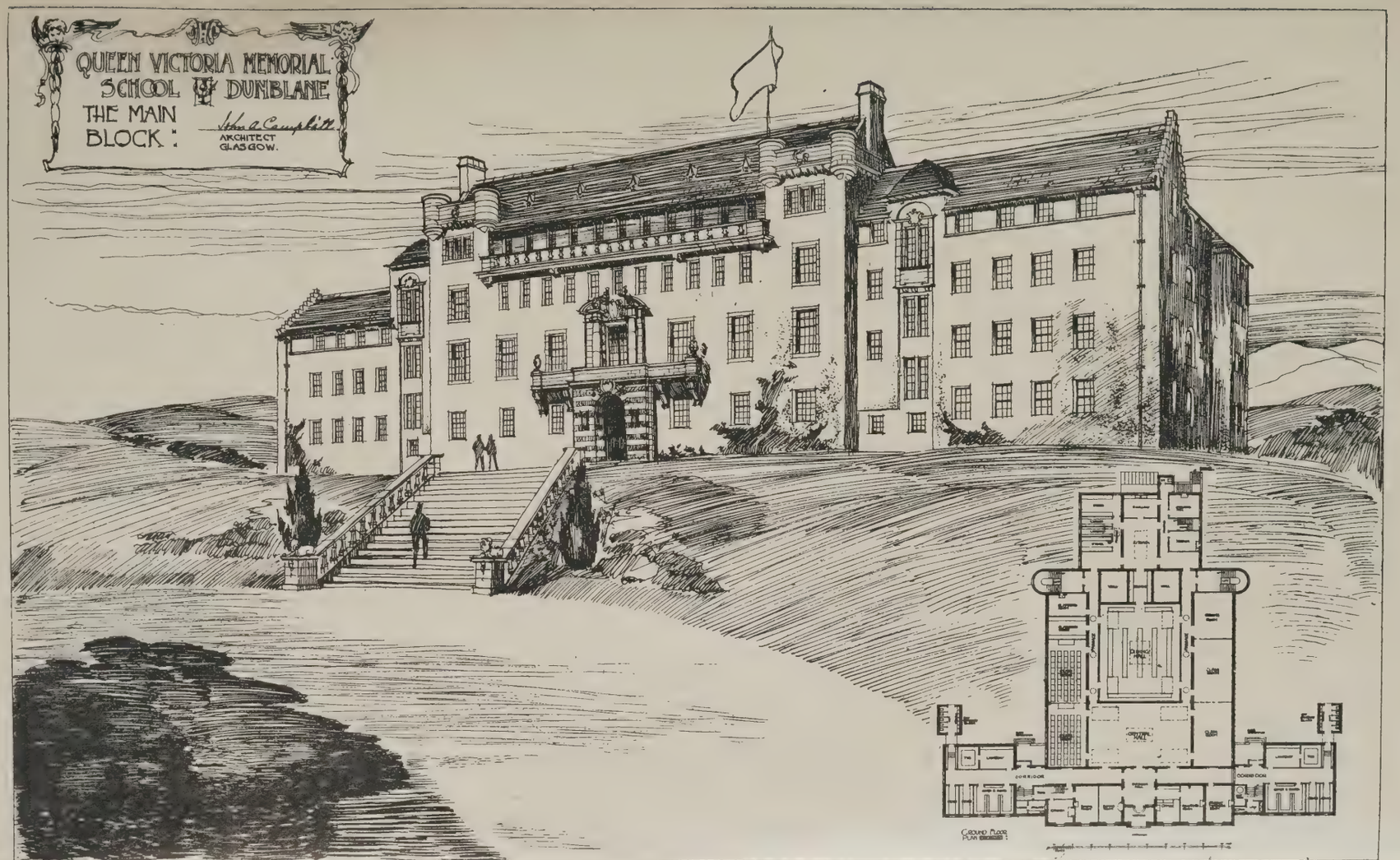
Portsmouth.—New quarters for the resident medical superintendent, the two resident assistant medical officers, a house for two servants, and the extension by 30 rooms, to the nurses' home, are additions to the Infirmary, decided upon by the Guardians. Messrs. Rake and Cogswell have been asked to prepare plans, and Mr. J. A. Grundy, the present clerk of the works, has been retained for the new works.

Stourbridge.—A new school is to be erected here by the Worcestershire Education Committee.

Swansea.—Plans for the following buildings and works have been approved by the Rural District Council:—Andrew Gwyther, Upper Loughor, one dwelling-house; Oliver Watkins, Gorseinon, bakery and stables; Evan Thomas, Clyndu, one dwelling house; proposed new road at Gowerton, and Thomas Morgan, Fforestfach, three dwelling houses. Amended plans:—John Jones, Loughor, one dwelling house; Dr. Frazer, Gendros, five dwelling houses; T. A. Stephens, Armine Road, five dwelling houses.

Taunton.—The Town Council have passed plans for the following works:—Additions to No. 7, Canal Road, for Mrs. Wensley; extension of St. Andrew's club-room, Rowbarton, for the vicar; drill-hall in the rear of St. Andrew's Hall, Rowbarton; temporary accommodation for the porters at King's College.

Wallsend.—The Town Council has passed plans for the following:—Thirty-two tenement houses to be built by Mr. James McHarg; proposed alterations to Nos. 36, 38, West Street for Mr. Grogan; blacksmith shop in Chestnut Street; theatre proposed to be erected in Park Road between Holly Avenue and Vine Street; six tenement houses in Charlotte Street for Mr. J. W. Moffatt.



Dunblane.—The new Queen Victoria Memorial School, erected from the plans of Mr. J. A. Campbell, Glasgow, will be opened by H.M. the King in the last week of September. The building, which is intended for the sons of soldiers and sailors, is of brick roughcast, and contains a reception hall, 46ft. by 30ft., with pitch-pine panelling and floor; a dining hall, 66ft. by 36ft., panelled in African mahogany, with kitchen department in connection; six classrooms, cloak-rooms, etc. On the upper floors are six large dormitories with 34 beds each, two with 24 beds each, and two with 14 beds each. Spray and slipper baths are provided in the bath-room. A short distance from the main building are a house for the adjutant, and eleven houses for the accommodation of the staff. The cooking is done by steam, and the main building is heated throughout by hot water. The grounds have been laid out to include a drill ground, cricket and football fields. The lighting is by gas. Mr. George Kermach was master of the works; and Messrs. G. and A. Cousin, Alloa and Edinburgh, the general contractors for the buildings and grounds, the latter being planned by Mr. McHattie, Chief Gardener to the City of Edinburgh. The water supply was planned by Mr. R. M. Christie, C.E., Dunblane, and carried out by Messrs. Casey and Darragh, of Stirling.

Winlaton.—The Ecclesiastical Commissioners have made a grant of £1,500 for a new rectory here.

Worcester.—The Worcestershire Education Committee are contributing £1,500 for the enlargement of the Grammar School.

Yardley.—The Worcestershire Education Committee have accepted the tender of Mr. Harvey Gibbs, King's Heath, amounting to £17,751, for the erection of a new Secondary school here.

Buildings in Progress and Completed.

Aberdeen.—The Aberdeen Dairy Co., Ltd., are about to extend and re-decorate, on an elaborate scale, their premises in Union Street, from the designs of Messrs. A. Marshall Mackenzie, LL.D., A.R.S.A., F.R.I.B.A., and Son. The floorings, wall linings, skirtings, counter top, etc., are to be carried out in Greek marbles, Pentelican white, Cipolino, and Skyros being the varieties employed. There will be a vaulted and enriched ceiling, and the shop-front and woodwork of mahogany. The lighting will be electric. The contractors are:—Mason work, Mr. George Hall; marble and plaster work, Messrs. James Bannochie and Sons; carpenter work, Messrs. James Garvie and Sons; painter work, Mr. John Whyte; electric lighting and plumber work, Mr. Walter Simpson.

Bolton.—A new Church House in connection with All Saints' Church has been erected at a cost of £200.

Carlisle.—At a special meeting of the Corporation Baths Committee, the tenders for the erection of public Turkish baths were submitted, and the committee eventually agreed to recommend the Council to accept the tender of Mr. W. Johnstone, Carlisle, for £22,894 11s.

Cathcart.—A new school has just been opened to accommodate 600 children. There is a manual instruction room in one block and a cookery room in the other, and a library, museum, and music rooms have also been provided. A unique feature of the plan is that each of the 22 class-rooms has a separate cloak-room entered from either the class-room or the assembly hall or the balcony, an arrangement which will greatly facilitate the easy administration of the school. The architect is Mr. Andrew Balfour, F.R.I.B.A., Glasgow, and the total estimated cost is £22,000.

Derby.—A new school for the parish of St. Joseph's. It is a one-storey building of red brick, accommodation being provided for 350 scholars. There are six class-rooms, 22 ft. by 24 ft., but by the aid of sliding partitions the whole can be made into one large room which will seat several hundreds of people, and a large stage has been erected at one end. A seventh class-room, 22 ft. by 31 ft., a teachers' room, a kitchen, and a large marching corridor, 10 ft. wide, are also included in the building. A low-pressure hot water system has been installed. The cost of the building and the site is estimated at about £5,000, and the bulk of this money has still to be raised. The architect was Mr. Eaton, of Derby, and Messrs. Richard Weston and Son, of Derby, were the builders.

Doncaster.—The Corporation have accepted the tender of Messrs. H. Arnold and Son, Doncaster, for 30 temporary cottages in Marshgate, for the accommodation, primarily, of tenants of that district dispossessed by the Marshgate Bridge scheme. The cottages will be of corrugated iron and wood, with felt roof, and will consist of a living room, scullery, and two bedrooms. The cost will be £62 each.

Dudley.—Lady Dudley laid the foundation stone on the 10th inst. of a training college at Dudley. The building is being erected at a cost of £19,000 on the parade fields, where an estate, eight acres in extent, has been secured. Accommodation will be provided for 100 students, with room for extension.

Ebbw Vale.—The foundation-stone of the new Church of St. John, Newtown, was laid recently. The building, in Early English style, will seat 500, and is to be faced with Ebbw Vale brick and Forest of Dean stone dressings. Mr. G. E. Halliday is the architect, and the Ebbw Vale Building Company, Ltd., are the contractors.

Exeter.—The memorial stone of the extensions to Hele's School will be laid by the Mayor on September 17th. The new buildings, with which rapid progress is being made, will cost more than £9,000.

Govan.—The District Lunacy Board has erected two new pavilions at the Hawkhead asylum to accommodate 120 aged and infirm patients, and a couple of blocks for the housing of nurses and attendants. The dormitories for the infirm patients are situated on either side of the administrative block, and command a splendid view of the surrounding country to the south. The pavilions consist of day rooms and dormitories, with all the most modern lavatory and sanitary arrangements, whilst they are connected with the main buildings by means of corridors. The nurses' and attendants' homes are situated to the rear of the pavilions, and consist of sitting and bedrooms. The cost has been about £25,000.

Hamilton.—A new Methodist Church is being erected near the Old Cross. The building is of stone, in Romanesque style and will cost £2,700. Mr. Alexander Cullen is the architect.

Hanley (Staffs).—Of the new Bethesda Mission Hall, which was opened here on August 27th, Mr. W. Campbell is the architect, and Mr. C. Cornes the builder.

Inverness.—The foundation stone of a new Masonic Hall, the "temple of St. Mary's C.O. Lodge, No. 339, was laid on September 4th." The Hall will form the upper part of a handsome corner block in Hamilton Street which is being erected for Mr. D. F. Macdonald from the designs of Mr. R. J. Macbeth, F.R.I.B.A.

Kingstown (Jamaica).—Messrs. William Cowlin and Son, of Bristol, have secured the contract for the new Government buildings and for the King's house, the residence of the Governor, to be erected as a consequence of the destruction of the former buildings by the recent earthquake. The contract price is mentioned as between £40,000 and £50,000. Messrs. Nicholson and Corlette, of London, are the architects.

Leeds.—The new C. S. Weatherill ward at the General Infirmary, erected under a bequest of £124,073 left by the late Mr. C. S. Weatherill, of Louis Street, Leeds, will be opened by the Lord Mayor on October 8th, and the white marble monument of the deceased gentleman, by Mr. Thomas Brock, R.A., which, under the terms of the will, is to be erected in the ward, will be unveiled on the same occasion.

Letchworth.—A new Roman Catholic Church, dedicated to St. Hugh, Bishop of Lincoln (1186-1200), has been erected in Pixmore Way. It is a plain, unpretentious, oblong building, with a small sacristy at the side, and in the event of a larger church being built at some future time, is intended to be used as a hall or school. The walls are of red brick, with tile dressings, and the south gable is surmounted with a small stone cross of Byzantine design. The walls inside are toned white, and the ceiling, which is in the form of a Gothic arch, matchboarded, is painted a dull green, with the ribs picked out in a chequered design of black, white, and red. There is a small narthex at the entrance, over which there is a gallery for the choir, lighted by a large circular window in the south end of the church. The altar vestments are of Morris tapestry and woven silk. The architect is Mr. Charles Spooner, F.R.I.B.A., and the building work has been executed by Mr. Aubrey Ellis, Willian, Letchworth.

London.—The Lord Mayor will on September 23rd unveil a memorial window to the late Alderman Sir David Evans, which has been erected at the Church of St. Andrew-by-the-Wardrobe, on the south side, overlooking the altar.

Middlesbrough.—"The Avenue" Wesleyan church and schools, which were opened at Linthorpe, Middlesbrough, on September 2nd, are built of red pressed brick, with artificial stone front and dressings, from designs by Mr. A. Forrester, Middlesbrough. Messrs. Allison Brothers, Middlesbrough, were the builders, and the cost has been rather more than £5,000.

Newcastle.—A new police station erected by the Corporation, in Wharrier Street, Walker, has just been opened. The main front is in stone up to the second floor level, and above this, and all the other elevations, are in red pressed brick with stone dressings. The roofs are slated with Newfoundland green slates. The cells are well heated and ventilated. The floors and ceilings are of Portland cement concrete, reinforced where necessary with expanded metal. The walls are in a salt glazed brick five feet high, the remainder being in a white glazed brick. The entrance halls and lavatories on the ground floor are tiled, and the remainder of this floor cement and wood block. The remaining floors are of redwood joists and flooring boards. The lavatories and drying room are of coloured cement. The whole of the building is lighted by electricity, and the cost amounts to £9,000. The contractors for the building were Messrs. Kirk and Brown, Mr. Thomas Bell acting as clerk of works. Mr. F. H. Holford, property surveyor to the Newcastle Corporation, is the architect.

Winlaton.—A new church is being built at Chopwell, the foundation stones being laid to-day. The Consett Iron Co. have made a donation of £200 towards the building.

Sunderland.—A new United Methodist Church at Paillion has just been opened. The building is of red brick, with stone facings, being a free treatment of the perpendicular Gothic, and comprises a church and small hall, having joint seating accommodation for about 450 persons, and a vestry. Messrs. Barnes and Burton, Newcastle and West Hartlepool, are the architects, and Mr. J. W. White, Sunderland, the builder.

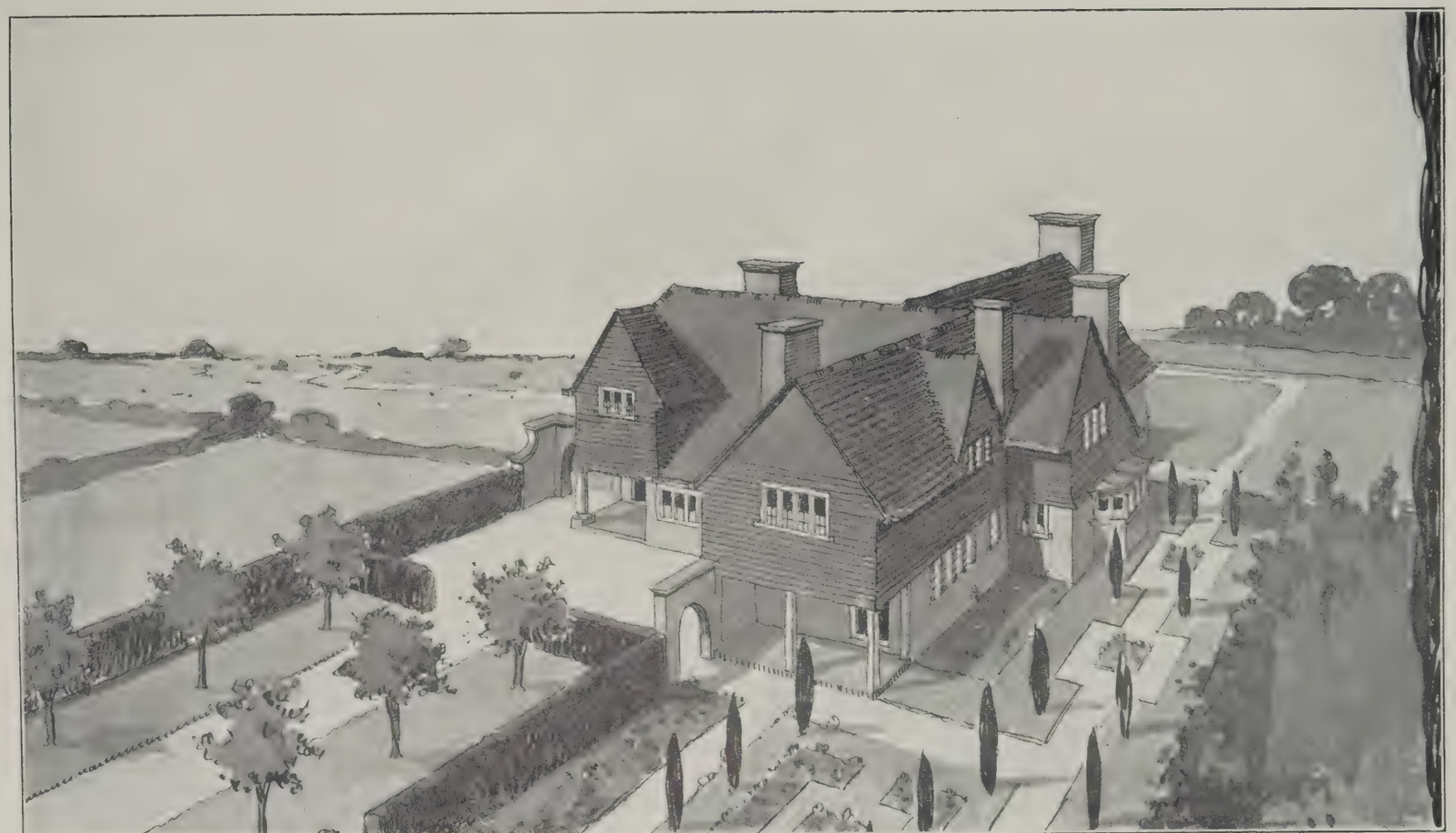
LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



Near Colwyn.



Near Yarmouth.



Bexhill-on-Sea.

THREE SEASIDE HOUSES. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.



HOUSE AT BEXHILL-ON-SEA. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.
(See centre plate.)

Our Plate.

We publish this week three sketch ews of houses by Mr. P. Morley Horder, R.I.B.A., which we entitled "Seaside ouses"; but, since the plate went to ess, the architect has informed us at one of the houses has been arked in error on the drawing, as being Yarmouth, whereas it is situated in-ad at Garboldisham, near Thetford. his dwelling is interesting, as showing e use made of an old Malt-House in rming a screen, and useful accommoda-n in the way of a cottage and stabling the new house at the back, connected a well-house and pergola to form an closed forecourt. The other houses eak for themselves both in point of aterial and arrangement.

Notes and News.

London warehouses are, according to e estate agents, very difficult to let. his fact is attributed to the general ackness of trade, foreign competition, id the severity of the L.C.C. regula-ons. According to the "Evening ews," one agent reports a general drop rents of from 30 to 50 per cent., and is said that there are more to let now an at any previous time. In Upper hames Street, many of the warehouses ive been to let for six years and more, id are likely to remain so. The L.C.C. ipulations for iron, concrete, or teak aircases, in some cases also for an ex-rior fire escape, and other various ructural alterations, in warehouses hich have mostly been standing for any years, impose a heavy obligation n owners.

* * *

The British Uralite Company, Ltd., of , St. Helen's Place, London, E.C., have sued a circular describing the uses to hich Uralite Asbestos may be applied, id illustrating an asbestone structure (a ttage at the Garden City, Letchworth), id a detail plan for fixing asbestos tiles. sbestos cement slate (Asbestone) is, it is ated, adaptable not only for roofing and ning walls and ceilings, and for partition work, but also for the erection of bungalows and small portable buildings. As a non-conductor, it is useful for cable casings, switchboards, and other electric work. It weighs no more than the thinnest corrugated iron, and is not affected by chemical vapours. The company have acquired a patent for the improved manufacture of this slate, and have installed the necessary machinery at the Uralite Works at Higham. The product is, therefore, entirely manufactured in England, and the company make a point of prompt delivery.

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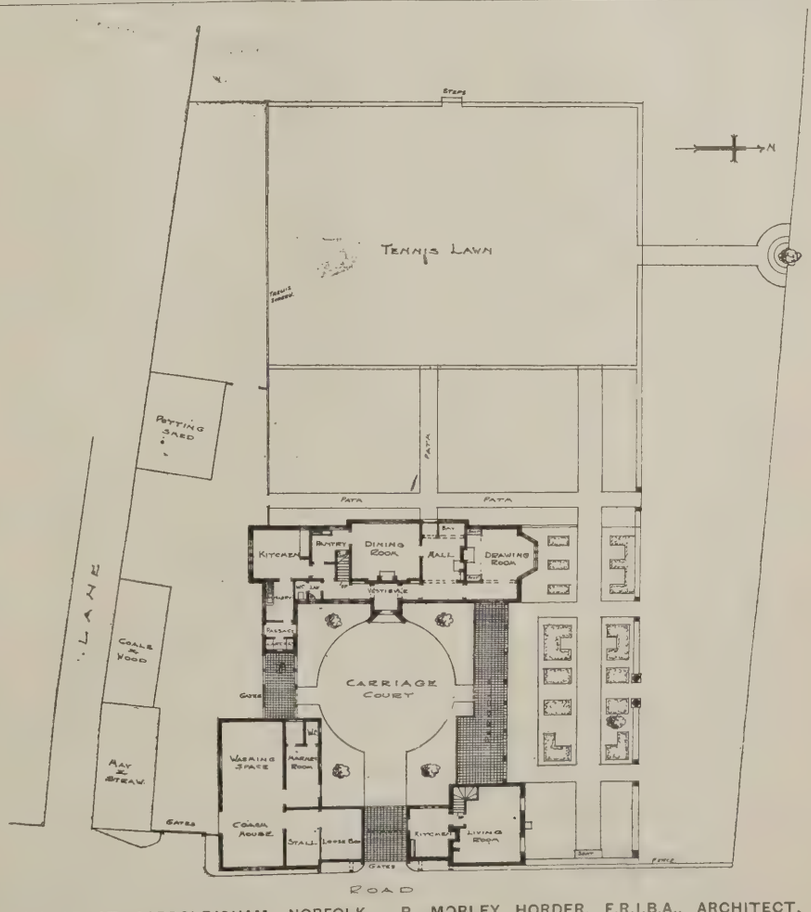
The portico of the recently demolished Exeter Hall was purchased by the L.C.C., on the advice of Professor Beresford Pite, as an interesting specimen of Classic work, for the L.C.C. School of Building at Brixton, the price being £5. The cost of moving the specimen, which was estimated at £15, has had, according to the "Evening News," an unexpected and unfortunate result. The columns were more massive and weighty than expected, and the establature was found to be in one piece. Heavy tackle had to be requisitioned to deal with it, and a number of workmen employed for a considerable period, so that the cost of removal has amounted to no less than £105!

* * *

Mr. A. Barton Kent, chairman of G. B. Kent and Sons, Ltd., has been appointed British juror in Section 98 of the Franco-British Exhibition, for brushes, turnery, etc.

* * *

A free copy of a very useful guide to "Ornamental Decoration" is offered by Messrs. Thomas Parsons and Sons, of Long Acre, to any builder who cares to make use of the coupon that will be found with their advertisement on page xxxiii. The work, which is attractively produced and consists of a collection of designs for painters' and decorators' work, undoubtedly affords a most handy synopsis of the various accepted styles of decoration—Assyrian, Moorish,



HOUSE AT GARBOLDISHAM, NORFOLK. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT.
(See centre plate.)

Pompeiian, Louis XV., Adam, and the more modern developments. It is published at 3s. 6d., but Messrs. Parsons (who, by the way, although they have been established for more than a century, are evidently adepts in up-to-date methods) have decided to offer it gratis to any builder fulfilling the conditions advertised on page xv.

* * *

Paupers as painters are objected to at Liverpool. Inmates of the Liverpool Workhouse having been employed in painting the exterior of the buildings, a deputation of house painters waited on the Select Vestry, the governing body of the Workhouse, to lodge a strong protest. The deputation mentioned that about 800 painters were out of work in Liverpool. The Guardians decided to refer the matter to a sub-committee.

* * *

The Wakefield Patent Acetylene Flare-Lights were used to illuminate the track on Friday night during the twenty-four hours' walk at the stadium of the Franco-British Exhibition on Friday and Saturday last. These lights are capable of yielding a flame of 500 to 5,000 candle power, any power required being obtainable at will. The light is remarkably pure, soft, and white, and of great diffusing power, entirely free from smoke and smell. The flame is not in any way affected by the weather, burning just as clearly in a gale as on the calmest night; and being fitted with large reflectors and swivel joints, the light can be focussed in any direction, vertically or horizontally, without moving the lamp. The Wakefield portable flare-lights were successfully employed during the recent motor race for the grand prize at Dieppe.

Views and Reviews.

Designs for Decorators.

Messrs. Thos. Parsons and Sons, manufacturers of fine colours, etc., have conceived the happy idea of issuing a collection of designs and colour schemes for painters' and decorators' work, without any letterpress beyond a very brief introduction, in which it is stated that the firm are prepared to introduce artists who can do the work, as well as to supply the materials with which it can be done. The designs are suitable for a large variety of purposes, and while they are all simple, and are therefore all quite practicable by the decorator of average skill, they are nevertheless, with few if any exceptions, truly artistic in spirit and in execution. They apparently include the decorative style of every well-marked period, and the compiler, Mr. F. Scott Mitchell, may be congratulated on having produced an eminently serviceable little book; and the enterprise of Messrs. Parsons in presenting it free to customers who comply with certain easily fulfilled conditions is no less commendable.

A Few Suggestions for Ornamental Decoration. A Collection of Designs and Colour Schemes for Painters' and Decorators' Work. Compiled by F. Scott-Mitchell. Published by Thomas Parsons and Sons, 8, Endell Street, Long Acre.

YORKSHIRE MASTER BUILDERS IN BELGIUM.

Impressions of the Visit.

The visit of the Sheffield and other Yorkshire builders to Belgium will live long and happily in the memories of those who had the good fortune to experience the lavish hospitality of their Belgian friends. The Yorkshiremen had a glorious time, and it is hoped that the *entente cordiale* will be further cemented by the visit of the Belgian builders to Sheffield next year.

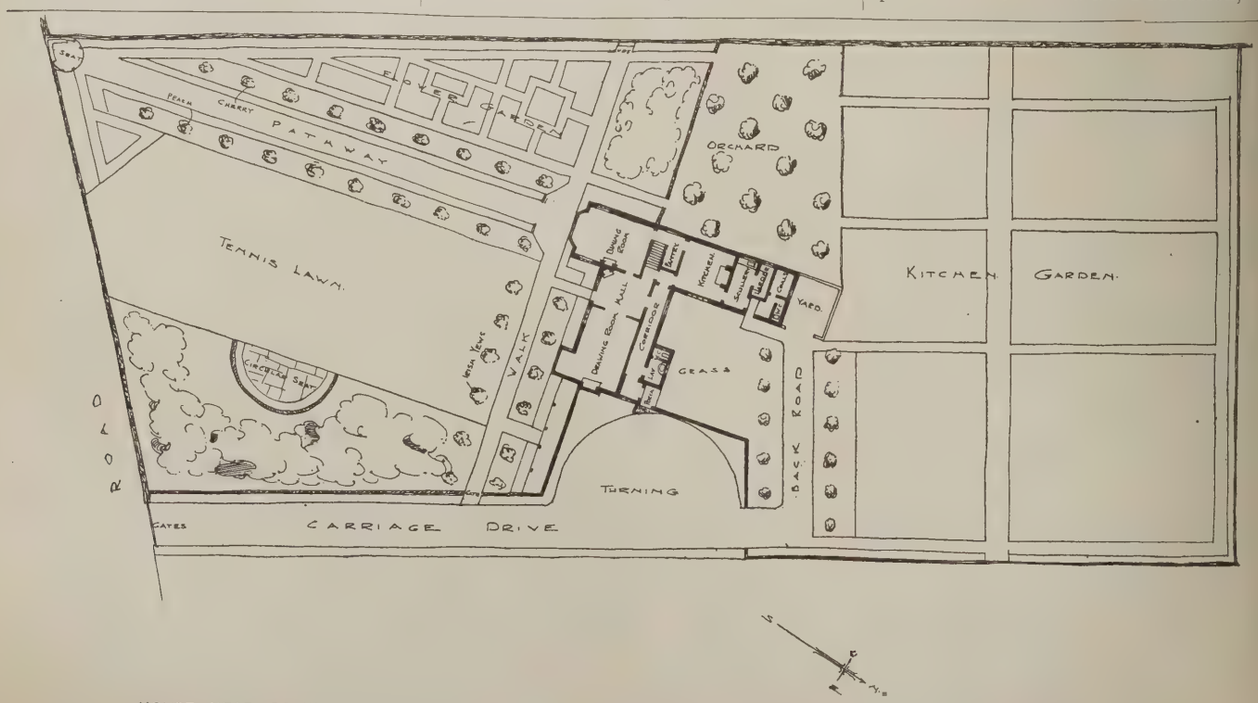
At the monthly meeting of the Sheffield Master Builders' Association, held at the Builders' Exchange on September 13th, the builders who went for the trip had an opportunity of explaining how they were received, what they saw, what impressed them most, and what they learned.

Mr. T. Eshelby (president of the association) occupied the chair, and immediately in front of him on the table was the cup presented to him for the association by the Mayor of Antwerp. The cup, which is a handsome production in cut glass, bearing the arms of the city and a suitable inscription, was the one from which the mayor drank the health of the party at the town hall. Its presentation marked the inauguration of a new and interesting ceremony, and the Sheffield Association is very proud to have the honour of receiving the first memento of the kind.

Arrival at Antwerp.

To Mr. A. J. Forsdike was entrusted the general description of the visit and receptions, while Mr. Biggin gave an account of the visit to the battlefield of Waterloo. It was an exceedingly difficult task, said Mr. Forsdike, to find words in which to convey to the minds of those who had not accompanied them the overwhelming cordiality of their reception everywhere. Hardly had each successive party set foot on the quays at Antwerp ere they were grasped by the hand with an even more than Yorkshire welcome, and barely had they time to dine ere they were hurried off to the Zoological Gardens, where the bands immediately struck up "God Save the King" and other patriotic airs in honour of the visit. Nine o'clock on Monday morning found them at the fine and commodious Exchange of the Antwerp Builders, where they were introduced by Sir Cecil Hertslet, the British Consul at Antwerp, to whom they were very specially indebted, and were officially received by the president of the Antwerp Association, M. Hesbain, who, speaking in English, welcomed the company to Belgium, to its artistic metropolis, and to the City of Antwerp. He (M. Hesbain) also mentioned in passing that the Mayor of Antwerp, by whom they would presently be received, had been a builder himself, and was at present an honorary president of the Antwerp Association.

Sir Cecil Hertslet followed with a complimentary speech, and expressed the pleasure he felt in the privilege of introducing his countrymen on such an auspicious occasion, and concluded by proposing the health of the president, which was heartily received. Mr. Biggin replied for the Yorkshire Federation, and



HOUSE NEAR COLWYN BAY. NORTH WALES. P. MORLEY HORDER, F.R.I.B.A., ARCHITECT. *(See centre plate.)*

paid a glowing tribute to the hospitality of their Belgian friends, whose cordiality had overwhelmed them, and said, in Mr. Biggin's inimitable fashion, that they had never felt so much honoured in their lives. Mr. Biggin then spoke of the better feeling which had latterly been engendered amongst builders, a feeling which, from the magnificence of their reception that day, was now becoming international in its scope, and which could not fail to be fruitful in results. He (Mr. Forsdike) then added a few words, and assured their Belgian friends that, despite the much-vaunted English hospitality, they (the Belgians) had completely outshone them. He concluded by extending to the Belgian builders a hearty invitation to Sheffield, and he felt sure the Sheffield Association would heartily sanction the invitation.—Councillor Dawson (Huddersfield) followed with a speech, in which he complimented the Belgians on their magnificent public buildings, which, unlike Sheffield razors, were intended to last, not for *a* time, but for *all* time. With this preamble, the party were hurried off in char-a-bancs to the town hall, where they were met by the Burgomaster, M. Hertogs. The party were here introduced by Sir Cecil Hertslet, who in a few happy phrases paid a tribute to the port and city of Antwerp. The party would see the magnificent buildings, of which the city was proud, and its railway station, with which, he was told, there were only two others in the world which could pretend to a comparison. British shipping interests in the Port of Antwerp rendered it necessary that the relations between the two countries should be amicable, and he assured the burgomaster that in receiving the company they were supremely conscious of the honour he paid them. After Mr. Eshelby, Mr. Biggin, himself (Mr. Forsdike), and the secretary (Mr. T. Smith) had been formally introduced to the mayor, the mayor, speaking in English, extended a hearty welcome to the company, mentioning in passing that he had visited London, Sheffield, Manchester, Liverpool, and other towns. The usual loyal and complimentary toasts having been honoured, the mayor inaugurated a pretty custom by presenting to Mr. Eshelby the glass from which he had drunk.

Antwerp's Magnificent Docks.

After inspecting the town hall, the party, under the guidance of Engineer Kinart, were taken for a drive over Antwerp's extensive docks, which, when the present extensions are complete, will make Antwerp by far the greatest port in the world. Two p.m. found the party back at the Builders' Exchange, where a banquet, to which 156 persons sat down, was presided over by M. Hesbain, president of the Antwerp Association. The usual patriotic and complimentary toasts were duly honoured, to the accompaniment of an excellent orchestra, which discoursed alternately English and Belgian airs, the Belgian newspapers of the following day describing our National Anthem as "The Gode Save the King." "King Edward VII." was proposed by the president, who said that Belgians would never forget the part the English nation had played in maintaining Belgian independence. Sir Cecil Hertslet proposed the health of King Leopold II., and paid a fitting tribute to the industry of the Belgian people. Speeches were also delivered by Mr. Thompson, of Dewsbury, Mr. Forsdike, and others. Even this did not end the day's festivity, for the party were once again—for the fourth time—ushered into the ever-waiting char-a-bancs, and hurried off to the docks, where the Belgian Government had kindly placed a steam launch, the "Emeraude," at the disposal of the Antwerp Builders' Association for the entertainment of their English visitors. Aboard the boat conviviality ran high, as the Belgians pointed with pride to the extensive docks and warehouses which lined the river. Nine o'clock saw the party back again; and even then sections of newmade friends divided up for complimentary dinners at different hotels. So much for one day.

Reception ot Brussels.

Tired out the party were; but Tuesday, at a quarter to nine, saw them once again at the Builders' Exchange; and afterwards they were entertained at the Zoological Gardens, where the party were photographed. At half-past twelve they left for Brussels, were hurried off in sections to hotels in various parts of the city, and met again, at three o'clock, at the Builders' Exchange, which adjoins the town hall. Here the reception was a replica of that at Antwerp, but, unfortunately, the speeches were in French, and in translation lost some of their warmness. The president of the Brussels Association, M. Delhaye, who was accompanied by the secretary, Mr. Van Ophem, said that the Belgians had always considered England as a sort of older sister, who had on several occasions protected them against the voracity of their great and powerful neighbours. For the services rendered they would always feel extremely grateful, and they could not express this gratitude better than by giving a hearty welcome to those of her children who came to visit them. In the matter of building, they did not consider themselves masters, but he thought it would nevertheless be found that the Belgians were not devoid of quality. He concluded by lifting his glass to the health of King Edward VII. and to the grandeur and prosperity of England. Alderman Jessop, J.P. (Huddersfield), in proposing the health of King Leopold II. and success to Belgium, paid a fitting tribute to the hospitality and warmth of the reception which had been accorded them. He could not speak for the National Federation, but felt sure that the Yorkshire Federation would be represented at the International Conference at Paris next month.

Brussels Buildings and Builders.

Third day (Wednesday) opened with the meeting of the whole party at the Bourse at nine o'clock, each lady and gentleman carrying a small card to frank all expenses on trams, steamboats, etc. By the kindness of M. Deschryver, director of the gigantic Maritime Installations, the party were personally conducted over the enormous Custom Houses, and were amazed by the size and up-to-dateness of everything they saw. Leaving the works, they arrived at Leaken, where a steamboat was waiting to take them over some of the prettiest river scenery. A thunderstorm, however, caused abandonment of the excursion. The party subsequently went by tramway through some of Belgium's most lovely scenery to Terveuren, where a banquet was awaiting them in the Restaurant Sevin in the park. A couple of hours were spent in feasting and "speechifying."

Mr. Forsdike averred that his description of the proceedings had given but a faint idea of the receptions they had. The visit had surprised them. Brussels was fine enough to be the capital of a country much larger than Belgium, and its industries were on a scale commensurate with a great nation. The organisation of its builders was much better than their own. Antwerp, a city about the size of Sheffield, had 530 members in its association, and last year added 100 members. The executive Board was principally composed of contractors, although the members included all branches of the trade. The number of employees represented by the association was 30,000. The wages paid to workmen were only about 4d. per hour, but against this was to be set the cheapness of living, which accounted for much of the difference. The working hours prior to the recent strike were 12 per day, 6.30 a.m. to 6.30 p.m., with one hour interval for meals, while on Saturdays work ceased at 5.30. He wondered where our English football and cricket matches would be with these working hours. The organisation was superb, not only did the Antwerp builders organise their own Workmen's Compensation Insurance, but they actually had their own solicitors, their own doctors, and their own hospital. There could be no possible quibbles about compensation, as the compensation for almost every conceivable accident was stipulated by law, and from it there was no appeal. The loss of a finger, a hand or a foot, meant so much compensation according to earnings. The premium charged by the association was four per cent. on wages, which was the same as that charged by the insurance companies. From the premium the association had already piled up a reserve of 2,000,000 francs, and last year a rebate of 30 per cent. was made to all members, whether they had had an accident or not. Although insurance was not compulsory, an employer whose workman was injured permanently would be required by the State to deposit with them such capital sum as would realise sufficient interest to pay the indemnity to the workman. At Brussels the association numbered 251. They had not their own insurance company, but had made special arrangements to insure collectively at two per cent. to cover compensation, medical liability, and third party risks.

Turning to general impressions, Mr. Forsdike spoke of the remarkable achievements of Belgian builders. The custom houses, over which they were conducted by M. Deschryver, had cost £280,000, and had been completely erected in eighteen months by 300 workmen, and the accomplishment would appear all the greater when it was remembered that the whole buildings were erected on quicksand, which had previously to be treated with piles and reinforced concrete to obtain a foundation. Another interesting feature was that French, Dutch, and German contractors often tendered for work there, but there was no instance on record of an English contractor having tendered.

Belgium's Wide Streets.

One's general impression of the streets was that they were much wider and finer than ours, and there were miles and miles of buildings with plastered fronts, painted every year, which gave a light and pleasing air to the cities. There were many humorous happenings in connection with the visit, but time forbade



SHEFFIELD AND YORKSHIRE BUILDERS AT BRUSSELS.

him to recount them. Altogether it was one of the most pleasing and instructive holidays he had ever spent.

Subsidised Buildings.

Mr. J. Biggin (president of the Yorkshire Federation), gave a graphic account of the visit to the battlefield of Waterloo, remarking incidentally that both on the journey and on the battlefield they met with the same cordiality as had been described by Mr. Forsdike. A fact which struck him everywhere was the size and ornamentation of the buildings, which, it apeared, were inconsistent with the amount of business which would return an adequate rental. The same observation applied to the theatres, of which the magnificent Théâtre Flamand, at Antwerp, was a typical example, and was the finest building of the kind he had ever seen. On enquiry, they found that the beauty of many of the buildings was due to the fact that they were subsidised. Theatres were considered public necessities, and were not expected to pay their way. He had innocently enquired what dividend the Builders' Exchange at Antwerp paid, but he was met with a smile. They didn't expect it to pay its way was the significant reply. What they wanted was an Exchange, for which they were prepared to pay. In many things Belgium was ahead of them, while in others he thought we still held our own. One fact, however, was very noticeable. At the post office he noted that old-age pensions were actually being paid while we were only just emerging from the "legislatory" stage.

The President (Mr. Eshelby) then produced the cup presented by the Mayor of Antwerp, and the company drank to the health of the Belgian builders.

Presentation to the Organiser.

An interesting event in connection with the visit took place on the Thursday evening at the Hotel de la Marine, Brussels, where the whole company assembled and presented to Mr. Thomas Smith (secretary of the Sheffield Association), who had organised the visit, a handsome dressing-case and silver-mounted walking stick, together with a quantity of Brussels lace to be handed to Mrs. Smith.

Correspondence.

Out-of-work Architects.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—May I point out that the remedy for the present unsatisfactory and distressing state of affairs among architects does not lie in closing the schools, registration or the elimination of the remittance man? One has only to glance at a newspaper or speak to one's friends to find that unemployment is not by any means confined to the architectural profession. It is, in fact, rampant in all professions, trades, and businesses. It is useless to tell the young man or his parents and guardians that there is not even standing room in the profession when all other walks of life are in the same state. The closing of the profession by Act of Parliament will not find work for the unemployed, but will make it practically a monopoly of the wealthy classes. The real cause of unemployment among architects and their assistants is the same as among all other working classes, namely, the private ownership of social necessities by a small class, who work and control them for their own profit, and not for the general well-being of all. The remedy lies in the social ownership and control of social necessities, architecture included, to be worked for the benefit of the whole community, and not for any one class. The sooner architects individually and collectively recognise this and join hands with the growing forces of Socialism the better it will be for themselves and for their art.

Yours truly,
A YOUNG ARCHITECT.

[There is much truth, no doubt, in our correspondent's remarks on unemployment generally. But we are not convinced that he has found the real remedy, and if, as Kipling has it—

"There are nine and sixty ways
"Of constructing tribal lays
"And—every—single—one—of—them—is—right,"

there are about nine hundred and sixty different explanations of Socialism, from the mild benevolence of Mr. H. G. Wells to the quite uncompromising rigour of, say, Mr. Jack Williams, all of which, according to their respective authors, are right. And our columns *are not open* for discussing their merits or demerits. —ED. B.J.]

Law Cases.

Arbitration Awards.

A building arbitration, as between Messrs. Pye, Parkinson, and Co., Ltd., builders, and Mr. Isaac Gale, provision merchant, was heard at the Hotel Metropole, Swansea, recently, before Mr. Ernest H. Leeder as sole arbitrator. Messrs. Pye, Parkinson, and Co. claimed from Mr. Isaac Gale, High Street, Swansea, £385, the amount of the architect's (Mr. Basil C. Deacon, of Liverpool) final certificate under a contract for the erection of two villas at Kingston Road, Coedsaeson, Sketty, for Mr. Gale. Mr. Gale repudiated liability for this sum and counterclaimed against Messrs. Pye, Parkinson, and Co. for about £1,300 in respect of alleged (1) excessive prices, (2) reductions not credited, and (3) breach of contract respecting work, workmanship and materials. Mr. Ernest H. Leeder has now made his award, which is as follows —1. Mr. Isaac Gale to pay Messrs. Pye, Parkinson, and Co., Ltd., the sum of £272 6s. 2½d. forthwith in full satisfaction and discharge, and as a final determination of all disputes between the parties. 2. Mr. Isaac Gale to pay his own costs and also two-thirds of the costs of Messrs. Pye, Parkinson, and Co., Ltd., of and incidental to the agreement of reference, the arbitration and the award.—Recently, Mr. David Morgan, of the firm of Messrs. James and Morgan, sat as arbitrator in a claim by Mr. T. P. Howells, builder, Cardiff, against the Llanbradach Building Club Company in respect of a number of houses built in Garden Street, Llanbradach. The arbitrator has now given his award in favour of the plaintiff, Mr. Howells. The defendants are to pay him £360 in full satisfaction of all claims.

Occupation Without Certificate.

At Keighley, William Coleman, builder, was summoned by the Keighley Corporation for permitting a house to be occupied without first obtaining a certificate of fitness.—It was stated that on June 6th

1907, the defendant submitted plans to the council for thirteen houses which he proposed to build in Lawkholme Lane. These plans were duly approved, and eight of the houses were erected. On June 19th, 1908, Cornelius Pickles, the assistant buildings inspector, found that the houses were occupied. It appeared that this particular house (152, Lawkholme Lane) had been occupied from June 1st. Regulation 40 in the schedule of the Keighley Waterworks Improvement Act, 1872, provides that no new house should be occupied until it had been certified by the local board or its officer to be in every respect fit for human habitation. If this regulation was not complied with, the penalty was not exceeding £5, with a continuing penalty of 40s. a day. When Mr. Pickles visited the premises no application had been received for a certificate, and the house was not completed. But even if the house had been completed, it would still have been an offence to permit it to be occupied without a certificate having been obtained. In this house, the cellar area in Hard Ings Lane had not been cemented, as was required by the Health Department, no ventilator had been fixed in the outer wall near the floor of the sitting room in Lawkholme Lane, and the prismatic lights had not been placed over the area. The object of the regulations was to ensure that people should not live in houses which were not fit for habitation, and it was the duty of the Corporation to see that the regulations were enforced, though it was a number of years since the Corporation took action in a case like this. During the last two or three years, however, they had had considerable trouble with builders. In many cases where builders had not obtained certificates the houses have been unfit for habitation.—Defendant made a statement to the effect that it was not his fault that the prismatic lights were not yet fixed. The cellar was cemented. He admitted that the house was occupied, and that he had not obtained a certificate.—A fine of 1s. and costs was imposed.

Obstructing Public Roads with Building Materials.

At Watford Petty Sessions, Aaron Jones, builder, was summoned for causing an obstruction in King Edward's Road, New Bushey.—A police-constable gave evidence to the effect that while on duty in the road in question he saw a quantity of building material on the footpath and a portion on the roadway. Defendant's attention was called to the obstruction, and he was asked to remove it. A stack of bricks completely covered the footpath and 3ft. of the road. Defendant told the constable that he could not remove the stuff until he had finished building. A fire hydrant was covered by a quantity of timber.—For the defence, it was urged that where builders were engaged in work they were generally allowed a little latitude in placing material on the paths and roads.—The Chairman of the Bench said that with the consent of the local authority builders were often allowed to place materials on paths, and even encroach a little on the road. The case was really a matter for Mr. Jones and the local authority. He added that Mr. Jones, legally, was in the wrong. His proper course was to get the consent of the Urban District Council to allow him to place his building materials on the path or road.—The Bench ordered the defendant to pay costs of the case.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

The querist's name and address must always be given, not necessarily for publication.

R.S. Joists and Concrete Floors.

MANCHESTER. — MANCHESTER writes: Would you give me a simple method and formula for calculating the thickness of concrete to a floor composed of concrete and R.S. bearers? The R.S. bearers spaced 4ft. centres, and supported every 12tt. on girders. I know the various weights and loads (in this case a school floor) to allow per square foot, but do not know how to arrive at the necessary thickness of concrete; also would the same formula apply were the R.S. bearers spaced 8ft. centres, or even wider spaced, as long as the concrete is strong enough to take the load it has to bear? Would you also give the working out of the formula in figures when applied to the floor width with R.S.B.'s spaced 4ft. centres?

There has been, so far as we know, no investigation of the subject which will help us to calculate, except in the most empirical manner, the strength of a floor reinforced with rolled steel joists embedded in concrete. The practice has been to place small joists close together, not exceeding 2ft. centres, and to estimate them to carry 50 per cent. more load than the strength of a free joist. Unless the joists are very small, and the concrete very thick, the service of the latter will not be to add strength as regards resistance to crushing, but only to prevent buckling in the joist. With a free joist the depth should never be less than one-twentieth of the span, but in a concrete floor this can be considerably reduced, because the joists are supported laterally against buckling. The concrete also causes the deflection to be less than would be the case if the joists were free, so that we are enabled to use sections which would be considered too slight for sustaining the load in question in the ordinary way.

Rolled steel joists might be placed at 4ft. centres, but it would be unwise to place them at 8ft. centres, unless the slab of concrete between were reinforced with rods or expanded metal. However, the ordinary steel joist and concrete floor is very much out of date, and our correspondent will find it more economical and more satisfactory to employ reinforced concrete.

Cost of Concrete Building.

WHITLEY.—CONCRETE writes: (a) Can you kindly give me a rough idea of comparative cost of walling of—(1) common brickwork, roughcast outside, plastered inside; (2) concrete blocks, made by hand on site, roughcast outside, and plastered inside. N.B. Sand is on site. In a small town common bricks cost about 35s. per 1,000 delivered. (b) What are comparative costs of—(1) ordinary wooden joisted floors (spans up to 15ft); (2) concrete floors (say 4in.) reinforced with expended metal conditions as above. (c) Would walls built of concrete blocks 12in. thick, roughcast outside and plastered inside, be as impervious to damp getting through, as a 14in. solid brick wall (not roughcast)?

(a) It is only possible to give the roughest approximate cost of the two systems of building. We think that the cost under the conditions named would be about equal. (b) The cost is materially affected by the size of the building and the number of floors it contains. For instance, if there are several floors to be constructed of reinforced concrete, the centering can be used several times over, but if there are only one or two floors the cost of the centering is proportionately higher. For ordinary dwelling houses we should place the cost of reinforced concrete floor as almost about equal to wooden floors, but for buildings with four or more storeys and for heavy loading the advantage is in favour of reinforced concrete. (c) Yes, certainly; concrete walls as described would be superior to a 14in. solid brick wall.

Study of Reinforced Concrete.

NORWICH.—J. C. H. writes: Can you give me the name or names of engineers who teach by correspondence the subject of reinforced concrete, as applied to buildings, retaining walls, bridges, and the like, as I wish to take up this subject at once? Also please advise me of suitable books on this subject, with their respective prices and publishers.

We do not know of any engineers who make a speciality of teaching the subject of reinforced concrete by correspondence. The subject is taught in a general way by The International Correspondence Schools, Chancery Lane. As regards books on the subject, the standard work is "Reinforced Concrete," by Charles F. Marsh and William Dunn, 31s. 6d. net. Other good books are "Principles of Reinforced Concrete Construction," by Turneaure and Maurer, 12s. 6d. net, and "Reinforced Concrete Construction," by Buel and Hill, 21s. net. There is also "Concrete Steel," by W. Noble Twelvetrees, price 6s. net. A useful pocket book on the subject is the "Manual of Reinforced Concrete," by Marsh and Dunn, price 7s. 6d. net. Considerable space also is given in "Specification No. 11," 4s. 3d., to the subject. These books can be obtained post free for the prices named from our offices.

Grey Stocks.

CHELLASTON.—BRICKS writes: Could you give me the address of a firm of brickmakers in the Midlands, who supply the grey stock bricks, similar to those used in Clive House, Roehampton, Surrey, which is illustrated in the BUILDERS' JOURNAL for September 2nd?

We have made enquiries, but cannot discover any Midland brickworks producing bricks of the colour used at Roehampton, which the architect informs us came from Guildford. You could get Lutons, but they are not pleasant in colour.

Measuring-up.

HECKMONDWIKE.—J. B. A. writes: "Can you give me any information as to measuring-up at the conclusion of a contract? Can an architect measure up the whole building from foundations to roof, including excavating, when the specification or contract does not provide for it? It so happens that the architect has given over-measure in most of the items, but the clerk of the works is measuring up the whole again, and taking all the extra measure off, and the deductions will be as much again in amount as the additions. There is the usual clause that any additions or reductions shall not invalidate the contract, but that they shall be added or deducted, as the case may be. I have always understood that if a building is to be remeasured throughout it should be specially stated. If I am bound to

submit, the work will prove a serious loss to me. I may state that the contract price is about £4,000."

Everything would appear to depend on the wording of the actual clauses embodied in the contract and specification; and where a building is to be erected on a priced bill of quantities, it is usual to provide that the building will be measured up on completion, and paid for at the rates for the various works given in the bill of quantities. But, without any of the documents before us, the best advice that we can offer is that you had better consult your solicitor.

New Factories in London.

LONDON, E.C.—P. and B. write: "Could you give us a list of factories recently erected and in course of erection in or near London?"

If you will apply to Mr. S. H. Knyvett, Deputy Chief Inspector of Factories, Home Office, Whitehall, S.W., we think that he will be able to give you the information you require.

Removing Stains from Brickwork.

OLDHAM.—B. U. B. writes: "Please suggest a method of removing stains on Accrington bricks, caused by repointing on the weather side with mastic and oil."

(1) The composition of the mastic is not stated, but if it has a base of litharge and linseed oil, and the stains take the form of a partial darkening of the bricks owing to absorption of oil, it may be best to give the face of brickwork a coat of raw and boiled oil, to bring it all to the same tone. It would perhaps be possible, however, to remove the stains, though without more precise particulars it is difficult to say. Try a paste composed of 1 part liquid ammonia, 1 gallon soft soap, 2lb. powdered pumice. Dust the face of the brickwork, and apply a coat of the mixture with a brush. Let it remain for 20 minutes, then scrub it off with a scrubbing brush and water, and, finally, rinse with a hose. G.

OLDHAM.—B. U. B. writes: "Please recommend a good treatise on the construction of piggeries."

Information as to piggeries may be obtained from "Farm Buildings," by A. Dudley Clarke, F.S.I., published by B. T. Batsford, 94, High Holborn, W.C., at 6s. net. Some illustrations are also given in a book entitled "Farms," by R. S. Burn, one of a series on "Practical Architecture," now, it is believed, out of print. Though Burn's book is about 50 years old, it contains useful information. The most recent practice will be described in a book shortly to be issued by the publishers of "Concrete," 57, Moorgate Street, E.C., dealing with the various uses of concrete about the farm. G.

Sewerage.

TAUNTON.—LEARNER enquires about a book on sewerage. If he will forward his name and address as enjoined in the notices at the head of this column, we will deal with the matter.

Architect as Insurance Agent.

PORTSMOUTH.—INSURE writes: "Is it against professional etiquette for an architect to act as agent to an insurance company? Would an architect who so acted be barred from becoming an Associate of the R.I.B.A., or similar body?"

We see no reason against the proposal, providing the insurance agency was not made a medium for advertising the profession of architect. On the latter point it would be necessary to consult the secretary of the R.I.B.A. We know of no ruling on the subject; but we imagine that the R.I.B.A. would prefer that their members confined their attentions to architecture.

Responsibility for L.C.C. Fire Risk Requirements.

LONDON, W.C.—W. writes: "In February last the London County Council served my client, the freeholder of a shop in the County of London, with a notice, under Section 10 of the London Building Acts (Amendment) Act, 1905, requiring:—(1) A trap-door to be put in the roof; (2) a self-closing fire-resisting door; and (3) a notice calling attention to the necessity of maintaining the means of escape to be attended to. It is clear that the requisition of the Council must be complied with, and a question has arisen as to whom the expense falls on. The freeholder has let the premises on lease for twenty-one years, and under the same the lessee covenants to execute all works and comply with all sanitary and other regulations required or imposed by competent authority upon or in respect of the premises. The lessee is further required to well and substantially rebuild, repair the premises, and deliver up the same so well and substantially repaired, etc. Kindly advise whether the expense of complying with the London County Council's requirements should fall upon the lessor, who is the freeholder, or the lessee. I am not aware of any decision on the point, but consider that the lessee must bear the expense."

I am of opinion that the whole of the expenditure mentioned must legally fall on the lessee only. It was decided in the case of "Greaves v. Whitmarsh, Watson, and Co., Ltd.," in 1906, that under a covenant in a lease to pay "all rates, taxes, and outgoings" the lessee is liable for the cost of paving works incurred under Section 150 of the Public Health Act, 1875 (L.R. (1906) K.B. 340)—a case almost on all fours with your case. On the other hand, a county court judge has been known to apportion similar charges between lessor and lessee—see "Weld v. Clayton-le-Moors U.D.C.," as reported in the "Estates Gazette" of March 8, 1902.

F.S.I.

Water Supply for Country Cottage.

WINSLOW, BUCKS.—B. S. writes: "(1) Having approved plans with the proposed water-supply stated thereon, and also described in writing as being within reasonable distance (less than 200 yards) from the site, is it legal for the Council now to refuse to grant the water certificate under their statutory powers? (2) Has any decision been given by any stipendiary magistrate or higher court as to what may be considered a 'reasonable' distance from which to fetch drinking water where there is only a well-and-pump supply of water in a village? If so, what is that reasonable distance? (3) Is it not a fact that a properly filtered rain-water supply has been held to be 'an available supply of wholesome water sufficient for the consumption and use for domestic purposes of the inmates of a house,' when the storage tank has been properly ventilated? In the case mentioned it is extremely doubtful whether, if a well was sunk on the property, an unpolluted supply could be guaranteed."

(1) I fear there is no doubt that the Rural District Council are within their legal rights—the by-laws are one thing, and the water certificate is another—in fact, the water certificate is a necessity even in districts where there are no by-laws. (2) I think no decision has been given naming a certain distance as being "reasonable" or otherwise—every case is decided upon its merits, and the tendency is certainly to greater stringency and much less "reasonableness." (3) Certainly a tank supply may be certified as sufficient, and a "water certificate" granted in respect of it, but, of course, it is of no use to have a larger tank than can be supplied from the available roof area. F. S. I.

Capacity of a Sheep Dipping Tank.

SHERBORNE.—B. R. M. writes: "Please inform me what quantity of water the sheep dip and steps (in accompanying sketch, not reproduced) will hold; also the rise for every 50 gal., so that I can make a gauge-rod for my customer to add chemicals according to the quantity of water in the dip."

Every cubic foot of space contains 6.235 gal. of liquid, or approximately 6¼ gal. Each foot in height of your tank (disregarding the steps) will, therefore, hold about 131 gal., and the total capacity (including the steps) may be taken as nearly as possible at 590 gal. F. S. I.

Arresting Decay in Wood.

TAUNTON.—S. P. writes: "Some village stocks which have come under our notice are in bad condition. They are exposed to all weathers, and consequently have become decayed. Can you suggest anything to arrest this? We have thought of using sideroleum or some similar preservative."

It would be better, of course, if the stocks were preserved under cover; but if this is not possible a treatment such as you suggest, with a preservative like carbolineum (Messrs. C. A. Peters, Ltd., 116, Newgate Street, E.C.), would be effectual.

Qualifying as Quantity Surveyor.

WARRINGTON.—W.F. writes: "I am desirous of taking up quantity surveying and civil engineering. Please advise."

A youth wishing to join this profession should serve, for a term of four or five years, as articled pupil to a quantity surveyor of repute, and should, having passed their preliminary examination, become a student of either the Surveyors' Institution (12, Great George Street, Westminster) or the Quantity Surveyors' Association (Caxton House, Westminster). He should, in addition, during his term of service, attend evening classes in building construction, and should then have no difficulty in passing the intermediate examination, qualifying for the Associateship of the Surveyors' Institution, before the expiration of his articles. A few more years' experience as paid assistant would enable him to pass either the final examination of the Surveyors' Institution, or that of the Quantity Surveyors' Association. Both the Quantity Surveyors' Association and the Surveyors' Institution hold examinations that are open to non-student candidates, and that are also (for the present) open to those who have not served articles. Particulars can be obtained from the secretary of either society. Candidates for these examinations, however, when applying for permission to sit, must produce such evidence of their training and education as is satisfactory to the respective councils. A. G. C.

CONTRACTORS' SECTION

(MONTHLY).

THE NATIONAL FEDERATION AND ITS BENEFITS TO BUILDING TRADE EMPLOYERS.

One of the most interesting and important phases of sociology is the gradual transition of human beings from the condition of isolated individuals into corporate existence. We are able to trace the progress of man from his prehistoric and dangerous isolation to the formation of the family; the aggregation of families into tribes; the massing of tribes into nations. And in the history of each nation we find the banding together of men with common interests—as witness the old craft guilds—a tendency somewhat set back with the advent of machinery, but at the present day more strongly developed than ever. Thus we find the gradual aggregation of populations in towns and cities, the initiation of Institutes and Societies for professional interests, business men, banding into limited companies, limited companies into trusts, firms forming trade associations, and trade associations, with common interests, forming federations of those trade associations.

Federation an Inevitable Development.

By such a long train of circumstances do we arrive at the National Federation of Building Trade Employers of Great Britain and Ireland, a product of sociological evolution. For the formation of such bodies does not happen fortuitously, or at the mere casual desire of a certain number of individuals, but by the compelling law of common needs, common interests and common welfare which draws them together for mutual help and co-operation. In other words, it is the inevitable necessity of this co-operation which forces it into being, and those building trades employers who have yet to join an Association would do well to ponder the fact.

What are the Benefits?

But the average man will rejoin that granted our premises, and assuming the inevitable necessity of trade co-operation, the advantage to the individual in joining such a movement yet remains to be proved; in short, what are the benefits to be derived by joining? Now, this is a common enquiry, and though the advantages are many, they need to be carefully enumerated.

Protection from Employees.

It will be sufficiently obvious to an enquirer that the very forces which have brought the Building Trades Employers' Federation into existence are able to bring other trade organisations into existence which may be in some degree antagonistic to the Association whose advantages he desires to consider. Such organisations may control the production of the materials which he uses, the actions and wages of the workmen he employs, or the conditions under which his work is carried out. For instance, in the matter of workmen, the Federation gives protection against aggressions or coercions by the workmen or their Unions. Nothing is more possible than that a workman's Union may, in furthering the supposed interests of its members, inflict very grevious loss or damage on a building trade employer, and, individually, his chances of gaining redress are absolutely nil. Moreover, the law has recently been altered very greatly in favour of Trades Unions, so that for actual intimidation or destruction of property by workmen, even if done under the direct incitement of their Union officials, the employer has no redress against the Union, as the Unions are not now responsible for torts committed by their members. They may strike and picket his premises to prevent other men working for him; but if he endeavours to protect his workmen by a system of counter-pickets he becomes personally liable for any torts committed by his pickets *unless he is a member of a Union or Association of Employers.* Such an Association or Union enjoys the same privilege in this respect as the workmen's Unions, and thus membership of an Association confers a very substantial benefit and protection to the employer.

Conciliation Advantages.

Trade disputes, while not always proceeding to the extremity of a strike, may occasion much difficulty and friction between an employer and his men, and here again membership of an Association confers on an individual employer the advantages of the conciliation arrangements existing between the National Federation and the three leading Operatives' Unions, viz., the masons, bricklayers, and joiners, together with the analogous agreement with the National Association of Plasterers, so that the dispute may be settled amicably and fairly between the two parties. And in this we have a second very substantial benefit.

Contract Coercion.

The aggression of workmen or their Unions is not the only form of coercion to which the individual employer may be subject. There are the possible impositions of others controlling the conditions under which he works. Architects and public bodies, in furthering the interests of their clients or the ratepayers, may seek to impose harsh and unconscionable conditions in their contracts. But membership of an affiliated local Association confers the right to use the national form of contract, the provisions of which are backed by the support and moral influence of the National Federation, who may also invoke the support of the Royal Institute of British Architects and the Institute of Builders in the same direction. This confers a third substantial benefit.

Workmen's Compensation.

Similarly the individual employer may have to cope with the imposition of unfair conditions and rates of insurance for workmen's compensation, and needless to say his legal liability in this respect is a very onerous one, making insurance against the risk an absolute necessity. A local Association can arrange, either directly or through its County Federation, for a collective bargain as to rates of insurance and fair terms of policy, and the benefit thus secured is a very real and financially advantageous one, often saving an employer in premiums many times the amount of his Association subscription, and obtaining for him a real instead of a fancied security from the various eventualities of compensation law. This is a fourth substantial benefit.

Inter-trading.

As one of the advantages of co-operation among the employers may be mentioned the inter-trading rule or custom which can be adopted by an Association, and secures preferential dealing as against outsiders. This privilege, if properly utilised by builders, sub-contractors, merchants, and dealers, may be made most valuable, while it does not interfere with fair competition, or foster the formation of rings, the bolstering-up of prices or other undesirable developments. This constitutes the fifth substantial benefit.

"Union is Strength."

It is an old saying that "union is strength," and if the general, moral and intellectual benefit resulting from the feeling of solidarity with the rest of the trade is less tangible than the other benefits already set forth, it is none the less real. For in this complex and restless age it is the worry that kills, and worry is largely produced by sub-conscious fear of risks which must be incurred, and which are inseparable from the conduct of building operations. But if some of the most serious of these risks are, as has been already shown, minimised or eliminated by the arrangements made or protection offered for the benefit of its members by an Association or the Federation behind it, it is obvious that membership in this respect alone confers a sixth substantial benefit on the individual employer, who has, also, the added advantages of social and friendly intercourse with other members, the opportunities for acquiring information or obtaining advice, and enjoying a sense of independence of outside influences which his membership confers.

Benefits to Come."

The advantages to which we have already drawn attention do not, however, exhaust the possibilities which may accrue to the individual employer through membership of a local Association. The important benefits already obtainable are probably in number but a tithe of those which will eventuate through the efforts of such an organisation as the National Federation. Even in this very number we indicate two important developments which may have far-reaching consequences on future building operations. Reinforced concrete, which the London County Council will shortly place among the ordinary methods of construction controlled by the provisions of the London Building Act, may affect the operations of the average contractor in several directions, some of which we have endeavoured to indicate in our article. The increasing tendency for the direct employment of specialist contractors, to which we draw attention in another article, may also have to be reckoned with. But over and beyond these developments from within the individual employer has also to take account of many developments from without. The ever-increasing number of laws based on

the desire for social reforms and the amelioration of social evils are fraught with possibilities that the individual has neither time to study nor the ability to cope with, but which may nevertheless inflict very real and unnecessary hardship upon him. Without some central organisation, such as the National Federation, to keep a watchful eye upon the many legislative proposals that are placed before Parliament, and to take action against proposed enactments which threaten to infringe the rights and liberties of building trade employers, and which may have been directly promoted for that very purpose by an antagonistic organisation, the individual employer would, without doubt, fare very badly. And in addition to the great advantages conferred by the National Federation in resisting aggressive enactments is also to be reckoned its ability to influence, modify, or initiate changes in the law for the benefit of building employers, which its representative character and organisation renders possible. This power, much more real than might be imagined, will strengthen as its organisation develops, and it becomes, therefore, the duty and the privilege of every individual employer to join this great organisation that the Federation, when moved to action for the promotion of legislation or the redress of grievances, may in truth be said to include and represent every building trade employer within the limits of the United Kingdom. For the building trades form the second largest community in the United Kingdom, and, although employers and employed may have their own difficulties in interworking, their union on questions of policy affecting matters of mutual interest, would present in the councils of the nation an incalculable and far-reaching force.

HOUSING AND TOWN PLANNING.

"Housing and Town Planning in Liverpool" was the title of a paper read by Dr. A. A. Mussen, medical officer of health for Liverpool, at the Sanitary Inspectors' Conference on Wednesday last. Dr. Mussen stated that since the passing of the Liverpool Sanitary Amendment Act of 1864 the city had spent more than £400,000 on the demolition of insanitary property, and over half a million in the acquisition of sites and the erection of dwellings under the Housing of the Working Classes Acts. The rental received from these dwellings was about £21,000 per annum. The corporation had obtained powers to close cellar dwellings after the year 1912, and in the meantime to pay reasonable compensation to owners who closed such dwellings. This, it was hoped, would rapidly reduce the number of cellar dwellings in the city. Was it too much to suggest that these beneficial provisions would soon be included in a general Act and be applied to the country at large? A Town Planning Bill chiefly for regulating the laying-out of estates to the suburbs had been promoted by the Liverpool Corporation, and had passed the Committee of the House of Commons. He thought this Bill would be more beneficial than the Government Bill on "town planning," under which nothing could be done without the sanction of the Local Government Board. A resolution was adopted urging the necessity for specifically naming sanitary inspectors in the Bill as officers charged with the enforcement of its provisions.

CLEANING BRICK BUILDINGS.

By A. B. Searle.

In these days of large factories and indifferent success in smoke consumption, the problem of cleaning the faces of brick and other buildings in our large cities is becoming increasingly important if the original designs of the architects are to be carried out and a proper colour scheme in our main streets is to be retained.

The rapidity with which a brick building becomes covered with dirt and soot depends on its situation and on the porosity of the bricks used in its construction, entirely non-porous bricks, such as those used for engineering purposes, and those covered with a glaze, being washed clean by the rain. Hence the harder and denser the bricks used the cleaner will be the face of the building.

As most bricks are somewhat porous, a periodical cleaning of the buildings becomes desirable, but the greatest care is required not to damage the material. Thus, in America, it has been the custom to scour dirty buildings with wire brushes (sometimes driven by small motors), but this is not to be recommended, as the wire removes the smooth face of the bricks and leaves exposed a still more porous surface, with the result that the building rapidly becomes dirty again. No method or material which in any way damages the natural face of the brick should ever be used in cleaning.

The "Acid" Process.

A very popular means of cleaning brick buildings in this country is by the use of hydrochloric acid, and provided the acid is not too strong this method may be quite satisfactory. It will generally be found that the ordinary commercial acid will stand the addition of 15 times its volume of water, and it should never be used without the addition of at least 12 times its volume of water. For many purposes, acetic acid is more satisfactory than hydrochloric acid, as it is equally effective in its action on the dirt, without having so corrosive an effect on the bricks. It is more expensive, but owing to its non-corrosive action buildings on which it is used remain clean longer than when the stronger "spirits of salt" is employed. It should be used somewhat stronger than the latter, about 8 times its volume of water only being added.

The amount of acid and water mixture required will vary somewhat with the care and skill with which it is applied, but will average about 4 sq. yds. per gallon of mixture, with ordinary care, and costing for acid about a farthing a square yard, with acetic acid, and half to one-third of this amount for common hydrochloric acid. As the cost of the acid is but a small cost of the whole of the cleaning, it does not always pay to use the cheaper acid, because, as already pointed out, the buildings, being corroded by its use, do not last clean so long as when the original surface of the brickwork remains undisturbed, or when acetic acid is used.

When acid is used to clean the face of a building, the latter should first be washed over with clean water to remove all the dirt which can be taken off by this means. The surface is next treated with the weak acid—a hard brush, but not one of metal, being used—and finally the building is washed over with clean water, to remove any material which has been loosened, but not actually removed by the acid. This final washing may, if desired, be carried out by means of a powerful jet of water, care being taken to work from the top of the building downwards, so as to prevent all accumulation of unsightly spots caused by the "creeping" of the dirt, which always occurs when the building is played on irregularly with a hose.

The Use of Soap.

In spite of the advantages and simplicity connected with the use of acid for cleaning buildings, there are many objections to this method, and other detergents are preferable because they have less action on the bricks themselves. Unfortunately, they are generally considered to be too expensive, though this idea is far from correct, when the total cost of cleaning throughout a considerable number of years is considered.

As soot is the chief cause of disfigurement of buildings in large cities and manufacturing towns, and as this material is not acted upon by any chemical that could be used for cleaning, other matters must be taken into consideration. Among these is the well-known fact that soot is always greasy, and therefore would be more easily removed from buildings by some agent which would destroy the grease, such as alkali or soap.

On this assumption, the use of soft soap has been tried with much success, especially when it has been dissolved in 36 to 40 times its weight of warm water (1lb. of soap in 4 gallons of water) and used whilst still warm. Apparently the most efficient cleaning is obtained by treating the building with clean water, then with the soap solution applied with a hard brush, and finally washing down with water just as was recommended above when acid is used.

Soap has little or no action on clean brickwork or stone, and its effect on soot and similar matters of a greasy nature is far more intense than that of any acid, so that when it is used, buildings of either red or buff bricks rapidly regain their original colour, unless the cleaning process has been so long delayed that nothing can ever remove the dirt from the bricks. Care must be taken to wash off thoroughly all the soap by means of a thorough playing with a hose or by the more expensive washing over with clean water, or discoloration will be produced. In actual cost, the use of soft soap in the manner described works out at practically the same as for acid.

It is not desirable to combine the two methods just given, as some contractors have found to their cost, for the acid decomposes the soap and produces oily compounds, which easily form spots of a disagreeable appearance. Hence, it is necessary to adopt *either* acid or soap, but not both.

In buildings where the dirt is more of a dusty than a sooty character, it will not usually be necessary to employ any special cleansing material, as a powerful spray of water—such as that from a fire-engine—will usually clean the building sufficiently, providing that the surface of the bricks is reasonably close and dense. Sand-faced bricks are particularly difficult to clean, on account of their roughness of surface, which enables the dirt-particles to lodge more easily than on the face of a vitrified or glazed brick.

In cleaning terra-cotta work, special care must be taken that the surface is

not destroyed, as much of the modern terra-cotta has a finished or dense face but an open or porous body, and if once the face is removed it will be almost impossible to keep the building clean.

In cleaning window-sills and other projecting stonework, care should be taken to use only so much water as will drop clear from the walls of the building, as otherwise unpleasant "smears" and "trickles" will be produced.

Above all, care should be taken by architects who wish their buildings to remain clean in spite of unfavourable surroundings, to use those bricks, terra-cotta, or other materials which have a slightly glossy and dense surface from which the dirt will be readily dislodged by showers of rain or by a simple water jet. If this point were more closely watched, many public and other important buildings would present a much more pleasing apearance than they do at present.

Scum Removal.

For buildings which are disfigured by a whitish encrustation, technically known as efflorescence or "scum," the use of very weak hydrochloric acid is almost essential, though even this does not always prove a complete remedy. The causes of "scum" are so numerous and complicated that it is difficult to provide any single means of removing this unsightly material.

Scum is chiefly caused by soluble salts in the bricks, which are dissolved when the latter become wet with rain, and as the water dries out it carries the salts to the surface of the bricks and there deposits them. If the scum were only thicker, it would be best to remove it by scraping the walls gently, taking care not to scratch the bricks, but this is not usually practicable, and the least harmful method is to brush the defective surface with a moderately hard dry brush, when the bricks are thoroughly dry. Should this not prove effectual after several times, the surface may be washed over with a little weak acid, and then with water, the disadvantage of this latter method being that it may cause the formation of a larger proportion of soluble salts (through the action of the acid on some of the constituents of the brick), and the remedy may thus prove to be worse than the disease. The same, in a lesser degree, is true of repeated scrubbing of the wall with a wet brush and water.

The expressed opinion of many brick manufacturers to the contrary notwithstanding, the greater part of the scum which disfigures so many buildings is really due to faulty material or to the use of impure water in manufacture, and only in very few instances is it due to the absorption of soluble salts from careless storage of the finished bricks. It is, of course, very unfortunate when a brickmaker cannot turn out goods free from scum or "whitewash," but, from the builder's and architect's standpoint this is not satisfactory, and provided that other makers are equally accessible is no reason why the less pleasing bricks should be used. The cleaning of scummed bricks will then be unnecessary.

CHANGE OF ADDRESS.—The Associated Portland Cement Manufacturers (1900), Ltd., have removed their chief offices to Portland House, Lloyd's Avenue, London, E.C. The telephone number will remain as at present (5690 Avenue).

CONTRACTORS AND REINFORCED CONCRETE.

The increasing amount of work which has been and is being executed in reinforced concrete has naturally attracted the attention of contractors, generally, to this method of construction. A number of firms who have had some experience of concrete work have taken up the exertion of reinforced concrete, and other firms who have been engaged for many years as ordinary builders and contractors have seen advantages in specialising in such work. Reinforced concrete requires expert knowledge in supervision and trained workmanship in execution, and the ordinary methods of conducting building operations do not apply to it. Not only practical experience, but engineering ability are required in the supervision and management as well as trained superintendents, foremen, and workmen. Being a somewhat new subject and one which is not well understood by the ordinary building construction student—certainly not by the ordinary foreman—reinforced concrete, as a method of construction, cannot be executed properly by the ordinary builder whose training and organisation has been derived from conducting building operations in the earlier and more traditional methods of building. It is, of course, possible that reinforced concrete will become so much an every-day method of construction as time goes on that a few years hence the whole of the building trade will understand it as well as it does brickwork or masonry construction. But at present there are no indications of this, and modern building operations are now so much more complex and require an amount of engineering knowledge that prevents craftsmen and foremen such as are employed to-day becoming proficient enough to undertake such responsibilities. In every direction work is becoming specialised. In the United States large structures are executed by numerous specialist firms, each doing separate portions who manage to work harmoniously with each other. In the last decade we have seen the steel frame structure introduced in this country, and there have been rapid changes in the methods of executing large building operations. The construction of the fireproof floors, which, for many years, have been increasingly adopted for buildings of any size, have been gradually given into the hands of specialist firms; heating, ventilation, lighting, steelwork, etc., are all now undertaken by specialists, and it seems to be the tendency for reinforced concrete to be dealt with in the same way. Architects and engineers have begun to recognise the absolute necessity for great care and adequate knowledge, in reinforced concrete construction, and they now generally insist upon the work being executed by experienced firms employing competent staffs of engineers and trained foremen. So much depends upon the reinforcements being in the proper position to ensure the work being of the strength designed, that the carelessness of the ordinary workman cannot even be tolerated. Firms who specialise in the construction of reinforced concrete have to keep hands in regular employment who are accustomed to working in this new method of construction, and, though the craftsmen are not paid so highly as in some other skilled trades, they are very different to the ordinary builder's labourer or the navvy. The execution of centering, too, cannot be done by the ordinary carpenter, for it is almost a craft in itself, intermediate between carpentry and joinery. A foreman must not only be thoroughly able to interpret the drawings accurately, but possess some elementary knowledge of reinforced concrete construction, and must exercise the closest supervision over the work, and have the ability to economise labour and material, for waste of which there are so many opportunities in dealing with this new method of construction. Then, finally, the control of the work must be in the hands of specialist engineers, experienced in reinforced concrete construction, competent to check the designs; they must be made completely responsible for the work, or there may be grave risk of collapse and danger to life and limb. A number of contractors who have undertaken the execution of reinforced concrete work have found to their cost that experience and expert knowledge is required, otherwise loss as well as inefficit workmanship and possible instability will result; in short, reinforced concrete work requires to be carried out by a specialist contracting organisation. Reinforced concrete is booming, but it is to be hoped that its progress will not be hampered by any examples of great catastrophes and numerous accidents such as have occurred in the United States as a consequence of the work being undertaken by contractors possessed of little or no knowledge of the subject. The truth must be told, contracting methods are rapidly and radically changing; the contractor of the future will need to conduct his business on very different lines from the builder and contractor of the last century and of the present decade. It seems to us probable that in the near future English contractors for large building works at any rate, will occupy very much the position of the American contractors, who are more financiers, controlling numerous specialist sub-contractors, and executing hardly any portion of the work themselves.

A large party of Warsaw merchants who arrived in London on Friday week, and left for the Continent last Thursday, are stated to have been largely interested in building and building materials, and to have "placed" in London a large number of orders, whilst enquiries were made that are expected to lead to a considerable expansion of business between England and Poland.

* * *

The rebuilding of Drury Lane Theatre after the fire is so nearly completed that the re-opening of the theatre is announced for to-morrow, September 17th. The new stage, which is said to have cost £20,000, will be 100ft. wide, 100ft. deep, and 100ft. high—nearly half as large again as the old structure. The Drury Lane floor has used up 10,000ft. of teak, specially imported from Burmah. The new roof is 20ft. higher than its predecessor, and is constructed of steel trusses 10ft. high and 90ft. long. A glass roof surmounting the "grid" avoids the necessity of artificial light for the day work. The old timber roof had stood for a century, and was as sound at the end as at the beginning. An improved electric lighting installation gives an illumination equal to 150,000 candle-power. Fly galleries, from which the scenery is worked, have a total length of 250ft., and are constructed of steel. The limelight galleries are nearly 200ft. long.

THE TRADE OUTLOOK—WINTERY.

That the building trade is suffering from the severest and most protracted fit of depression it has ever known is only too evident. The question is, are matters improving, or are we to reach even lower depths? Here, of course, there is ample room for divergency of opinion, and accordingly the optimist and the pessimist are expressing the opposing views appropriate and natural to their respective temperaments. A cheery optimist, writing in the "Daily Chronicle" of September 4th, has no hesitation in prophesying increased activity in the near future. Indeed, he already discerns an upward movement. "As one who knows the building trades," he writes, "I believe that the worst has been seen, and that things are on the mend." He then quotes the Board of Trade returns for August, as showing that in London there was an increase of 8 per cent. in skilled tradesmen employed, and of 11 per cent. in the number of labourers compared with a month ago, and that there is actually an increase of 14 per cent. in the number of labourers compared with a year ago. He derives further comfort from the fact that a number of local authorities throughout the country are increasingly adopting the advice Mr. John Burns gave them last November in his address to the Municipal Corporations Association, and pressing into the ordinarily slack period of winter large public works and buildings, the execution of which can be so arranged. Improved methods of transit, he points out, have also given the painters and house repairers a great deal of work. When lack of travel facilities confined people to certain areas, the landlords were in many cases indifferent to the claims of paint, whitewash, and repointing. Now that the electric tram and tube have given the people a wider range of choice of houses, the landlords, in order to retain their departing tenants, are cleaning, painting, and smartening up, and the effect is to give more employment than otherwise would have been available. Our optimist further writes that a great deal of reservoir, tramway, and engineering work, sanctioned in the past three years of Parliament, is reaching the stage at which, now that bricks and cement and iron and steel are cheap, it will be undertaken. All over the country, the method of adapting public work to seasonal decline of general and private trade will, he declares, so far as building is concerned, go a long way to tide the labourers in that trade over the winter.

Against this determined optimism we have, unfortunately, to set some very grim facts of the opposite character. The valuable reports that have been forwarded to us from the secretaries of master builders' associations in every part of the country contain many references to the state of trade in given districts, and the record of depression is, so far as we can gather, unrelieved by a single gleam of hopefulness with regard to the immediate future. Most towns seem to be overbuilt; and the high rate of interest on money—which for many months was only procurable at from five to seven per cent.—had no doubt the effect of postponing a great deal of speculative building, which, now that the bank-rate shows signs of remaining normal, may now be expected to recommence in those districts—if there remain any—where small buildings are still wanted.

In a previous issue it was shown that the brick and tile makers of Northamptonshire and elsewhere, as well as the slate quarriers, were exceedingly slack. It now appears that the manufacturers of bricks and tiles in Bridgewater are feeling very acutely the depression in the building trade throughout the country. There has not yet been a reduction in the wages of the many hundreds of men engaged in the various yards, but, stocks being very heavy, much short time is feared in the winter. The charges placed on manufacturers through the operation of the Employers Liability and other Acts tend continually to increase, while rates and taxes do not diminish. During the boom in the building trade a few years ago, brickyards were started all over the country, and these curtailed the area supplied by Bridgewater. The trade in best facing bricks to Dublin has fallen to a shadow, and the valuable trade in ridges to London has almost ceased. The outlook at present is very unpromising. In their endeavour to maintain sales and keep their men employed, manufacturers compete fiercely with each other, as well as with outside firms, for what business there is, with the result that the best businesses at present barely provide enough to pay wages and expenses, and leave nothing for profit, or for extension and replacement of plant. The building operations at Fishguard have absorbed large quantities of Bridgewater bricks at low prices, and it is hoped that the trade of London and other important centres may revive next year. It would be easy to multiply evidence of this kind, which, like our reports on the iron and steel and Portland cement trades, all points to the same uncomfortable conclusion, namely, that trade is about as bad as it could possibily be, and shows no very clear signs of immediate betterment.

The continued depression in the building trade and the false rumours of improvement, have been made the subject of special enquiries by a correspondent of the "Manchester Dispatch," who was told by Mr. Batchelor, secretary of the Operative Bricklayers' Society, that "The building trade was never in a worse plight, and there is no prospect of improvement during the winter," Mr. Stennett, London District secretary of the Carpenters' and Joiners' Union, was hardly more cheerful. Carpenters, he said, are in a very bad way. They are "suffering from two causes—improvement in labour-saving machinery, and overcrowding. The increase in steel construction has affected all branches of carpentry and joinery. Steel is displacing wood for skirting, joists, sash-frames, and so on. There is marble dadoing everywhere in place of oak, and I suppose soon, in the City at any rate, there will be no need for carpenters at all." Shop-fitting, Mr. Stennett, believed, had been temporarily suspended, in consequence of the Franco-British Exhibition. "Everyone in the West End has been so busy with customers blocking through the establishment all day, that there has been no time to think of fittings." When the Exhibition closes, there is likely to be a rush of work in shop-fitting. To the same correspondent, an unnamed member of the Federation of Building Trades' Employers expressed the opinion that "we must get back to very prosperous days in general trade before the speculative builder will be able to open operations again."

The unemployment consequent on this state of depression was the chief theme of Mr. Shackleton's presidential address at the Trade Union Congress at Nottingham; and in such centres as Birmingham, Coventry, Manchester, and, above all, at Glasgow, unemployment has become an exceedingly embarrassing problem. But though, for the moment, the outlook is decidedly wintery, it may be that the trade is about to realise the truth of the proverb that "When things are at their worst they are about to mend."

Matters of Opinion.

No. 1.—The Increased Employment of Specialist Contractors.

It is true that each age produces its own difficulties, and it is, therefore, equally certain that each age must also grapple with those difficulties, consider them, and, if possible, find a satisfactory solution of them. In such case, experience, having no knowledge of the circumstances, can necessarily be of small account. If, from time to time, we deal, under this heading, with difficulties and developments occurring in the building trades, it will be with the clear intention of elucidating and setting forth views and opinions of those most qualified to speak and obtaining a nucleus of opinion which may be generally helpful to the contractors and others.

In taking for the first of these topics the increasing employment of specialist contractors, we may say frankly that we have found it a subject on which contractors, whatever they may really feel upon the matter, are at present somewhat loath to speak. The three opinons that we give (we have received others but couched in too colourless terms to be of interest), are absolutely in agreement as to the unsatisfactory character of the present arrangements, which are, after all only the outcome of a policy of drift. Take, for instance, the views of a large contracting firm in the Midlands:—

"In reply to your enquiry *re* 'Increasing practice of Building Owners contracting out with Specialist Contractors,' we ourselves have no objection to this course being taken, providing the owners are prepared to undertake the entire responsibility. The arrangement, as at present, works very unsatisfactorily: the principal contractor having no control over the workman coming from the specialist, but to a very large extent is made responsible for their actions and for the satisfactory character of their work. Matters are also complicated by the Workmen's Compensation Act, and the question of 'Attendance,' on these specialists requires to be dealt with in a different form than that usually employed. It seems to us most unfair to ask a general contractor to value an item in the quantities of which he can form no adequate judgment. We are of opinion that the employment of these specialists by the building owners direct, has a very decided tendency to delay the completion of a building, and oftentimes the chief contractor is involved in considerable loss in consequence."

We may note from this opinion the suggested complications under the Workmen's Compensation Act, and, in point of fact, this very difficulty has arisen within the last fortnight, in London, as the re-



[*Photo: Topical.*

THE BLACKFRIARS BRIDGE WIDENING.

The illustration shows the rapid progress being made with the widening by the contractors, Sir William Arrol and Co.

sult of an accident to a workman in the employ of a specialist firm. Take another opinion, this time from a large contracting firm in London:—

"The practice that obtains of including in the contract special works to be executed by other firms, is broadly, in our opinion, detrimental to the contractor. During the progress of the building he has to work with men who care little or nothing about the building in course of erection beyond their own particular work, and constant friction arises; also, as they know that, virtually, the order emanates from the architect, the contractor has great difficulty in controlling their work. Very often this is a fruitful source of delay, and cases have occured where the work of the specialist has been so bad that the contractor would not own it; but is not able to alter it. Yet it is done under his contract, and remains for all time as a specimen of his work.

"We can see no justification for this practice, except in the realm of sculpture, carving, and art-work. If trouble would only be taken at the outset to properly specify and detail these portions of the work, they could then be taken off and included in the quantities and priced in the usual way. What is the issue? The contractor becomes merely an agent, and in many cases has the whole responsibility, as if he were doing the work himself. On all hands specialists are springing up whose interest it is to work for architects to the detriment of the contractor, and the contractor is left with empty shops where such works used to be carried out."

It might be worth mentioning here that even after a contract is signed alterations have been made and a specialist contractor introduced, to the detriment of the general contractor. A few weeks since, in talking to the representative of a big contracting firm, we learned that in a recent big contract of theirs, which included the execution of a certain extensive piece of work in one class of stone, a decision was come to after the commencement of the work to have that particular work executed in an entirely different material. Consequently, the whole thing was lopped out of the contract, and eventually placed in the hands of a specialist, and, needless to say, though the general contractors had not to supply either the materials or the labour, they lost the profit they would otherwise have made on the work. That such an alteration as this might have serious consequences is all too possible, for in estimating, a contractor may, and frequently does, cut his prices on one piece of work, relying on other parts to make his profit. Our third and last opinion, from another Birmingham firm, touches upon another undesirable feature:

"The question of the increasing practice of architects and building owners to include in quantities prime cost amounts for specialist contractors for the many and various requirements of a building is one which has engaged the anxious consideration of Builders' Associations and the National Federation. That it is a serious question for those who take the responsibility of a building contract will at once be apparent, such a contract always entailing in the last issue entire responsibility for the whole of the work embodied in the quantities. If a builder is to undertake such responsibility he should by all the laws of reason be given control of all the work and the workmen employed to execute it. Is this so under present conditions? Let us take a concrete case. In a recent contract taken in the Midlands of about £9,000, there were provisional sums amounting to £3,500.

"These provisions entailed the introduction of 23 specialist contractors. Among the items the most striking is a provision of £590 for joinery to be executed by a firm selected by the architect. The condition in the contract under which this and all other of the items were to be executed was as follows:—The contractor is to make good at his own expense all defects of whatsoever kind which appear within six months of certified completion, in particular should any joinery shrink, warp, wind, or twist more than one-eighth of an inch, the contractor will be required to renew same at his own expense. Comment is unnecessary. But another and, if possible, a still more serious aspect of such a contract is that in case of any accident to any of the employees of the twenty-three specialists the builder, as principal contractor, would be liable to be sued for damages under the Employers' Liability Act, although he had actually no control over them.

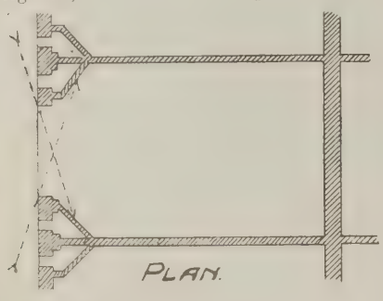
"It would seem nowadays that the term 'builder' is a misnomer: he is fast degenerating into a mere financial agent for the purpose of assuming the responsibilities of all and sundry whom an architect or proprietor may choose to specify, often for a very meagre return of profit. It is not to be wondered at that builders are beginning to ask themselves whether the remuneration is commensurable with the risk."

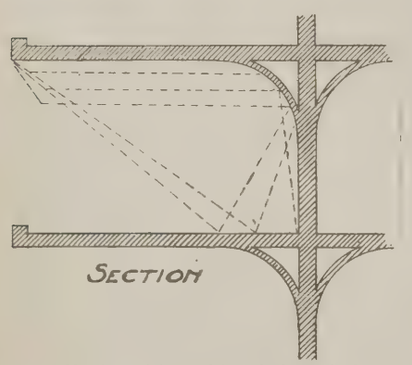
We may note here to what an extent specialist work is introduced into a contract, when nearly 40 per cent. of the work in a £9,000 contract is outside the general contractors' control. The logical and undesirable outcome of a contractor becoming a mere financial agent need not be laboured. But the prospect of such a development, which possibly has not yet gone very far, should be sufficient to induce contractors to take speedy steps to deal with the matter before it gets beyond control.

LIGHTING ROOMS.

New Methods of Construction.

Mons. Augustin Rey, architect to the "Fondation Rothschild" for the erection of working men's dwellings in Paris, has just made known a rather startling proposal for the modification of the planning and construction of rooms in order to secure efficient lighting by the sun's rays Mons. Rey points out that in growing towns, with their agglomerations of tall houses and comparatively narrow streets, it is almost impossible to ensure adequate natural lighting. His experiments were carried out in a moderate sized room, not overshadowed, having one large window, which did not, however, quite reach the floor or the ceiling. He found that the whole of the ceiling, the end wall, and over nine-tenths of the floor were badly lighted, while a small portion of the





front walls for either side of the window of the lateral walls and of the floor were in "obscurity." Translated into percentages, Mons. Rey's figures work out as follows:—44.93 per cent. of the surface was well lighted, 44.13 per cent. badly lighted, and 1.93 per cent. in "obscurity," i.e., semi-darkness. Therefore considerably over half of the surface of the room is deprived of the purifying action of the sun's rays and in cheap dwellings obscurity breeds dirt. The question is how to increase illuminations by both direct and reflected light. The means proposed are decidedly revolutionary yet quite simple. To begin with, Mons. Rey insists that the window should reach from floor to ceiling. His next suggestion is that the angles formed by the front wall, on either side of the window, and the lateral walls should be filled up with cupboards, the panels being placed at an angle. By this arrangement the front part of the room is effectively flooded with light, direct or reflected. Now comes the question of the back part of the room. If the room is almost square and not over large, all that is needed is to give the ceiling a gentle slope from window to inner wall. If the room is a deep one, then he cuts off the angle formed by the end wall and ceiling by means of a gentle concave curve. It is a parabolic curve, and Mons. Rey calls his new ceiling the "luminous ceiling." He finds that practically the whole surface of such a room is thoroughly lighted, only .30 per cent. being in "obscurity," as against 10.93 in "obscurity," and 44.13 badly lighted of the ordinary room. The cost of forming the "vaulted" luminous ceiling, the author declares, would not add a shilling a year to the rental of an average sized room. The question of appearance has some importance; the room is better lighted, so looks larger and more cheerful; the dissymmetry is not apparent, for the slope and curve are very gentle, and the eye is not incommoded thereby, less notice being taken of a curve than of an acute angle.

It is certainly worth while experimenting with the proposal, for unquestionably the thorough lighting of rooms, especially in towns, is of the utmost importance hygienically. The problem, too, is not without its economic aspect, as the system might well be applied to the planning of showrooms and workshops, at all events so far as regards the "luminous ceiling."

Market Reports.

Stone and Slate Trades.

The building stone trade has shared in the general depression with other building trades. The Bath stone and Portland districts have been slack; in the Sheffield, and Rowsley districts trade was fairly good. The Aberdeen granite trade has also been slack, and but for the American granite industry having tempted so many quarrymen away, unemployment here would have been serious. There has been a falling-off in the imports of foreign stone.

Some attention has been attracted to the slate trade by the three exhaustive articles that have appeared in "The Times," and if these do anything to improve the condition of the trade in Wales there will be much to be thankful for. The great preference of architects to-day for green slates has, of course, its part in making things slack in the principal Welsh slate districts, though a green Welsh slate from a small Carnarvonshire quarry is to be employed for the Bangor Normal College. Some indignation has been expressed that slates should have been imported from South Wales for the North Wales University buildings. The increase in concrete flat roofs on large buildings is also affecting the slate trade.

Brick and Tile Trade.

The brick trade has been good and bad in districts, but on the whole things have been very slack. Things were fairly good in Lancashire, at Chelmsford, North Wales, and Stourbridge. In the Durham districts and Ipswich, only moderate; Bedford was slack, and in the Midlands trade has been dull, especially so in the blue brick industry in South Staffordshire. The trade in the Peterborough district has been quite the worst known, and there is some talk of the Fletton manufacturers combining to regulate prices. The publication in the daily press of a statement that Fletton bricks could be bought at 8s. a thousand has led to some inquiries, but the general depression in the building trade has not tended to induce speculative purchases.

Timber Trade.

The soft wood timber trade continues quiet, with small importations, and still smaller demand. In spite of this latter fact, prices, though they have declined somewhat, remain fairly good, considering the general depression in the building trade. Outside London and the south ports business for the autumn has shown signs of improvement; there are numerous enquiries, and contracts have been made at from 5s. to 7s. 6d. per standard over the lowest spring average. This still leaves low prices, and with low freights and the cheapness of other building materials, there is every inducement for building operations to resume their normal volume. Manchester trade keeps steady, and prices firm; and the Glasgow trade is improving, but the North-East coast ports continue quiet.

Sweden and Canada have sent very small supplies, but the deficiency from the former has been made up by larger stocks from Russia and Finland. For prepared stuff from Sweden the demand has been a little better, and the prices are on the July average. The time is ripe for the large buyer on a cash basis, and a few are taking advantage of the cheap prices to make speculative purchases. Sellers are disposed to clear at unremunerative rates for the sake of ready money, and there are rumours of many quiet transactions at unreported figures.

Pitchpine imports have been restricted, but the demand is very small, and only fair prices have been maintained. For spruce there has been small demand, and prices have declined. Oregon pine rates fell, but recovered later, and are now little below the average.

For American walnut the demand is dull, and only large logs are asked for; the Italian walnut supply more than suffices for a restricted demand.

The teak and mahogany markets have been very slack; there is no demand for anything in teak but the best wood ("European quality"), and the cost of getting this on ship must inevitably keep up the prices. The mahogany trade has been very stagnant; the imports have been been very restricted, and have nearly equalled the consumption. Only the best timber has been in demand, and for this the prices ruled fairly good.

Wainscot prices are improving, principally owing to deficient supplies. Odessa oak has not been in demand, but the shipping having now finished for the season, the sellers are sure of their price.

The Iron and Steel Trades.

The iron and steel trades remain in a depressed condition, the only difference in the situation as compared with that of a few weeks ago being that sellers and buyers are now more generally satisfied than they were that prices have touched bottom. It is, however, never safe to prophesy, and those best acquainted with the conditions of the trade are always the most reluctant to express confident anticipations as to the future. We will content ourselves, therefore, with stating a few broad facts. It should always be borne in mind that the staple products of the principal British steelmakers are rails and shipbuilding materials. Shipbuilding is still in a state of coma, and there is no business in rails to speak of. Under such circumstances, British makers pay more serious attention to the girder trade, and for some time past British joists have competed very closely with the foreign article, especially in the case of wholesale orders for export. Where girders are sold subject to tests and inspection, the British article is frequently cheaper than the foreign. It is also well to re-

member that where a fair quantity of joists are required from stock, say 5/10 tons, or more, such can frequently be obtained from the stocks of several English makers as cheaply, or more cheaply, than foreign joists from stock merchants. The works' usual extra charge for stock delivery is 10s. per ton. The characteristic feature of the British steel trade at the present moment is a mania for price associations. Probably most of our readers are unaware that there is a regular association for fixing prices for joists for the home trade. In imitation of the German syndicate, the English makers have established a sliding scale according to quantity. The minimum price for 100-ton lots is £5 15s. per ton, carriage paid to the Thames, or other pricipal centre, with 2s. 6d. per ton extra for lots under 100 tons, and a further 5s. per ton extra for lots under 50 tons. Lots over 250 tons are subject to free competition.

The syndicated price for foreign joists remains at £5 4s. per ton f.o.b. Antwerp nominally, subject to rebates of 11s. and 13s. per ton for the South and North of England respectively. This price is for 1,000-ton lots, but wholesale merchants will sell any quantity at a shilling or two above the syndicate price. It is because of the multiplicity of steel combines that alterations in prices are so misleading, and cannot be taken as a correct index of the state of the market. The general impression of competent observers is that with America deeply depressed, and also disturbed by the Presidential elections. German mills nearly all working about half-time only, and our own shipbuilding trade in the depths of depression, there can be no recovery for some months to some.

About the cheapest prices obtainable today for joists, from stock merchants, delivered free on van in London, are:—British, £6 10s. per ton; Continental £6 7s. 6d. per ton.

The Portland Cement Trade.

The Portland cement trade is marking time, with but little activity except in a few isolated markets where special conditions prevail. Prices have now reached a level that is lower, we believe, than ever before in the history of the industry, and below which it would seem impossible for them to drop, and we hear of makers preferring to reduce their output rather than accept some of the figures now current. There is no doubt that the present extremely low level of prices fully discounts even the substantial saving it is hoped will accrue from the new fuel contracts which will shortly be entered into. The building trades continue slack, with but little if any sign of improvement, and altogether the cement makers' lot at the present time can be far from a pleasant one. The only redeeming feature in the position is to be found in the fact that the importations of cement from the Continent into the United Kingdom continue to fall, and there seems to be every probability that the total for this year will fall below that of the year 1900. Since that year it will be remembered these importations have reached very nearly 300,000 tons, whereas it is expected that this year they will fall below 100,000 tons. One would have thought that so considerable a diminution of foreign competition would have at all events prevented any serious fall in home prices, and that it has not done so emphasises the unsatisfactory trading conditions which now exist. A feature of interest is the placing of the enormous Panama Canal contract for cement with one of the leading American firms. It was never seriously expected that the business would come to this side of the Atlantic, although several British firms tendered at very low figures.

CONTRACTOR'S PLANT.

A 150-ton Crane.

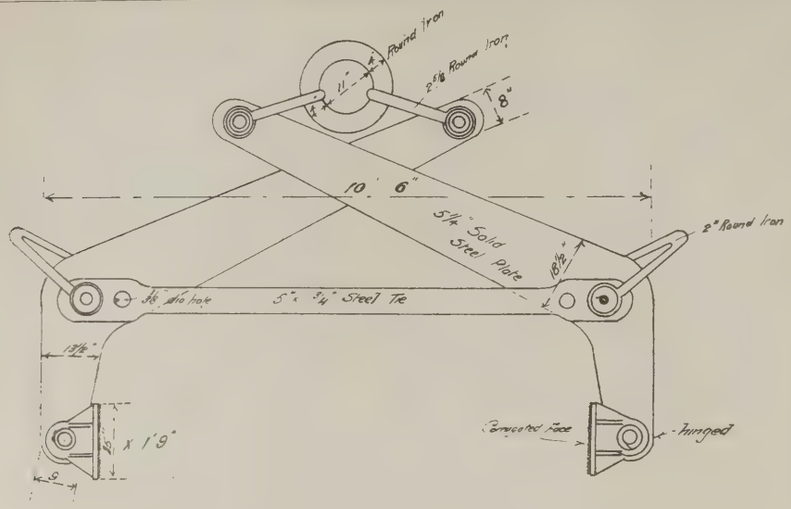
An illustration and description of the 150-ton crane which Messrs. Robert MacAlpine and Sons, of Glasgow and London, are using at the Methil Dock Works in Fifeshire will be of interest generally to contractors. This crane, which is being used for the raising of 50-ton blocks in connection with a new sea wall, belongs to Messrs. Swan, Hunter and Wigham Richardson, Limited, the Tyne shipbuilders, from whom Messrs. MacAlpine have hired it for their work.

The jib is hinged at the bottom, and is raised or lowered by means of a couple of rotating screws. For slewing, the barge on which the crane is built is moved by means of mooring ropes and anchor-chain, which are passed round steam-capstans on board. In addition to the heavy purchase, the crane has two

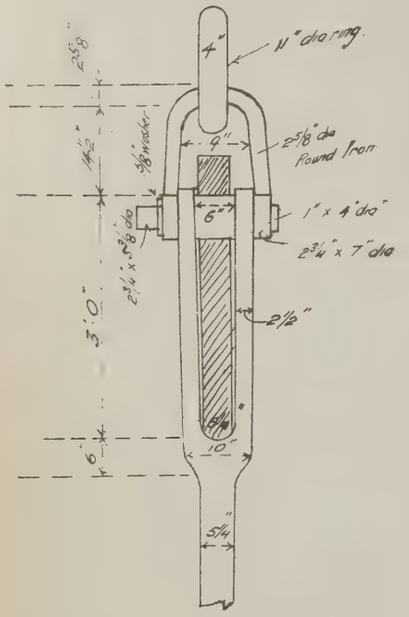


Photo: J. Brown.

150-TON TITAN CRANE IN USE AT THE METHIL DOCK WORKS.



— Elevation of Grips —



— Detail of Top Part. —

lighter purchases, which have proved invaluable in the case of block removal.

The grips used by the contractors are of interesting design, and are illustrated on this page. They were specially made of forged steel by Messrs. Stothert and Pitt, Bath, and are after the pattern used by builders in lifting fine dressed ashlar where shear-holes may not be made. The paws of the grips are grooved on the face, and hinged so as to bear fair on the block-face when the strain is on. The grips are hung by a chain from the heavy purchase-rope of the crane passing through a large ring connected to links fastened to the ends of the arms. A chain fastened to the shoulder links of the grips is linked to one of the light purchases of the crane. This rope takes the weight of the grips and is used for lowering them over the blocks and for lifting the grips after a block has been deposited in its new position. Owing to the grips being caught at the shoulders, they are kept spread by this means. Guide-ropes are led from shoulders of the grips to the barge.

When about to lift a block the grips are first squared by means of the guide-ropes and lowered over the block by the light purchase-rope from the crane. The heavy purchase-rope is then wound up, and the strain pulling the upper ends of the arms together presses the paws firmly against the sides of the block, which is then raised to a height sufficient to clear the neighbouring blocks. The crane then works itself round by means of its mooring-ropes, and gets into position for lowering the block to the new line. When the block is landed the grips are freed by the light purchase-rope from the shoulders, and a position taken up for gripping the next block.

LEADLESS GLAZED TILING AT THE NEW GOVERNMENT BUILDINGS.

More than 5,000 square yards of Carter's leadless glazed tiling have been recently supplied and fixed in the new Government buildings at Westminster, which were designed by the late Mr. John Brydon, and of which Sir Henry Tanner, I.S.O., F.R.I.B.A., is the superintending architect. The great recommendation of this class of tiles is that all risk to the workers in the glazing process is obviated. The question of lead-poisoning has been very much before the public of late years, and has long occupied the attention of the Home Office. Royal Commissioners have reported on it, and the legislation under Lord James of Hereford has reduced the risk to a minimum. Still, with the use of lead there still remains a certain amount of risk, but with the use of leadless glaze there is absolutely no risk at all. Hence the encouragement given by the Government to the manufacture of these tiles. There are one or two drawbacks, as, for example, a certain want of uniformity in tone of colour, which, while it commends itself to some tastes, is not so satisfactory to those who require even colouring. But to those who consider the health of the worker to be of more consequence than one special point in the article produced, which in other respects is quite equal in value, the leadless glazed tiles will certainly be more satisfactory. It may well be that even the slight drawback above mentioned will, in process of experiment, be overcome, but till then no doubt both methods of glazing will be in use.

New Companies.

A. Parry Fielder, Ltd., to acquire the business carried on by A. P. Fielder, and to carry on the business of architects, surveyors, financiers, concessionaires, merchants, builders, contractors, decorators, builders' merchants, etc. The first directors are to be appointed by the signatories. Registered August 18, by C. F. Smith, 1, Arundel Street, W.C. Capital: £10,000.

Bianco, Ltd., to carry on the business of merchants, importers and exporters of and workers in marble, stone, granite, limestone, slate, glass, earthenware, etc., and to adopt an agreement with Herman Lichtenstein. Registered August 22. Registered office, Victoria Wharf, Green Street, Bethnal Green, E. Capital: £5,000.

"Firmit" Flooring Co., Ltd., capital, £1,000; to carry on the business of flooring contractors, artists in Italian marble, terrazzo, Roman mosaic and Venetian glass, etc. Registered August 21. Registered office, 49, Deansgate, Manchester.

East Central Properties Co., Ltd., capital, £20,000; to acquire certain land and buildings in Stepney, and to carry on the business of builders, estate owners and managers, etc. The first directors are H. W. Johnson (managing director), and others to be appointed by the signatories. Registered August 27, by Bartlett and Gregory, 6, New Square, Lincoln's Inn, W.C.

Northwich Brick and Terra-Cotta Co., Ltd., capital, £1,000; to adopt an agreement with W. S. Moore, C. E. Williamson and Martha A. Barrow, and to carry on the business of brick, tile, terra-cotta, imitation stoneware and building material manufacturers, etc., as formerly carried on by the said vendors at Manchester Road, Northwich, as the Northwich Brick and Terra-Cotta Company. The first directors are W. S. Moore, C. E. Williamson, Martha A. Barrow, and J. Cawley. Registered August 22, by the Solicitors' Law Stationery Society, Ltd., 28-9, Chancery Lane, W.C.

Sydney and Thomas, Ltd., capital, £2,000; to adopt an agreement dated July 26, 1907, between J. S. Beale and H. Johnson, relating to the erection of buildings and the execution of works by the said H. Johnson on land at Southampton Row and Vernon Place, W.C., and the granting to the said H. Johnson of a lease of the said land and buildings, and to carry on the business of land and property owners and managers, builders, contractors, etc. The first directors are C. W. Bennett and T. E. Johnson. Registered August 22, by Charles Sawbridge and Son, 68, Aldermanbury, E.C.

Bankruptcies.

Thomas Robbins, jobbing builder and painter, 11, Bordesley Green Road, Birmingham. Liabilities estimated at £186 1s. 1d.; assets £64 10s. 1d.

Britton, Frederick, builder and contractor, Bedford Row, W.C. Liabilities £154,500. Assets consist chiefly of a book debt (£8,000), stated to be bad.

Jones, Ernest, Derwent House, Preesgweene, near Chirk, builder. Gross liabilities £1,168; expected to rank, £669. Assets, £430.

Javens, James Joseph, joiner and builder, Park Road, Carlton. Gross liabilities £877 1s. 5d.; £317 is expected to rank for dividend. The assets are nil.

Cooper, Charles, joiner and builder, Thorntondale. Gross liabilities £415 17s. 2d., of which £407 1s. 11d. is expected to rank for dividend, the assets being estimated at £76 18s. 6d.

Rowland, William Henry, painter and decorator, residing and carrying on business at Redhill Oil and Colour Stores, Coventry Road, Hay Mills. Liabilities expected to rank for dividend £67 19s. 3d. Assets estimated to produce £9 9s., the deficiency being £58 10s. 3d.

Barker, Joseph Wm. Lancelot, house furnisher and artistic decorator, 214, Western Road, Crookes, and 12, Haymarket, Sheffield. R.O., Sept. 5. Adj., same day.

Gillett, Wm. Frdk., timber merchant, 2, Styman Street, East Road, City Road, and 4, Hardwicke Villas, Bowes Park. R.O., Sept. 3. First meeting Bankruptcy Court, Sept. 16, at 12. P.E., same, Oct. 29, at 11.

Hart, Chas., builder, Laurel Cottage, Hemyock. R.O., Sept. 4. Adj., same day.

Hunt, Alf., builder (trading as A. Hunt), late 69, Marshall Road, Woodseats, Sheffield. First meeting, O.R.'s, Sheffield, Sept. 18, at 12. P.E., C.C., Sheffield, Oct. 8, at 2.

Jones, Jno. Clarke, joiner and builder, Woodville Cottage, Church Street, and Kingsway, Frodsham. R.O., Sept. 4. Adj., same day.

Marshall, Jno. Thornton, builder, Buckingham. First meeting, O.R.'s, Oxford, Sept. 16, at 12. P.E., Town Hall, Banbury, Oct. 27, at 10.

Moody and Lucas, builders, 5, Ravensbury Terrace, Earlsfield. R.O., Sept. 2. First meeting, 132, York Road, S.E., Sept. 18, at 12. P.E., C.C., Wandsworth, Oct. 15, at 12.

Richardson, Wm. Hy. and Wm. Slater Somerfield, plumbers and glaziers (trading as Richardson and Somerfield), Bearwood Hill Road, Burton-on-Trent. First meeting, Midland Hotel, Burton-on-Trent, Sept. 15. P.E., C.C., same, Oct. 14, at 12.

Sands, Thos., builder, 2, South Terrace, and Highfields, Broadoak, Heathfield. R.O., Sept. 2. First meeting, Crown Hotel, Hailsham, Sept. 17, at 11.30. P.E., County Hall, Lewes, Oct. 7, at 11.30. Adj. Sept. 2.

Current Market Rates of Materials in the Various Trades.

The quotations given in this list apply only to larger quantities purchased in London (the minimum quantity for which these prices are applicable being given where practicable). Retail purchasers must expect to pay a reasonable advance on wholesale rates, as well as carriage. The trade discounts for each item have not been considered, as these would be affected by the quantity of the goods purchased. The endeavour is made to give fair average prices, which would in many cases be affected by the quality of the materials required.

BRICKLAYER.

The current rates for stocks, Flettons, and other common building bricks, and for local facings are not given, as local considerations obviously affect their prices, and readers who may make use of the information given in these columns can readily obtain quotations for themselves.

		Current rates.	Rates for similar materials on Aug. 1.
Best blue pressed Staffordshire bricks	per 1,000	3 5 0	
do. bullnose bricks	do.	3 15 0	
Best Stourbridge fire bricks	do.	4 15 0	

Glazed Bricks.

Best white and ivory white-glazed one side	per 1,000	10 7 6	
do. glazed one end	do.	9 17 6	
do. quoins, bullnose bricks, and bricks glazed on 4½in. side	do.	13 17 6	
do. glazed two sides (double stretchers)	do.	15 17 6	
do. glazed two ends (double headers)	do.	12 17 6	
do. glazed one side and two ends	do.	16 17 6	
do. glazed two sides and one end	do.	17 17 6	
Splays, chamfers, and squints (to an angle of 45 degs.)	do.	15 7 6	
Double bullnose bricks, double splays, round ends, bullnose stops, and mitres	each	0 0 5	
Double bullnosed mitres ...	do.	0 0 7	
Internal angles, 2½in. radius	do.	0 0 4	
do. do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Best buff and cream	per 1,000	11 17 6	
do. glazed one end	do.	11 7 6	
Other colours, extra ...	do.	4 0 0	
do. quoins, bullnoses, and bricks, glazed on 4½in. sides*	do.	15 17 6	
do. glazed two sides (double stretchers)*	do.	18 17 6	
do. glazed two ends (double headers)*	do.	15 17 6	
do. glazed one side and two ends	do.	19 17 6	
*These bricks in other colours, extra	do.	3 10 0	
do. glazed two sides and one end	do.	20 17 6	
Splays, chamfers, and squints for an angle of 45 degs	do.	19 17 6	
In other colours, extra ...	do.	3 0 0	
Internal angles, 2½in. radius	each	0 0 5	
do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Ordinary-quality salt-glazed bricks, glazed one side ...	per 1,000	8 17 6	
do. glazed one end	do.	8 7 6	
do. quoins, bullnoses and bricks, glazed on 4½in. sides	do.	12 7 6	
do. glazed two sides (double stretchers)	do.	14 7 6	
do. glazed two ends (double headers)	do.	11 7 6	
do. glazed one side and two ends	do.	15 7 6	
do. glazed two sides and one end	do.	7 6	
do. splays, chamfers, and squints for an angle of 45 degs.	do.	13 17 6	
Specially prepared or dipped salt-glazed with plain glazed side or ends, as described above, same price as for best ivory whites	per 1,000		
Ordinary-quality salt-glazed double bullnoses, double splays, round ends, bullnosed stops and mitres	each	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed double bullnosed mitres	do.	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed internal angles, 2½in. radius	do.	0 0 3	
do. 4½in. radius	do.	0 0 5	
Best dipped salt-glazed internal angles, 2½in. radius	do.	0 0 4	
do. 4½in. radius	do.	0 0 8	
Ordinary salt-glazed moulded bricks (stretchers and headers)	do.	0 0 8	
Best dipped do.	do.	0 0 8	
Second-quality glazed white and ivory white, 30s. per 1,000 less than best white			
Second-quality coloured bricks, same price as best whites of their respective descriptions			
Plain arch bricks £6 per 1,000 above list for respective kinds and colours			£4 per 1,000 above list.
Cambered arch bricks 1s. 2d. each, any kind or colour, if not exceeding 9ins. by 4½ins. by 2 ins			1s. each.
Rich majolica glazed bricks (headers and stretchers)	per 1,000	21 17 6	
do. quoins and bullnoses ...	do.	26 17 6	

Sand, Ballast, Cement, Lime, and Fireclay.

Thames and pit sand ...	per yard	0 7 0	
Thames ballast	do.	0 5 6	
Best Portland cement ...	per cask	0 5 10	
Best ground blue lias lime (NOTE.—The charge for the sacks to be added to prices per ton.)	per ton	0 19 0	
Grey stone lime	per yard	0 11 6	
Stourbridge fireclay in sacks	per ton	0 27 6	upwards

MASON, SLATER AND TILER.

The average current prices for stone per foot cube are given in the following list, the railway rates being calculated on the assumption that orders will be given for full truck loads of about 4 tons upwards.

Brown Whitbed Portland stone (in blocks containing on an average 20 ft. cube)	per ft. cube	0 2 0	
White Basebed do.	do.	0 2 1½	
Bath stone	do.	0 1 6	
Beer stone	do.	0 1 6	
Ancaster stone	do.	0 1 10	
Greenshill stone	do.	0 1 10	
Chilmark stone	do.	0 1 9	
Darley Dale stone	do.	0 2 3	upwards
Red Mansfield stone	do.	0 2 4	
Closeburn red freestone ...	do.	0 2 0	
Hard York stone	do.	0 2 10	
do. 6 in. sawn both sides landings (random sizes)	per ft. super	0 2 4	
do. 6 ins. rubbed two sides do.	do.	0 2 7	
do. 3 ins. sawn two sides slabs	do.	0 1 0	
do. 2 ins. self-faced random slabs	do.	0 0 6	
Broken Granite (blue Guernsey), 1½ ins. ...	per ton.	0 9 9	c i.f. Thames
do. do. 2 ins. ...	do.	0 9 6	do.
do. do. 2½ins ...	do.	0 9 0	do.
do. (Imperial blue Scotch), 1½ ins.	do.	0 8 9	do
do. do. 2 ins. ...	do.	0 8 6	do.
do. do. 2½ ins. ...	do.	0 8 3	do.
do. (Midland Counties), 1½ ins.	do.	0 11 0	London station
do. do. 2 ins. ...	do.	0 10 9	do.
do. do. 2½ ins. ...	do.	0 10 6	do.
Granite Kerb (Norwegian). 6 ins. by 12 ins. ...	per foot	0 1 4	c.i.f Thames
do. do. 12 ins. by 6		0 1 4	do.
do. do. 12 ins. by 8		0 1 6	do.
do. (Imperial blue Scotch) 6 ins. by 12 ins.	do.	0 1 3	do.
do. do. 12 ins. by 6		0 1 3	do.
do. do. 12 ins. by 8		0 1 5	do.
do. (grey Jersey), 6 ins. by 12 ins.	do.	0 1 3¾	do.
do. do. 12 ins. by 6		0 1 3¾	do.
do. do. 12 ins. by 8		0 1 5¾	do.
Circular kerb 4d. per foot extra. Granite Pitchings (Aberdeen), 3 ins by 5 ins ...	per ton.	1 15 0	do.
do. do. 3 ins. by 6 ins.	do.	1 14 0	do.
do. do. 4 ins. by 5 ins.	do.	1 14 0	do.
do do. 4 ins. by 6 ins.	do.	1 13 0	do.
do. (Imperial grey Scotch) 3 ins. by 5 ins.	do.	1 10 0	do.
do. do. 3 ins. by 6 ins.	do.	1 9 0	do.
do. do. 4 ins. by 5 ins.	do.	1 9 0	do.
do. do. 4 ins. by 6 ins.	do.	1 7 6	do.
do. (grey Jersey), 3 ins. by 5 ins.	do.	1 7 6	do.
do. do. 3 ins. by 6 ins.	do.	1 6 6	do.
do. do. 4 ins. by 5 ins.	do.	1 6 6	do.
do. do. 4 ins. by 6 ins	do.	1 5 0	do.
do. (blue Guernsey), 3 ins. by 5 ins	do	1 14 0	do.
do. do. 3 ins. by 6 ins.	do.	1 13 0	do.
do. do. 4 ins. by 5 ins.	do.	1 13 0	do.
do. do. 4 ins. by 6 ins.	do.	1 12 0	do.

Slates.

*Best blue Bangor Countess slates	per 1,000 of 1,200	£3 0 0	upwards
do. 20 ins. by 12 ins.	do.	£3 15 0	
First-quality Bangor Countess slates	do.	12 17 6	
do. 20 ins. by 12 ins.	do.	13 10 0	
do. Ladies	do.	7 5 0	
Permanent green Countess slates	do.	11 10 0	upwards
do. 18 ins. by 10 ins. ...	do.	9 10 0	
do. Ladies	do.	6 10 0	
Best "Eureka" unfading green Countess slates ...	do.	15 15 0	
do. 20 ins. by 12 ins. ...	do.	18 7 6	
do. 18 ins. by 10 ins. ...	do.	13 5 0	
do. Ladies	do.	10 5 0	
Best blue Portmadoc Countess slates	do.	13 10 0	
do. Ladies	do.	6 10 0	

**These prices are for lots not less than 4 tons.*

Tiles.

Plain red roofing tiles ...	per 1,000	2 2 0	
do. hip and valley tiles ...	per doz.	0 3 6	
Best Broseley tiles	per 1,000	2 10 0	
do. ornamental tiles	do.	2 15 0	
do. hips and valley tiles ...	per doz.	0 3 10	
Edwards's (Ruabon) brindled red or brown tiles ...	per 1,000	2 17 6	
do. ornamental do.	do.	3 0 0	
Valley tiles	per doz.	0 3 9	
Hip tiles	per doz.	0 4 0	
Peake's mottled or red Staffordshire tiles	per 1,000	2 12 0	
do. ornamental do.	do.	2 15 0	
Valley tiles	per doz.	0 3 6	
Hip tiles	do.	0 4 0	
Best "Rosemary" plain tiles	per 1,000	2 8 0	
do. ornamental do.	do.	2 10 0	
Valley tiles	per doz.	0 3 8	
Hip tiles	do.	0 4 0	
"Hartshill" sand-faced tiles	per 1,000	2 10 0	
do. pressed do.	do.	2 7 6	
do. ornamental	do.	2 10 0	
Valley tiles	per doz.	0 3 5	
Hip tiles	do.	0 4 0	

CARPENTER AND JOINER.

Fir timber best middling Danzig	per load	4 15 0	
Seconds	do.	4 10 0	
Riga and Libau, full size	do.	3 5 0	
Swedish Balks	do.	3 0 0	
Pitch-pine (average 30 ft.)	do.	4 5 0	
Swedish Deals, 3 ins. by 11 ins., and 4 ins. by 11 ins. 1st quality	per standard	22 10 0	
do. 2nd do.	do.	20 0 0	
do. 3rd do.	do.	13 10 0	
do. 4th do.	do.	11 5 0	
do. 1st quality 3 ins. by 9 ins.	per standard	19 10 0	
do. 2nd do. do.	do.	16 0 0	
do. 3rd do. do.	do.	12 10 0	
do. 4th do. do.	do.	11 10 0	
Swedish Battens, 2½ ins. by 7 ins. 1st quality	per standard	14 10 0	
do. 2nd do.	do.	13 0 0	
do. 3rd do.	do.	11 10 0	
do. 4th do.	do.	10 10 0	
Battens, 2½ ins. by 6 ins., 2 ins. by 6 ins., and 2 ins. by 4 ins. do.	do.	9 10 0	
do. 2 ins. by 4½ ins. and 2 ins. by 5 ins.	do.	9 0 0	
For foreign sawn boards 1 in. by 7 ins. and 1½ ins. by 7 ins. add to price of battens	do.	0 10 0	
For ¾ in. do. add	do.	1 0 0	
White Sea first yellow deals 3 ins. by 11 ins. (average price)	do.	24 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Second yellow deals 3 ins. by 11 ins.	do.	19 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	12 0 0	
White Sea first yellow battens 2½ ins. by 7 ins. and 3 ins. by 7 ins.	do.	17 0 0	
Second do.	do.	13 10 0	
Third do.	do.	11 10 0	
Petersburg first yellow deals 3 ins. by 11 ins.	do.	21 10 0	
For 3 ins. by 9 in. deduct from above	do.	4 0 0	
do. second yellow deals 3 ins. by 11 ins.	do.	14 0 0	
For 3 ins. by 9 ins. deduct	do.	1 10 0	
do. third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	11 0 0	

		Current Rates.	Rates on Aug. 19.
Petersburg battens, 1st per standard		14 0 0	
do., second	do.	11 10 0	
do., third	do.	10 10 0	
White Sea, first white deals, 3 ins. by 11 ins.	do.	15 10 0	
For 3 ins. by 9ins. deduct from above	do.	1 0 0	
do., second white deals 3 ins. by 11 ins.	do.	13 10 0	
For 3 ins. by 9 ins., deduct from above	do.	1 0 0	
do., first white battens ...	do.	11 0 0	
do., second do.	do.	10 0 0	
Pitch-pine deals	do.	19 0 0	
Add for less than 2 ins. thick	do.	0 10 0	
First yellow pine regular sizes	do.	40 0 0	
do., oddments	do.	32 0 0	
Second yellow pine regular sizes	do.	33 0 0	
do., oddments	do.	28 0 0	
American whitewood planks	per ft. cube.	0 4 6	
Kauri pine planks	do.	0 4 0	
1 in. by. 7 ins. yellow flooring, planed and shot ...per square		0 14 0	
Add, if matched	do.	0 0 6	
1¼ in. by 7 ins. yellow, planed and matched ...	do.	0 16 6	
1 in. by 7 ins., white planed and shot	do.	0 12 6	
1 in. by 7 ins., white, planed and matched ... per square		0 13 0	
1¼ in. by 7 ins., do.	do.	0 15 6	
¾ in. by 7 ins., yellow matched boarding, beaded or V-jointed	do.	0 11 6	
1 in. by 7 in., do.	do.	0 15 0	
¾ in. by 7 ins., white do. ...	do.	0 10 0	
1 in. by 7 ins. do.	do.	0 13 0	
For 6 ins. boards deduct from the above prices ...	do.	0 6 9	

Hardwoods.

Teak	per load	18 0 0	
Danzig and Stettin oak logs (large)	per ft. cube	0 3 0	
do., small	do.	0 2 6	
Wainscot oak logs	do.	0 5 9	
Dry wainscot oak (in the 1 in.)	per ft. super	0 0 9	
¾ in. do., do.	do.	0 0 7	
Dry Honduras mahogany (Tabasco), in the 1 in. ...	do.	0 0 10	
do., selected Figury do. ...	do.	0 1 8	upwards
do., American walnut do....	do.	0 0 10	

FOUNDER AND SMITH.

Cast-iron columns and stanchions, including patterns	per ton	7 10 0	
do., drain pipes, 3 ins. diameter, L.C.C. weights, in 9 ft. lengths, coated with solution	per yard	0 2 4	
do., do., 4 ins. diameter ...	do.	0 3 0	
do., do., 5 ins., do.	do	0 3 10	
do, do., 6 ins., do.	do.	0 4 6	
do., do., 9 ins., do.	do.	0 6 3	
Rolled steel joists, Belgian (ordinary section)	per ton	5 10 0	
do., English	do.	5 15 0	
Rolled steel fencing wire...	do.	8 10 0	
do., galvanised	do.	10 0 0	
Steel compound girders (ordinary section)	do.	8 0 0	
Angles, channels, etc., do.	do.	7 0 0	
Galvanised sheets, common brands	do.	12 15 0	
Wrought-iron gas tubes (current discount off standard lists)	p.c.	70 p.c.	
do., water tubes	do.	67½ p.c.	
do., steam tubes	do.	62½ p.c	
do., galvanised gas tubes...	do.	57½ p.c.	
do., do., water tubes ...	do.	55 p.c.	
do., do., steam tubes ...	do.	50 p.c.	

		Current Rates.	Rates on Aug. 1.
Expanded metal lathing, ⅜ in. mesh (short way) 24 gauge, in quantities of not less than 300 yds. ...	per yard	0 0 10	
do., 22 gauge	do.	0 1 3½	
do., 20 gauge	do.	0 1 5½	
do., ½ in. mesh, 24 gauge...	do.	0 0 10½	
do., 22 gauge	do.	0 1 4½	
do., 20 gauge	do.	0 1 6½	
(For quantities of between 300 and 700 yds. deduct approximately 10 per cent. from above; for quantities of between 700 to 1,400 yds., deduct approximately 15 per cent.)			

PLUMBER, COPPERSMITH, AND GLAZIER.

Sheet lead, 3 lbs.	per ton	17 5 0	17 12 6
do., above 3 lbs.	do.	16 15 0	17 2 6
Lead water pipe up to 2 in.	do.	17 5 0	17 12 6
Lead barrel pipe	do.	18 5 0	18 12 6
Lead pipe, tinned inside ...	do.	44 2 6	44 10 0
do., and washed outside ...	do.	46 12 6	47 0 0
do., soil pipe, up to 4½ ins.	do.	20 5 0	20 12 6
do., do., to 6 ins.	do.	21 5 0	21 12 6
do., do., above	do.	22 0 0	22 7 6
Lead sash weights	do.	19 15 0	20 2 6
Sheet zinc	do.	28 0 0	upwards
Copper sheets	do.	71 0 0	do.
do., nails	per lb.	0 0 11	
do., wire	do.	0 0 10	
Plumber's solder	per ton	65 0 0	
Tinman's solder	do.	80 0 0	
Old lead (against account, etc.)	do.	12 0 0	12 5 0
Clean scrap copper, do ...	per cwt.	2 12 0	2 10 0
Clean scrap brass do. ...	do.	1 18 6	1 18 0
Old zinc, do.	do.	0 14 6	0 13 0
15 oz. English sheet glass, thirds (in crates)	per foot	0 0 2¼	
do., do., fourths	do.	0 0 1⅝	
21 oz. do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 2	
26 oz., do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 3½	
32 oz., do., do., thirds ...	do.	0 0 4	
do., do., fourths	do.	0 0 3½	
For obscured sheet glass add to fourths	do.	0 0 1	
15 oz. fluted sheet	do.	0 0 3½	
21 oz., do., do.	do.	0 0 4	
For obscured fluted sheet, add to above	do.	0 0 1	
¼ in. plain rolled plate ...	do.	0 0 2½	
3-16 in., do., do.	do.	0 0 2⅝	
⅛ in. do., do.	do.	0 0 3	
For rolled fluted plate add to the above prices ...	do.	0 0	

Buildings in Progress and Completed.

Glasgow. — The Clyde Navigation Trustees last week formally inspected the new harbour works and extensions. These works include basins and quays at Yorkhill, now being executed by Messrs. Robert McAlpine and Sons, commenced in 1907, and now finished with the exception of about 174 lineal feet of quay wall and 280 lineal feet of superstructure. The contract embraces walls on monolith foundations, ordinary quay walls, timber wharfing, and reinforced concrete wharfing.

Portsmouth.—A new municipal college, to be run on the lines of a University College, has been erected on a site in close proximity to the Town Hall at a cost of £110,000. The departments into which the work is at present divided are as follows:—(1) Chemistry, metallurgy, and natural science; (2) mathematics, physics, and electrical engineering; (3) mechanical and civil engineering; (4) arts and commerce; (5) school of art; (6) day training college; and (7) pupil teacher centre. From the spacious entrance hall, ascending and descending, runs an imposing staircase, from which on each floor corridors branch out right and left to the various rooms on each side. The basement is mainly devoted to the engine-rooms, workshops, steam and electrical laboratories. The ground floor is devoted principally to the offices and a few class-rooms, together with the first of six lecture theatres. On the first floor is a suite of rooms for the mathematics, physical, and electrical engineering department, fitted with the requisite apparatus for preparing the students for the various examinations. Here, too, are the class-rooms for the day training college. There is, besides, a large examination hall, extending through two floors. On the second floor is a suite of rooms for the study of chemistry. There is also a suite of drawing offices for civil and mechanical engineering. The third floor, the topmost of the building, is exclusively devoted to theoretical and applied art. The architect is Mr. G. E. Smith, of Southsea, and the builders are Messrs. Armitage and Hodgson, of Leeds.

Messrs. Stacey and Co., have, among recent orders, despatched two of their patent winches to facilitate the execution of a large building contract at Entent, Singapore. These winches have also been selected for use in the construction of the new schools at Duke Street, Aldgate; new schools at Llandudno; fireproof floors at Hoare's Brewery, Smithfield, by Messrs. Stuart's Granolithic Co., making the fifth machine ordered by this firm, and the Western Valley Sewers, Newport, Mon.

We would draw the attention of our readers to the special offer held out to them by The Marshall Co., Office Equipment Specialists, 163, Mansion House Chambers, London, E.C., of which particulars will be found in our advertising columns. To secure the custom of our readers, the Marshall Co. are prepared to give 25 per cent. off their regular prices, being prepared to lose money on the first order, in the certainty that their wares will ensure permanent custom.

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IMPORTANT TO ARCHITECTS & BUILDERS.

REVOLUTION in Silent Door Spring Hinges.
A New and Wonderful Floor Spring for Double and Single Action Doors.
Absolutely the Shallowest, Most Perfect, Powerful and Efficient Spring ever invented.
Half the size, Thrice the Value and Durability of others.
Its unique Sealed Check Chamber is Impervious to Water, and an immunity against oil-stained floors.
It is calculated to increase the demand for double and single action Door Springs, even more than my original celebrated and now Universally used 1870 patent Spring and Adjustable Shoe.
Such a Shallow Box as referred to above has never before been known to be practicable. It has been specially designed for the shallowest floors, to suit the exigencies of modern construction.
Robert Adams' other Specialities include New Patterns in Fanlight and other Opening Gearing, Panic Bolts, Weather and Water Bars, &c., &c.
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ROBERT ADAMS, 3 & 5, Emerald Street, Bedford Row, London, W.C.

15 GOLD MEDALS AWARDED.

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS OF GREAT BRITAIN AND IRELAND.

THE COUNCIL, 1908.

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The President (C. H. BARNSLEY, BIRMINGHAM). WM. SHEPHERD (LONDON).

Secretary:
A. G. WHITE, 31 and 32, Bedford Street, Strand, London, W.C.

MONTHLY REPORT.

The half-yearly meetings were held at Birmingham, on July 28th and 29th, and have been already reported in our issue of August 5th, when reference was also made to the half-yearly report. Arising out of those meetings, the following business has been dealt with:—

The report and minutes of meeting have been printed, and sufficient quantities of the printed copies delivered to the secretaries of the county federations to furnish each of their members.

National Form of Contract.

A circular has been addressed to the local Associations through the county federations, enclosing copies of the three important resolutions passed by the general meeting for the purpose of further extending the use of the National Form of Contract, calling attention to them, and asking for information bearing on the subject to be returned on or before September 30th, for the information of the Administrative Committee, who will take this question up at their October meeting.

National Scheme of Conciliation.

A circular has likewise been sent out enclosing a copy of the resolution of the general meeting, and a copy of the minutes of the Special Sub-Committee of the National Board regarding the application of the Builders' Labourers for admission to the National Scheme of Conciliation, requesting that steps may be taken forthwith to submit both resolution and report to the respective county federations and report their opinion thereon on or before November 1st. The secretary of the Builders' Labourers (Mr Flanagan), and the secretary of the operatives' representatives on the National Board (Mr. Chandler) have been advised accordingly.

Official Journal of the Federation.

A circular announcing the formal appointment of the "Builders' Journal" as the official journal of the Federation, and giving particulars of resolutions and terms of appointment, together with a form of subscription, has been sent out to the secretaries of the county federations for transmission to each of their members.

Generally.

The usual correspondence and routine business arising out of the half-yearly meeting has been dealt with.

Organisation.

During August, the following places were visited by the secretary, and interviews secured with Builders or Association Secretaries—namely, Oxford, Reading, Folkestone, Dover, Canterbury, Ramsgate, Margate, and Bedford. Generally, associations at these places are either non-existent or in a suspended condition, except in the case of Bedford, where proposals are being made for joining the Federation. In the other cases arrangements have been made to correspond pending a suitable opportunity occurring for more active steps.

International Congress of Builders at Paris.

As previously advised, in the half-yearly report, the International Congress of Builders at Paris was to be held in September. A notification has just come to hand, however, to the effect that in consequence of the recent labour disturbances in the building trade in Paris and its environs it has been found necessary to postpone the Congress to November 16th to 19th next. A fresh programme will shortly be issued, and will be in due course communicated to the membership.

Conference of Secretaries.

The Annual Conference of Secretaries will be held in London on October 20th. On August 7th a preliminary circular was sent out to the federations notifying the above date, and inviting suggestions for the agenda or promises of papers by September 1st. So far, the response has not been equal to expectation, and this opportunity is taken to remind secretaries of the fact, and request them to forward their suggestions at once.

THE NORTHERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The Lancashire, Cheshire and North Wales Federation, The Yorkshire Federation, The Northern Counties Federation, and The Tyne and Blyth District Federation.

Secretary: JOHN TOMLISON, Cromwell Buildings, Blackfriars Street, Manchester.

MONTHLY REPORT.

Northern Centre Conciliation Board.

A special meeting of this Board was held at the Grand Central Hotel, Leeds, on Monday, September 7th, when an appeal from the Rochdale Local Board, re operative joiners' wages and working rules, was reconsidered. The appeal was previously before the Board on June 29th, when it was referred back with a view to the matter being settled locally. The local board have met on two or three occasions with a view to coming to a decision, but have not been successful. The decision of Monday's meeting is not to hand at the time of going to press.

THE LANCASHIRE, CHESHIRE AND NORTH WALES FEDERATION.

Secretary: JOHN TOMLISON, Cromwell Buildings, Blackfriars Street, Manchester.

MONTHLY REPORT.

The quarterly meeting of the Executive Council of this Federation is to be held in Lancaster on or about September 28th. It is announced that arrangements are being made for meetings of all the trade committees to take place at an early date to consider matters affecting the various trades.

LOCAL ASSOCIATIONS AFFILIATED TO THE LANCASHIRE, CHESHIRE, AND NORTH WALES FEDERATION.

MONTHLY REPORTS.

ALTRINCHAM, SALE & DISTRICT ASSOCIATION.
Secretary: W. Moody.

Notices were recently received from the Operative Bricklayers for alteration to the working rules, and counter notices were given. These were amicably arranged to the mutual satisfaction of the masters and the operatives. Notices have also been received from the Amalgamated Society of Carpenters and Joiners for alterations to the working rules, and for an increase of wages, and the questions are still in abeyance. The number of members to date is 140.

BARROW-IN-FURNESS ASSOCIATION.
Secretary: J. Baker.

The building trade here is suffering in sympathy with the general depression; and the stop-works, without any immediate prospect of the renewal of operations, added to the fact that the shipbuilding trade is very quiet, has curtailed the general building enterprise of the town. The number of members to date is 33.

BLACKPOOL ASSOCIATION.
Secretary: W. A. Clarke.

The Blackpool Master Builders' Federation has a membership of 73, which includes practically all the builders of Blackpool. During the holiday season but few meetings are held, as there is then naturally a difficulty in getting members to

attend; consequently there is for the moment but little business to report. A serious blow has fallen upon one of our members. His men were removing a scaffold on a building, when a short putlock slipped and struck a joiner who was working below. The man, although able to walk home, died the next day. The peculiarity of the position is this: Our member A is held to be responsible for the fatal accident to the man working for another member B, and third party insurance not having been effected B's insurance company claim the whole of the amount of compensation (£273) from A. The secretary mentions this because he finds that in this district very few take up a third-party policy.

BOLTON AND FARNWORTH ASSOCIATION.
Secretary: J. R. Vose, F.C.I.S.

The number of members of our association to date is 115. During the past eighteen months, since the adoption of the inter-trading rule, our membership has greatly increased.

We have at present a plumbers' strike taking place for an increase of ½d. per hour, making 9½d. The employers have opposed the alteration, desiring certain other alterations in the working rules, which were of a restrictive character. At the present there seems little hope of an immediate settlement. It has been decided that the support of the general association shall be given to the master plumbers in resisting the application.

Sectional meetings of the association have been held during the past month to consider the Federation Circular with respect to the desirability of taking uniform action to abolish restrictive trade rules, and to secure more uniformity in the hours of labour, etc. In the main, the principles of the circular have been adopted.

BURY AND DISTRICT ASSOCIATION.
Secretary: R. Hall.

Some months ago, the Bury Corporation took up the question of the housing of the working classes. The supporters of municipal housing urged that there was a shortage of cottages, and because, so it was alleged, the builders in the town declined to build.

The Corporation approached the agent to the Lord of the Manor, asking that the corporation should be put upon preferential terms as far as land was concerned, and even suggested to the said agent that he should insert a clause in the leases granted to the local builders and others, forbidding them to increase the price of ground rents when selling property.

The master builders took the matter up, and appointed a small but influential committee to go into the question of housing, and to meet the agent of the Derby estates, and if possible get him to grant concessions to the builders. The committee were also to point out to him the hardship it would be to the builders and others who had taken land and built upon it, if he granted the corporation conditions such as he would not grant to anyone else.

The committee have held several meetings, and have met the agent and visited several blocks of cottage property in Bury and Bolton, with the result that the builders are placed upon the same footing as the Corporation. The agent refuses to insert the clause suggested by the Corporation, with respect to increasing ground rents, because, as the builders' committee showed, in almost every case this over-riding ground rent is all the builder gets out of his building.

The committee have also been successful in getting removed certain restrictions with respect to the building of cottages. Altogether they are to be congratulated upon the success of their mission.

During the last two months three meetings have been held between the Operative Stone Masons' Society and the master masons respecting worked stone. The operatives complain that contractors from other towns, "where the standard rate of wages is less than in Bury," obtain work in Bury and bring their worked stone into the town. This is a vexed question, and the secretary of this association would like an expression of opinion from other towns that are under the same conditions—that is, those towns where there is an agreement with the operatives as to the "worked stone rule."

The number of members up to date is 96.

LEIGH AND DISTRICT ASSOCIATION.
Secretary: S. Wigham.

The report from Leigh this month is of a purely holiday character. On Saturday, August 1st, a dozen members of the Leigh Association invited a dozen members of the Bolton Association to a game of bowls.

The Leigh and District Master Builders' Association had their annual picnic on Thursday, August 6th, to Castleton, in Derbyshire, thirty-one members and wives assembling. After breakfasting at the Thatched House Hotel, they left in coaches for Castleton, driving via Mosear, Lady Bower, Yorkshire Bridge, and Ashopton, arriving soon after 2 o'clock. Among the places visited were The Castle of the Peverils (familiar to the readers of Scott's "Peveril of the Peak"), the extraordinary caverns of the Peak, the Speedwell and Blue John mines, and the chasm known as the Devil's Hole. The return journey was made via Hope, Bamford, Hathersage, Fox House, Dore Moor, and Eccleshall, the party arriving at the Thatched House Hotel, Sheffield, for dinner at 6.30. The secretary was complimented on the excellent arrangements made.

LIVERPOOL ASSOCIATION.
Secretary: Bertram B. Moss, F.C.R.A.

Meetings are to be held shortly of the Emergency Committee, and the Masons' Committee. The annual meeting, and the meeting of the Conciliation Board, are also about to take place.

It has come to the notice of the association recently that the War Office are departing from the usual custom in this part of the country, and are now inviting tenders for a job without supplying quantities. The association are approaching the War Office upon the subject, and have also asked the Lancashire and Cheshire Federation to take the matter up.

The Operative Masons, who have recently entered into a new agreement with this Association, doing away entirely with the breakfast half-hour, made application to have the amended leaving-off time on Saturday—namely, 12.30— altered to the original time, 12 o'clock. This matter will receive the attention of the Masons' Committee.

The Liverpool Corporation, through the City Engineer's Department, recently invited tenders for a small job without supplying quantities, and on application being made by the association for quantities to be supplied, the City Engineer readily agreed.

The number of members to date is 425.

LLANDUDNO AND DISTRICT ASSOCIATION.
Secretary: E. P. Morris, Accountant.

Owing to the summer season, no meetings have been held recently, but they will be renewed this month, when matters of interest to local builders will be taken in hand. During the vacation, an excursion was made to Port Sunlight, to inspect the works and village of Lever Bros.

MANCHESTER & SALFORD GENERAL ASSOCTN.
Secretary: John Tomlison.

The re-organisation of the Associations in this district by the formation of one general association for the trade, in preference to the several separate sub-trade societies, is at present taking place, and already the Master Builders' Association have thrown in their lot with the general society, and passed the formal resolution winding up their separate association. It is hoped that the other societies will do likewise at an early date.

The number of members to date is 213.

OLDHAM AND DISTRICT ASSOCIATION.
Secretaries: Cowper and Dean, Accountants.

During the period dealt with in the last half-yearly report notices for alteration of rules were received by this association from the Operative Joiners, Stonemasons, and Painters. The joiners' case came before the Northern Centre Conciliation Board, to whom the matter was referred, and resulted in an award practically in favour of the employers. The painters have been on strike, but an agreement was arrived at to refer the dispute to a Board of Trade arbitrator, who gave an award practically in favour of the employers. The operative stonemasons eventually withdrew their notices.

The inter-trading rule has now become more thoroughly appreciated, and complaints as to any breach thereof are less numerous. This is accounted for by the fact that the rule has had the desired object of increasing the membership of the association.

The number of members to date is 180.

RADCLIFFE, WHITEFIELD, PRESTWICH AND DISTRICT ASSOCIATION.
Secretary: W. Lomax.

This association has recently had a difficulty with the operative painters. There are two branches of the operatives' society in the area of the association, one in Radcliff, and one in Prestwich. The Prestwich branch gave the association six months' notice for an increase of wages from 8⅝d. to 9d. per hour, which notice terminated on June 1st. Although several conferences were held, no decision has been arrived at. A few of the employers (not members of the association), together with the operatives, asked the Board of Trade to send an arbitrator. The Board of Trade sent one, and he has given an award granting the men the 9d. per hour, and several alterations in the rules. The employers connected with the association, however, are not bound by this decision, and up to the present they have been able to get all the men they require at the old rate and rules.

The association gives each year a prize to the best student in Building Construction at the local technical school, and the president gives a further prize to the student having the best home-work papers. At the meeting held on September 2nd, two members of the association were appointed to decide who were the winners of the prizes. The giving of these prizes has greatly increased the interest taken in the Building Construction classes by the apprentices, most of whom are employed by the members of this association.

ROCHDALE AND DISTRICT ASSOCIATION.
Secretary: H. Oldham.

The operative carpenters and joiners of this district are asking for an increase of one penny per hour, and the employers gave notice for a revision of the whole of the rules. The matter was brought before a special sub-committee and the local Conciliation Board, but no settlement was arrived at. The dispute was then referred to the Northern Conciliation Board, at their meeting which was held in Leeds on June 29th last. Their decision was: "That the employers and operatives meet again and try to come to some amicable settlement." Failing this, the dispute would have to come before the Northern Centre again. The meeting between employers and operatives took place, but matters were not improved, the result being that delegates will attend the meeting of Northern Centre Board at Leeds on September 14th.

The death took place, on August 24th, of Mr. James Whitworth, of the firm of Messrs. Brook and Whitworth, painters and decorators, Milkstone Road. The firm are members of our association. The interment took place on August 27th, our association sending Messrs. R. Howarth (president), T. Wilkinson, F. Nicholl, and H. Oldham (secretary), as representatives.

The number of members to date is 60.

WARRINGTON AND DISTRICT ASSOCIATION.
Secretary: Bertram B. Moss.

This Association has recently been approached by the operative plasterers to amend two of their rules, in regard to the boundary rule and the country job rule. A conference has taken place between the employers and operatives, with the result that the employers have not been able to see their way to agree to any alteration. The alteration required by the operatives to the boundary rule is a very important one, namely, that they wanted all men to be taken on at the shop, and walking time to be paid in all cases.

This association held a monthly meeting on Wednesday, September 9th, but there is nothing of importance to report.

The number of members to date is 63.

WIGAN AND DISTRICT ASSOCIATION.
Secretary: R. Hollows.

The number of members of this association to date is 105. The rules of the Operative Bricklayers' Society were recently re-drafted, and the following concessions were granted by them: 1.—Breakfast half-hour in winter months done away with: men start with breakfast got. 2.—Starting places increased to 1½ miles from centre of town. 3.—Any job 3½ miles from centre of town is to be considered a country job. Any society men may be taken on at the job. No change in the rate of wages was given, though demanded by the operatives. The Operative Slaters' Society were recently granted an increase of ½d. per hour, to 9d. The summer months were reduced by a fortnight, and some variations in the hours in the winter months have been made.

There is nothing to report from the following associations, affiliated to the Lancashire, Cheshire and North Wales Federation:—Ashton-under-Lyne, Birkenhead and Wirrall, Burnley and District, Chester and District, Crewe and District, Darwen, Heywood, Lancaster and District, Longridge and District, Macclesfield and District, Middleton and District, Preston, Radcliffe, Rossendale and District, Whitefield, Prestwich and District, Southport and District, St. Anne's-on-Sea and District, St. Helen's, Stockport, and Wallasey.

THE YORKSHIRE FEDERATION

Secretary: J. DAVIDSON, 14, Park Road, Leeds.

MONTHLY REPORT.

The monthly meeting of the Executive Council was held at the Town Hall, Garrison Street, Bridlington, on Friday, August 21st. Mr. J. Biggin (president) occupied the chair, and was supported by 29 delegates from the affiliated associations. Alderman Sawdon, Mayor of Bridlington, was present, and stated that it was a privilege and pleasure to give the Federation a hearty welcome to the town. He gave most interesting statistics of the development of the town during the past few years. On the motion of the president, seconded by Mr. A. W. Sinclair, a hearty vote of thanks was accorded to the Mayor for his reception, and to the Corporation for granting the use of the Town Hall for the Federation meeting.

The treasurer reported receipt of subscriptions amounting to £15 18s., and reminded members that nine months of the financial year had expired. He made an earnest appeal to all associations to use every means to pay outstanding subscriptions before next meeting, and to co-operate loyally in maintaining the income and efficiency of the Federation.

On the motion of Mr. A. J. Forsdike, seconded by Councillor J. Dawson, the accounts amounting to £68 7s. 8d., which had been examined and certified as correct by the Finance Committee, were approved and cheques ordered to be drawn in payment thereof.

The president reported that the Home Office had expressed their willingness to see representatives of the Federation with respect to the furnishing of returns under Section 12 of the Workmen's Compensation Act, 1906. He and the secretary had thoroughly discussed the matter with an Under-Secretary, who expressed his desire that returns should be furnished relating to compensation paid for accidents arising on permanent premises which came under the classification of factories. It was pointed out that these only covered about five per cent. of accidents,

and that if the returns of the insurance companies included all accidents reported to them, the statistics would be entirely misleading, and might be used to the serious prejudice of building trade employers. The Under-Secretary thereupon promised that the Federation would be given an opportunity, if they so desired, of making observations to the Home Office when the first statistics are available. The Federation recommended members who are insured either under the Federation scheme or through an insurance company, if they are requested by the Home Office to furnish returns, to fill up a form giving the name of the company with whom they are insured, as the return will be made by such company on their behalf.

It was reported that at the Northern Centre meeting a resolution was passed that, as the Centre Federations were at the present time revising their rules, they should consider the desirability of making them uniform as far as possible, and the Federation secretaries had been requested to confer together with this object in view.

It was reported that at the half-yearly meeting resolutions were passed requesting the Royal Institute of British Architects to unite with the Institute of Builders and the National Federation in a joint effort to extend the use of the National form of Contract to districts that have not already adopted the form. The Administrative Committee were also requested to consider the desirability of approaching other societies or institutes of architects with a view of inducing them to adopt the National Form of Contract, and also to approach the Government departments and the various Public Local Authorities with the same object in view. On the motion of Councillor Dawson, seconded by Mr. J. Smith, the Federation resolved to approach the West Riding County Council with a view to the recognition of the National Form of Contract, and urged the local associations to approach the local authorities in their respective districts in order to obtain the use by them of the said form.

It was reported that the National Association of Builders' Labourers had applied to be admitted as parties to the conciliation scheme, but that as the Association had not been parties to the original agreement, it was left with each Federation to consider the application and determine as to its acceptance or otherwise. It was resolved, on the motion of Councillor Dawson, seconded by Mr. Mears, to defer the consideration of the matter for the present.

It was stated that the Federation were reported to be £42 in arrears on June 30th, 1908, in respect to their allotted contributions to the National Reserve Fund. It was resolved, on the motion of Mr. A. W. Sinclair, seconded by Mr. E. Quibell, to request the National Secretary to favour the Federation with a return of the present position of the National Reserve Fund, and to consider the matter further at the next meeting.

It was reported that the National Federation had arranged for the Annual Conference of Secretaries to be held on Tuesday, October 20th. On the motion of Councillor Mallinson, seconded by Mr. Townsley, the Federation secretary was empowered to attend the conference, and the local associations were strongly recommended to make arrangements for the attendance of the local secretaries, in order that the Conference may be thoroughly representative. The secretary read the minutes of the Northern Centre, Lancashire, Cheshire, and North Wales and Northern Counties Federations.

Councillor Dawson, Messrs. H. Fallas, and A. J. Forsdike, referred to the visit to Belgium under the auspices of the Sheffield Association, and acknowledged in suitable terms the splendid manner in which they had been received, and the most generous way in which they had been entertained by the builders of Antwerp and Brussels. On the motion of Councillor Dawson, seconded by Mr. H. Fallas, the Federation unanimously resolved to tender to the presidents and members of the Antwerp and Brussels Associations an expression of their high appreciation of the exceptional privileges enjoyed.

A letter from the secretary of the Grimsby Association was read, stating that Friday, September 25th, was a convenient date to the local Association for the next meeting of the Federation; and on the motion of Councillor Dawson, seconded by Councillor Mallinson, the arrangements were confirmed.

The Council were afterwards entertained to tea by the president and members of the Bridlington Association, to whom a hearty vote of thanks was accorded for their generous hospitality.

LOCAL ASSOCIATIONS AFFILIATED TO THE YORKSHIRE FEDERATION.

MONTHLY REPORTS.

BARNOLDSWICK AND DISTRICT ASSOCIATION.

Secretary: J. C. Addyman.

The monthly meeting of this association was held at Earby on September 7th. The president occupied the chair, and there was a fair attendance of members. The president reported on his visit to Belgium with a party of Yorkshire builders, who had been accorded a splendid reception by the Belgian builders. The president also called the attention of new members (of whom sixteen had joined during the past two months), to the Federation's arrangement with Lloyd's, as to workmen's insurance.

A draft letter to architects as to delay in rejecting or accepting tenders, and advocating intimation of the result of the tenders being sent to all contractors successful or unsuccessful uniform use of National Form of Contract, prompt issue of certificates, and item for workmen's insurance to be placed in all quantities, was considered and accepted.

It was decided to purchase Lumley's "Public Health," seventh edition, for the use of members. The following subjects were discussed: Annual return of number of men and apprentices employed; purchase of crests for new members; special forms of estimate; adoption of "Builders' Journal" as the official organ of the Federation; collection of outstanding subscriptions; reduction of wages.

BARNSLEY ASSOCIATION.

Secretary: J. Denton.

The Barnsley Federation of Building Trade Employers held their monthly meeting on Wednesday, September 9th, at the King's Head Hotel. Councillor G. Haigh (president) was in the chair, and was supported by the following gentlemen: Messrs. Councillor W. G. England, J.P., T. Lindley, F. Goodyear, P. Dalby, Councillor G. Mellor, E. Broley, A. Brown, H. Ashworth, J. Smith, T. Potter, J. Clarke, H. Medley, C. D. Potter, and the hon. sec., Mr. J. Denton.

The minutes of the previous meeting were confirmed. Correspondence was read from the local Trades and Labour Council asking the Federation to receive a deputation with regard to union and non-union labour on Corporation and other contracts (public).

The general feeling among the members was that, as a matter of courtesy, the deputation ought to be received. After discussion by several members, it was resolved that the deputation attend the next monthly meeting. It was resolved that the hon. sec. (Mr. J. Denton) attend the proposed Conference of Secretaries in London in October. A very interesting report of last Yorkshire meeting was given by Mr. J. Smith, a vote of thanks being accorded to that gentleman for his services rendered in attending the Yorkshire meeting, on behalf of the usual delegates unavoidably absent. The general reduction of wages question was debated by several members, but the meeting unanimously resolved "That no benefit would be derived from a reduction of wages, and any such action could not be entertained." The report of the last meeting of the Local Conciliation Board was given by Mr. C. D. Potter, who reported that the local area had been fixed by a five-miles radius of Barnsley. The Builders' Labourers also applied for admittance on the Conciliation Board, but their application was deferred for another meeting. The Federation delegates on the Conciliation Board action was approved. Pithy, comprehensive, and interesting reports of their visit to Belgium in connection with the Sheffield Association tour were given by Messrs. E. Broley and Councillor W. G. England, J.P., votes of thanks being accorded to these gentlemen at the close.

The new High Grade School for Girls, Barnsley, is rapidly approaching completion, the west wing being ready for the slates. The roofs are to be covered with Westmorland green slates from the Buttermere quarries. The architects are Messrs. Buckland and Haywood-Farmer, of Birmingham, and the contractor is Councillor G. Mellor, of Barnsley.

The number of members to date is 50.

DEWSBURY ASSOCIATION.

Secretary: E. B. Warmsley.

Mr. Sam Coop, of Messrs. S. Coop and Son, contractors, Dewsbury, is the president of this association, of which the meetings are held every third Wednesday in the month. This month there is nothing of special interest to report. The number of members is now 38.

SHEFFIELD ASSOCIATION.

Secretary: T. Smith.

The monthly meeting of the Sheffield Association was held on August 10th. Mr. Thos. Eshelby (president) occupied the chair, and there was a large attendance of members. A request for a meeting of the Conciliation Board was received from the Operative Bricklayers' Society, in reference to alleged violation of working rules by a member of the association. The operatives alleged that the firm in question were requiring them to work a full week of 49½ hours before paying overtime, whereas the rules distinctly stated that there should be one uniform fixed time for starting and stopping, and any deviation therefrom should be paid for in accordance with the rules respecting overtime. The men also alleged that they were not allowed walking time for distance beyond 2½ miles from the Parish Church as stipulated by rules, and they further alleged that an illegal deduction of 2d. per week had been made to cover Workmen's Compensation insurance. In reply to those allegations the firm in question complained that the first complaint arose from a mutual agreement of the men, who wished to make up some time in consequence of a particularly rough week. They had, however, instructed the foreman that henceforth the men must work rigidly to the rules. With respect to walking time, the firm had replied to the operatives that there was no case, as local men were engaged on the job. The firm were not sending any men from Sheffield, and if any members of the operatives' union were there, they must have applied and been engaged on the job.

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The deduction for insurance had been discontinued. After discussion the secretary was instructed to write to the operatives to the effect that the firm in question were now complying with the rules, and that the matter was therefore automatically settled.

In handing to the president five applications for membership, the secretary remarked that it was now considerably more than twelve months since they had had a monthly meeting at which new members had not been elected.

A letter was read from the Secretary of the Builders' Merchants' Association, saying that they would arrange as early as possible for a deputation from the Master Builders' Association to meet them in reference to the arrangement of preferential terms between builders and builders' merchants.

A letter was read from the town clerk covering the following resolution which had been passed by the City Council: "That this committee recommend the Council to modify the necessary clauses with regard to retention money as at present inserted in building contracts of the Corporation, so as to provide that one-half of the retention money shall be paid to the contractor on the expiration of six months from the date of the issue of a certificate of the completion of the contract, and the remaining half on the expiration of a further period of six months." The resolution implies an important concession, and is the result of the deputation from the Association to the City Council, pointing out that the terms whereby a contractor was required to keep a job in repair for twelve months, and have meanwhile 10 per cent. of the contract price retained was most harsh and unnecessary.

Mr. Forsdike said that when the Cottage Exhibition was in its embryo stage, Mr. Biggin and he were appointed as representatives of the association, and a good deal of work fell to their share. As time went on, it became necessary for the committee to have a number of guarantors, and they of course fell in with the others. Mr. Biggin and himself became responsible for £15; and now that the accounts were made up, there was a deficit of 14s. 6d. in the £ they were called upon to pay. He (Mr. Forsdike) was one of the judges, and altogether attended more than forty meetings, while Mr. Biggin attended quite as many. It was thought that after thus devoting their time, it was unfair that, seeing that they represented the association, they should also suffer pecuniary loss, and it was suggested that this should be made good to them by the association. It was resolved that the Association refund to Messrs. Forsdike and Biggin the sums for which they were individually responsible.

The next item on the agenda was a description of the recent visit to Belgium, which is separately reported in another past of this issue. At a later stage of the meeting Mr. Forsdike (who is president of the club) presented to the Builders' Exchange Club a handsomely framed copy of a photograph of the party, taken at Brussels, for which he was accorded a hearty vote of thanks. A further framed copy of the party, taken in the Zoological Gardens at Antwerp, will be presented by the president of the association (Mr. Eshelby).

WAKEFIELD ASSOCIATION.
Secretary: J. Beaumont.

A meeting of the members of this association was held at the Strafford Arms Hotel, Wakefield, on September 3rd, Mr. Tom Lee, the president of the Association, in the chair.

The minutes of a meeting of representatives of the association, and of the Operative Carpenters and Joiners' Society, were read, Alderman Judge presiding, from which it appeared that working rules between the employers and the operative carpenters and joiners were finally approved, and a recommendation was made for the rules to come into operation on November 1st next. On the proposition of Alderman Judge, seconded by Mr. W. J. Atkinson, the rules were approved and adopted, and another resolution was passed on the motion of Mr. Atkinson, seconded by Mr. J. Pashley, that Alderman Judge, Mr. George Crook, and another member of the association, be authorised to sign the rules on behalf of the association. Directions are also given for the printing of the rules after they had been signed by the representatives of both parties.

A copy of a letter prepared by the Yorkshire Federation, and proposed to be sent to architects and surveyors (dealing with the questions of contractors' tenders, the National Form of Contract, architects' certificates, and the inclusion in quantities of an item for insurance against accidents, was considered, and Ald. Judge moved, and Mr. W. Sanderson seconded, a resolution that a letter on the lines suggested be sent to each of the local architects and surveyors.

Alderman Judge moved, and Mr. H. Fallas seconded, a resolution that the "Builders' Journal" be adopted as the official organ of the association, and that the association become a subscriber to the Journal, the subscription to be paid out of the funds of the Association.

The number of members to date is 30.

There is nothing to report from the following associations affiliated to the Yorkshire Federation: Bradford, Bridlington, Grimsby, Halifax, Harrogate, Huddersfield, Hull, Leeds, Malton (Norton), Morley, Scarborough, Shipley and District, York.

THE NORTHERN COUNTIES FEDERATION.

Secretary: W. H. HOPE, Post Office Chambers, 14, Norfolk Street, Sunderland.

MONTHLY REPORT.

At a meeting of the Executive Council held at Sunderland, on Tuesday, August 11th, at 4.15 p.m., there were present Messrs. S. Easton, R. Heslop, Newcastle-on-Tyne; Alex. Ross, J. G. Robertson, South Shields; J. Davison, R. Johnson, W. C. Creasor, Stockton; W. S. Davidson, Middlesbrough; W. B. Cooper, J. W. White, Sunderland. The minutes of the Executive Council held at Sunderland on May 28th, which had been printed and circulated, were read and signed as correct.

Arising out of the minutes, the secretary gave a report upon the insurance of the members of the local associations. It appeared that the South Shields Association had appointed a small subcommittee to go into the question, who were of opinion that insurance should be left an open question, the members being free to insure as they thought best. The secretary explained the action of the Special Committee in adopting the Federated Employers' Insurance Association, Ltd., as the official insurance company of the Federation. Mr. R. Heslop, as a member of the Insurance Committee, endorsed the secretary's remarks, as did also the chairman. Mr. A. Ross also spoke as a member of the special committee, and referred to the action of South Shields. After some further discussion, it was resolved:—"That the South Shields Association be asked to call a meeting at an early date, and that Mr. W. C. Creasor, the representative of the Federated Employers' Insurance Association, Ltd., be given an opportunity of putting before the members the terms offered by his company, and that the secretary also attend the meeting."

With regard to North Shields, in the absence of a representative of that association the secretary stated he had attended their meeting and given the members information, with the result that the North Shields Association had rescinded their resolution adopting the tariff company, and leaving the members at liberty to make their own arrangements.

The consideration of the wages of the operatives, which had been referred to the Executive Council from the quarterly meeting, was considered, along with the different rates of wages paid within the Federation area. The opinions of the local associations were received, and after some discussion, it was resolved, on the proposition of Mr. R. Heslop, supported by Mr. W. S. Davidson:—"That this Council recommend to the Federation that no action be taken with respect to the wages paid to the operatives at the present time."

The motion of which notice had been given by the Hartlepools Association with reference to the Federation or local associations taking up shares in the Federated Employers' Insurance Association, Ltd., was considered. It was explained that the qualification for a representative to hold a seat upon the Directorate would be the holding in his own right of shares to the nominal value of £1,000. As this Federation is not in a position to take up the requisite shares, it was resolved, on the proposition of Mr. J. G. Robertson, supported by Mr. W. B. Cooper:—"That the Federation not having funds at its disposal to take up shares, no action be taken in the matter."

The question of the amendment to rules 4, 12, and 13, which had been put forward by the Hartlepools Association, so as to allow for the appointment of a chairman of the Executive Council in addition to the offices of president and vice-president, was discussed. Mr. Creasor, in the absence of any representative from Hartlepool, gave that association's reasons for placing the matter forward. On the proposition of Mr. Easten, supported by Mr. White, it was resolved:—"That while the Council is in sympathy with the object, the matter must be allowed to stand over until a more tangible scheme be submitted."

The financial statement showed £113 14s. 4d. in hand on current account, in addition to the amount on deposit. Accounts amounting to £47 16s. 5d. were, on the proposition of Mr. Heslop, seconded by Mr. Ross, passed for payment.

The Annual Conference of Secretaries will be held in London on October 20th, and all the secretaries of the local associations affiliated with the National Federation are invited to attend. On the proposition of Mr. S. Easten, supported by Mr. Cooper, it was resolved:—"That this Council, appreciating the educational value of the Conference, recommends the local Associations to appoint their secretaries to attend this Conference."

The Bill to make provision for certain regulations connected with the building trades has now been published. It provides inter alia that all accidents in the case of building operations shall be reported to the District Council.

The minutes of the National Federation and Northern Centre were read. Arising out of the Northern Centre minutes was the consideration of the question of admitting the Labourers' Union to the National Conciliation scheme. After considerable discussion, it was decided, on the proposition of Mr. Heslop, supported by Mr. Ross, to recommend to the Federation:—"That it is undesirable that, until we have a more extended acquaintance with the working of the Conciliation Board, the Labourers' Union should be admitted."

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A letter received from the National secretary covering resolutions which were passed at the half-yearly general meeting relative to the National Form of Contract was read, and, on the proposition of Mr. Easten, supported by Mr. White, it was resolved:—"That copies of the letter be obtained, and a copy forwarded to each local association for consideration."

LOCAL ASSOCIATIONS AFFILIATED TO THE NORTHERN COUNTIES FEDERATION.

MONTHLY REPORTS.

MIDDLESBROUGH ASSOCIATION.
Secretary: Walter Rigby.

A circular has been issued by the Streets Committee of Middlesbrough Corporation giving notice to builders, plumbers, and others concerned, that all trenches in public streets required to be made for the purpose of drains, gas, water or electric light services, will in future be opened and filled in by the Streets Department. In the past this work has been done by the builder or plumber. This association, in discussing the circular, felt that the new regulations would be a great inconvenience, not only from the probable delay in getting outside workmen on the job, but also, and especially from the contractors' point of view, from the difficulty in estimating for this kind of work in contracts, owing to very uncertain knowledge of the Corporation charges. The Streets Committee was approached by letter, and a deputation from the association waited upon them and stated the case from the builders' point of view. The interview was very satisfactory, and the probability is that the matter will be mutually arranged on the basis of a schedule of prices for varying depths, and for the different kinds of material, etc., and there is to be registration of persons qualified to open up streets.

This association is endeavouring to arrange for a pleasure-party visit to the Franco-British Exhibition, London, on Monday, September 21st, returning on Thursday evening, September 24th, and the practical co-operation of the local associations, Stockton and the Hartlepools, is warmly invited.

STOCKTON-ON-TEES ASSOCIATION.
Secretary: W. C. Creasor.

At a meeting held on September 7th, Mr. Jno. Davison, president, presiding, the secretary reported that the Operative Bricklayers had withdrawn their original notice for an alteration in the working rules as regards short time in winter. Our sub-committee had endeavoured to induce the Operative Bricklayers' Society to accept the short time in operation at Middlesbrough, as the two towns were now almost for all practical purposes one. The Operative Bricklayers' Society had refused this, and now sent in a notice that in the months of December and January work should cease at 4.30 p.m. instead of 4.45 p.m. After discussion, it was decided to accept this alteration, as it was a step in the direction of obtaining one set of rules for Stockton and Middlesbrough, an object that has been sought for some considerable time.

A report of the National meetings at Birmingham was presented by the chairman.

Our previous opinion in regard to seeking a reduction of wages at the present time was confirmed, viz., "That we do not consider a reduction of wages should be sought at present," and the secretary was directed to forward this to the N. C. Federation.

Arrangements were made to present to Alderman Atterby, J.P., on Thursday next, the gifts subscribed for by the Association and members on the occasion of his marriage.

The secretary was asked to attend the annual Conference of Secretaries in October.

Reports of Federation meetings were presented and approved.

The number of members to date is 55.

SUNDERLAND ASSOCIATION.
Secretary: W. H. Hope.

A general meeting of this association was held in the board-room, 14, Norfolk Street, Sunderland, on Thursday, August 20th, at eight p.m. The secretary read a letter received from the Northern Counties Federation of Building Trade Employers in reference to serving notice for a reduction of the wages of the operatives. The matter had been before the quarterly meeting of the Federation, and had been referred to the Executive Council, when the question was considered along with the different rates of wages paid within the Federation, and the opinions of the local associations received. After discussion it had been resolved:—"That the Council recommend to the Federation that no action be taken at present with respect to the wages paid to the operatives." On the proposition of Mr. J. W. White, supported by Mr. J. McMillan, it was resolved:—"That in view of the letter received from the Northern Counties Federation of Building Trade Employers, this association take no further action in the matter at present."

The secretary reported that although applications had been made for the return of forms sent out to the members for information in connection with the section of the Sunderland Corporation (1907) Act relating to the breaking-up of streets, etc., very few of the members had responded. As the matter is one of great importance to the members, it was resolved, on the proposition of Mr. R. J. Huntley, supported by Mr. Hudson, "that each member be asked to keep the necessary particulars for another three months, and return the forms with these particulars, and to forward at once any forms that they may have already completed."

A letter having been received from the operatives requesting the employers to give their consideration to the fixing of the south and west boundaries of the local conciliation board's jurisdiction, it was resolved, on the proposition of Mr. J. W. White, supported by Mr. J. T. Clark, "that the question is already dealt with by the working rules, the area being that to which the working rules apply."

The question of making representations to the local slaters, plasterers, plumbers, and labourers to join the local conciliation board was considered and on the proposition of Mr. J. W. White supported by Mr. Hudson, it was resolved:—"That the question be left in abeyance at present."

A letter received from the National secretary, with resolutions respecting the adoption of the National Form of Contract by local authorities and others, was read and received.

The question of tendering for the Durham County Council was discussed. The two important matters at issue are the principle of independent arbitration in the case of disputes, and that quantities should be the basis of the contract. Correspondence had taken place with the Council, who had made certain concessions, but on these two points no concession had been secured. An attempt by the Federation to arrange a meeting with the chairman of the Educational Buildings Sub-Committee had been made, but without success. On the proposition of Mr. J. White, supported by Mr. R. J. Huntley, it was resolved:—"That this association recommend to the Northern Counties Federation of Building Trade Employers that a meeting of members and non-members of the Federation who have tendered for work for the Durham County Council should be held with a view to going fully into those grievances."

The Conference of Secretaries is to be held in London on October 20, and it was resolved:—"That the secretary attend the Conference and that one guinea per diem be allowed as expenses."

There is nothing to report from the following associations affiliated to the Northern Counties Federation: Hartlepools, Teesside.

LOCAL ASSOCIATIONS AFFILIATED TO THE TYNE AND BLYTH DISTRICT FEDERATION.

MONTHLY REPORTS.

NEWCASTLE AND TYNE DISTRICT ASSOC.
Secretary: Wilton A. Rycroft, Accountant.

The trade in this district is very bad at the present time, and, as far as can be ascertained, there is very little new work to look forward to. The local association has recently been engaged in considering a set of proposed new bye-laws with regard to new streets and buildings, which the City Corporation are framing. These bye-laws have previously been before the association, when certain alterations were considered necessary, and I am pleased to say that the Town Improvement and Streets Committee of the Corporation have taken notice of the representations made by this association, and considerably amended the proposed bye-laws. A new set of rules to govern the association has also been under consideration, and will shortly be submitted to a general meeting of the members for their approval.

There is nothing to report from the following associations affiliated to the Tyne and Blyth District Federation: Blyth, North Shields, South Shields.

THE MIDLAND CENTRE OF THE NATIONAL FEDERATION.

Secretary: F. W. AMPHLET, 58, New Street, Birmingham.

MONTHLY REPORT.

The building trade in the Midlands is still in a very depressed condition, and the prospects for the winter are by no means cheering.

No meetings of this Federation have been held since the half-yearly meetings in the middle of July. The Emergency Committee is meeting very

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soon, to consider the question of revising the Centre rules. Copies have been sent to the local associations, for distribution among the members, of the National Federation half-yearly reports and minutes, also of a circular letter from the National Secretary with reference to the adoption of "The Builders' Journal" as the official organ of the Federation.

In order that the resolutions of the National Federation in regard to the extension of the use of the National Form of Contract may be effectively carried out, the secretary will be glad to receive from local secretaries or members the names and addresses of chairmen and officials of spending committees on public bodies.

LOCAL ASSOCIATIONS AFFILIATED TO THE MIDLAND CENTRE.

MONTHLY REPORTS.

BURTON-ON-TRENT ASSOCIATION.
Secretary: A. W. Chamberlain.

In bringing to the notice of the members of this association the "Builders' Journal," the secretary takes this opportunity of reminding them of the great and obvious advantages of supporting the official organ of the Federation. Every member should do something—(1) by becoming a subscriber to the Journal; and (2) by reporting to the secretary for publication any matter of interest.

LEICESTER ASSOCIATION.
Secretary: S. A. Dove, F.C.R.A.

The inter-trading rule that has recently been adopted is becoming more appreciated. The rule is having the desired effect in an increase of members, more than forty new members having joined since last July.

We are about to adopt a new set of rules, and have decided to follow the lines of the model set prepared by the Federation; also a day-work price-list has been prepared, and is expected to be ready by the end of the year

The number of members to date is 109.

NORTHAMPTON ASSOCIATION.
Secretary: A. L. Airs.

This association was founded in 1876 by the leading local men in the building and allied trades, and has had a very successful career. We have a membership of thirty-five. During the past year we have had practically no dispute with the employees.

The trade in the district is still very quiet, and there seems no prospect of its improving for some little time, most of our builders being employed with work away.

NOTTINGHAM ASSOCIATION.
Secretary: W. J. Barton, F.C.I.S.

The building trade in this district is in a very bad state indeed, and there have not been many questions brought before the association for discussion recently.

The association has appointed a sub-committee to consider several matters of interest and importance to the trade—for example, the increasing number of p.c. items in quantities, ironmongers declining to allow discounts on goods which the builder has to fix and pay for, and other matters of a similar character.

The two principal works at present in hand in Nottingham are the New Albert Hall and the New Hippodrome, both being terra-cotta jobs. The contractor (Mr. F. Evans) for the Albert Hall is making very good progress with the work which consists of a large hall for concerts, public meetings, etc., capable of seating 2,500 persons. The amount of the contract is about £17,000. The architect is Mr. A. E. Lambert, of this city. The site was only cleared about April last, and the structure has already reached a considerable height, and the steelwork for gallery, etc., is in a very forward state. Messrs. J. Parkinson and Sons, Ltd., of Blackpool, Newcastle, are the contractors for the Hippodrome, and although the site was not cleared until March last, the first performance is fixed for September 28th. This is a smart piece of work, as the building is one of the largest of its class in the country, the width inside being no less than 85ft., whilst the stage is 40ft. in depth with a 42ft. opening. Seating accommodation is being provided for 2,500 persons, excluding the waiting-rooms, which are being provided for all classes of the audience. The architect is Mr. Bertie Crewe, of London.

WORCESTER ASSOCIATION.
Secretary: W. Phelps.

We have had no meeting of late. With wages fixed for a term of years, and a Conciliation Board appointed to deal with disputes, there has been no business for us to discuss.

Trade is dull with us, though the Triennial Festival has given an impetus to the painting and decorative work. We have now no building of any importance being erected, except a £2,000 job which Messrs. Stokes are doing, and which is now well in hand. The Malvern builders, too, are very quiet.

There is nothing to report from the following associations affiliated to the Midland centre: Birmingham Bromsgrove, Coventry, Derby, Dudley, Hinckley, Kidderminster, Leamington, Leicester, Lincoln, Long Eaton, Loughborough, Mansfield, Newark, North Staffordshire, Nuneaton, Redditch, Stourbridge, West Bromwich, Wolverhampton.

THE SOUTH-EASTERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The London Federation, The Southern Counties Federation, and The Eastern Counties Federation.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

THE LONDON FEDERATION.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

MONTHLY REPORT.

The council met on July 16th, at 31 and 32, Bedford Street, Strand, W.C.

The reports from the Office Premises and Organisation Committees were read and adopted.

It was decided to support the motion proposed to be made by the Earl of Wemyss in the House of Lords that certain members of that branch of the legislature should be invited to represent and speak on behalf of central societies for the advancement of trade, commerce, industry, law, science, and art.

A proposition was received from the London Building Industries Federation (Operatives) that working rule agreements be made with those trades with which no agreements now exist.

The Council expressed its willingness to receive and consider applications from the separate building trades as to the formulation of reasonable working rule agreements between them and the L.M.B.A.

Information was received that "The Builders' Journal" had been adopted by the National Federation of Building Trade Employers as its official organ, and the Council agreed to supply reports to the same.

It was decided not to hold any meetings during August unless deemed necessary by the president.

Meetings.

dates of which have been decided upon:

London Master Builders' Association.

1. Finance Committee meeting, 3 p.m., Thursday, Sept. 17th. 2. Council meeting, 4 p.m., Thursday, Sept. 17th.

Institute of Builders.

Annual Dinner (Whitehall Rooms), 7 p.m., Wednesday. Oct. 14th.

Builders' Benevolent Institution (London).

1. Management Committee meeting, 5 p.m., Monday, Sept. 28th. 2. Annual Dinner (Whitehall Rooms), 7 p.m., Thursday, Nov. 5th.

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THE SOUTHERN COUNTIES FEDERATION.

Secretary; T. COSTIGAN, 31 and 32, Bedford Street, Strand, London, W.C.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTHERN COUNTIES FEDERATION.

MONTHLY REPORT.

PORTSMOUTH ASSOCIATION.
Secretary: F. B. Roskell.

A large and important meeting of this association was recently held for the purpose of discussing the grievances raised by the speculative builders of this town. A meeting had previously been held by the speculative builders to protest against certain clauses in the local bye-laws (building), and it was decided to appeal to the Master Builders' Association for their co-operation and support in the matter. Mr. M. Coltherup (president of the Master Builders' Association) presided over the meeting, at which there was a large attendance. The various clauses to which objection had been raised were explained or pointed out by representatives of the speculative builders, and after a lengthy discussion a resolution was passed to the effect that, as the meeting considered certain amendments in the bye-laws were necessary, a joint committee should be formed to draw up a report to forward to the Chairman of the Roads and Works Committee, asking them to secure the amendments desired. It was decided that the joint Committee should consist of five members of the Master Builders' Association and five of the speculative builders' representatives.

There is nothing to report from the following associations affiliated to the Southern Counties Federation: Brighton, Chatham, Gravesend, Maidstone, Southampton.

THE EASTERN COUNTIES FEDERATION.

LOCAL ASSOCIATIONS AFFILIATED TO THE EASTERN COUNTIES FEDERATION.

MONTHLY REPORT.

GREAT YARMOUTH ASSOCIATION.
Hon. Secretary: R. J. Hill.

The secretary wishes to ask members who have not yet sent in their return on the forms provided and sent out to each a few weeks ago, to oblige by sending them in at once, to enable him to complete the list required for Federation purposes. A meeting of this association will take place on Thursday evening, October 5th, at 8.30, when the usual monthly meetings will be resumed.

The number of members to date is 46.

There is nothing to report from the following associations affiliated to the Eastern Counties Federation: Cambridge, Norwich.

THE SOUTH-WESTERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The South-Western Federation, and The South Wales Federation.

Secretary: W. F. LONG, 3, Northumberland Buildings, Bath.

THE SOUTH-WESTERN FEDERATION.

Secretary; W. F. LONG, 3, Northumberland Buildings, Bath.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTH-WESTERN FEDERATION.

MONTHLY REPORTS.

BATH ASSOCIATION.
Secretary: E. J. B. Mercer.

The Bath Master Builders' Association held their usual quarterly general meeting on August 29th, Councillor J. W. Knight, J.P., president, in the chair. Mr. F. B. Parsons, vice-president, and several past presidents, and others were present. The minutes of the last quarterly meeting having been read and adopted, the hon. treasurer presented his accounts for the late summer outing to Stratford-on-Avon and Warwick, which were adopted, and a cordial vote of thanks was passed to Mr. Ambrose for making the forward arrangements.

A letter was read from the operative painters complaining of a breach of the rules by a member of this association by refusing to pay extra for overtime. The secretary was instructed to write to the member in question for his explanation.

In compliance with a request from the National Federation the secretary was empowered to furnish to the newly adopted official organ of the Federation, namely, "The Builders' Journal," such information as may be desirable.

Although the present working rules between employers and operatives provide for arbitration and conciliation, it was thought advisable to form a Local Conciliation Board to act in conjunction with the West of England and South Wales centre, as occasion may arise, and the following members were elected (pending settlement of numbers by head quarters)—namely, Messrs. J. W. Knight, J.P., F. B. Parsons, S. Ambrose, F. J. Blackmore, F. C. Chancellor, H. Erwood, G. J. Long, and A. W. Wills, to act until the regular meeting in May next.

BRISTOL ASSOCIATION.
Secretary: A. J. Pitt.

Possibly in consequence of the depressed state of the building trade in the West, few matters of importance have come before the association for consideration during the past month. The ordinary monthly meeting was held on August 27, under the presidency of Mr. Frank N. Cowlin, when, amongst other matters, it was reported that action had been taken in respect to a call for tenders for an important contract in the neighbourhood, in which it was stated that the sum of one guinea, not returnable, must be deposited before quantities were supplied. It had been pointed out that the builder was put to considerable expense in the preparation of a tender of any considerable size, and also that if such practice became general it would place the builders to great disadvantage. It was suggested that the amount of deposit should be returnable on receipt of a bona fide tender, and this had been agreed to by the authorities.

Consideration was also given to the matter of Corporation contracts, arising out of a motion put at a recent meeting of the City Council to the effect:—"That in all Corporation contracts the following clause shall be inserted:—That the works shall not be assigned or sub-let as a whole to any contractor, nor any portion of the works to be sub-let without permission in writing from the architect (or engineer), and then only to responsible parties, approved by the architect (or engineer), and the fact of any sub-contractor being permitted by the architect (or engineer) to undertake portions of the work shall not relieve the contractor from the full and entire responsibility attaching to the contractor, including responsibility under the clause herein contained, with reference to the payment of wages and observance of the hours and conditions of labour, nor from active superintendence of the works, either personally or by qualified agent during their progress. Provided that if the contractor shall be required by the architect (or engineer) the Corporation, or the specification to employ any particular sub-contractor, he shall not be responsible for work done or materials supplied by such sub-contractor, nor shall he be responsible to see that the clause relating to the payment of wages and the observance of the hours and conditions of labour is carried out with reference to the persons or workmen employed by such sub-contractor, nor for anything arising out of such sub-contract. For the purposes of this clause, a sub-contractor shall be deemed to include any person who employs workmen in the preparation of materials to be used by the contractor in carrying out his contract."

The president referred to a communication which had been forwarded in the name of the association to each member of the City Council, pointing out that it was absolutely impossible for any builder to carry out conscientiously the last clause of this resolution, and suggesting as an alternative that if found necessary or desirable, the whole of the materials used in the execution of the work shall be obtained from firms to be approved by architect or engineer.

Arising out of this, the Bristol Trades Council had written asking the association to grant them an interview upon the question, and this had taken piace on Monday, August 17th, when the matter had been very fully discussed with a view to deciding upon a wording that should be satisfactory to all concerned. Nothing definite, however, had been arrived at at the interview.

It was felt that in view of a rather small attendance, no good purpose would be served by further discussing the matter at that meeting, and eventually it was decided to refer the consideration of this subject to a small sub-committee, with instructions to report to the ensuing meeting.

There is nothing to report from the following associations affiliated to the South-Western Federation: Bridgwater, Cheltenham, Exeter, Gloucester, Hereford, Stroud, Taunton.

THE SOUTH WALES FEDERATION.

Secretary; W H. BILLINGS, Salubrious Chambers, Swansea.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTH WALES FEDERATION.

MONTHLY REPORT.

NEWPORT ASSOCIATION.
Secretary: R. Richards.

The president, Mr. A. W. Brownscombe, has been elected upon the Executive on the Centre Board of the South Wales Conciliation Board, and Councillor William Augustus Linton, of Newport, has been elected chairman of the County Federation Board. Mr. Linton and Councillor William Miles Blackburn, a member of the Board, and also of the Executive Council of the South Wales Building Trades Employers' Federation, and Mr. William Moore have also been elected as its Newport representatives on the Executive Board.

Just now there are amongst the members signs of revived interest in the Association work. This Association has been in existence well-nigh upon half a century, and its past and present members have done excellent work in brushing away trade abuses and customs. They have, to their credit, both on National and local Councils, the initiation of reforms and rules that have been adopted both by the National Federation and by sister Associations. The history of the National Federation of Great Britain, and that of the local Association, is closely identified with the name of the late John Linton, of Newport, who was president of this association from 1873 to 1900, and who brought to its councils much experience, wisdom and foresight.

The executive committee are about to revise a handbook giving a "Schedule of Day Work Prices," for the use of members only, and they are also about to issue a new handbook containing the rules of the Association.

Amongst the new rules recently adopted is one relative to "Tendering without Quantities."

A circular has been issued to members advising them to use the National Federation crest for their trade stationery, etc.

Special efforts are being made to increase the membership of this old-established Association.

Work generally has been quiet during the past few months. Several new works are drawing to completion, notably the new Savoy Hotel, High Street; the additions to the County Council Buildings, Pentonville; and Summerhill New School and Institute. Work is being pushed on by the Great Western Railway in connection with the tunnel approaches, and it is anticipated by next spring sufficient progress will have been made to enable the commencement of work on the tunnel itself, and no doubt tenders for that work will soon be invited by the company. The Corporation have just given two public works contracts to Mr. J. H. Williams, Newport, for new roads, etc.

PONTYPRIDD ASSOCIATION.
Secretary: A. W. Julian.

Arising out of the secretary's annual report, papers are to be read occasionally on matters pertaining to the building trade, organisation, etc. Mr. G. L. Morgan, one of our members, has promised the first, which will be on "The Law with Respect to Drainage and New Buildings," which we hope to hear at our October meeting.

There is nothing to report from the Swansea Association.

SCOTTISH BUILDING TRADES FEDERATION.

Secretary: JAMES CAMERON, Solicitor, 61, Lothian Road, Edinburgh.

MONTHLY REPORT.

The annual meeting of the Scottish Building Trades Federation is to be held in the Imperial Hotel, Stirling Street, Aberdeen, on Friday, September 18th. Several items of importance are down for consideration, principally regarding the proposed new scaffolding regulations, workmen's compensation insurance, and the appointment of the "Builders' Journal" as the sole official organ for Scotland.

As regards the scaffolding regulations, the draft prepared by the Departmental Committee has been carefully revised by a committee representative of building trade employers throughout Scotland, and a report thereon will be submitted to the meeting, and a decision come to as to how best to bring the proposed amendments directly under the notice of the Home Secretary.

Employers generally have felt the extra premiums for accident insurance since the passing of the Workmen's Compensation Act a very heavy burden, and negotiations are meantime in progress with Lloyds with a view to an arrangement being entered into whereby there would be collective insurance by the Scottish Builders. Some definite statement is expected to be made at the annual meeting on this subject.

The employers in the Scottish building and allied trades have no official organ for ventilating any question that may affect them. Now that the National Federation has entered into an arrangement with the "Builders' Journal" whereby that periodical is appointed sole official organ for the 'National," the Scottish Federation have taken the matter up. The various centres in the "Scottish" have been advised of all that has been done. Specimen copies of the paper have been sent to them for consideration, and it is expected that a decision will be come to at the annual meeting to appoint the same paper sole official journal for Scotland.

The reports to hand on the state of trade all over Scotland make very dull reading. Without exception, bad trade is prevalent everywhere with little or no sign of improvement.

Steps are about to be taken to better organise the Scottish Federation, and at the annual meeting Mr. Cameron, the secretary, will have some useful advice to throw out; and it is hoped that employers generally will back him up in an effort to better the organisation of the building trade. Glasgow should come in at this juncture. For several years the employers in Glasgow have stood aloof from the Federation, with which they were formerly connected. They are a power in themselves, and any scheme of organisation could not be complete without Glasgow taking a prominent part in it. "Let Federation Flourish" should be the motto of all good and true members of the building trades who have their trade interests at heart.

ASSOCIATION AFFILIATED TO THE SCOTTISH FEDERATION.

MONTHLY REPORT.

EDINBURGH, LEITH, AND DISTRICT BUILDING TRADES' ASSOCIATION.
Secretary: James Cameron, Solicitor.

After a good deal of careful consideration the Executive have authorised the secretary to issue copies of a circular anent the inter-trading rule to all those connected with the building trade in the Edinburgh and Leith district, who are not members of the association. The circular is as follows:—

In order to safeguard the interests of those engaged in the building and allied trades, the above Association recommends that the following rule be put into practice, viz.—"Members shall not give or take tenders for any work to or from any persons who are not members of this kindred Associations connected with the building trade, and shall not employ such persons to do work for them." With such a rule, the position of the association would be materially strengthened, and it would be able to bring about much needed reform in the building trade in several matters of vital importance, such as:—A uniform mode of measurement for the several works; an arbitration clause appointing a neutral arbiter under general conditions of contract; payment for work done within a reasonable time after completion; a uniform set of general conditions of contracts to be mutually agreed on between this and the Architects' Association; the exclusive employment of contractors connected with the local associations. Employers engaged in the building and allied trades who have not yet joined the association are invited to do so. The secretary's address is 61, Lothian-road, Edinburgh.

At the monthly meeting of the Executive, complaints were made by several members in the Association who were unsuccessful tenderers for a contract for one of the Corporation bodies, that their schedules had been refused them on their writing to request the return of same. Much time and labour had been spent on the pricing of the schedules which would have been of great benefit for reference in similar work. Moreover it is quite the usual practice for schedules of unsuccessful contractors to be returned when asked for. The matter has now been taken up by the association.

The state of trade in the Edinburgh district is very quiet indeed.

There is nothing to report from the following associations affiliated to the Scottish Federation: Aberdeen, Alloa, Dingwall, Dumfries, Dundee, Hawick, Inverness, Keith, Kilmarnock, Oban, Paisley, Perth; nor from the following Glasgow associations: Master Brick-Builders' Association, Master Masons' Association, Master Wrights' Association, Master Plumbers' Association

ASSOCIATIONS IN IRELAND.

There is nothing to report from the Dublin and Belfast Associations.

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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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At all newsagents and bookstalls	8	8
By post in the United Kingdom	10	10
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The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, *Caxton House, Westminster.*

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Armagh (Ireland).—For the reconstruction of the Tontine buildings as a town hall, for the City Council:—

Hutchinson Keith, Belfast	£3,590	0	0
W. Dowling, Belfast	3,526	0	0
P. M'Kenna, Armagh	3,467	0	0
P. M'Aleenan, Castlewellan	3,466	0	0
Collen Bros., Portadown	3,300	0	0
D. P. Martin, Armagh	3,178	11	1
J. and W. Stewart, Belfast	3,095	0	0
T. Collen, Tandragee	2,928	2	4
R. Collen, Portadown	2,503	5	8

Burslem.—For a block of shop property, Queen-street, for Mr. F. Wilson. Mr. E. T. Watkin, architect and surveyor, Swan-chambers, Burslem.

J. Cooke	£2,800
W. Cooke	2,700
G. M. Sambrook	2,635
H. Wardle	2,550
H. Howlett	2,549
J. Grant	2,400
Bennett Bros.	2,275
W. Grant and Sons,* Burslem	2,249

*Accepted.

Colwyn Bay.—For the erection and completion of the first portion of St. Paul's Mission Church, Colwyn Bay. Messrs. J. M. Porter and Elcock, architects, Colwyn Bay:—

Jones and Pritchard, Abergele	£1,670	0	0
S. Bond and Sons, Belgrave-rd.	1,472	3	6
E. Jones and Son, Groeslon, R.S.O., Carnarvon	1,300	0	0
T. Jones, Harland House	1,198	0	0
J. Tucker and Sons, Lansdown road	1,120	0	0
O. Jones and Hughes, York-rd.	1,100	0	0
J. O. Davies,* Euryn Villa, Bron-y-nant	1,065	8	0

*Accepted.

Bristol.—For office fittings for new premises at Corn-street, Bristol, for the Union of London and Smith's Bank:—

P. E. Gane, Bristol	£1,163
R. Wilkins and Son, Bristol	974
Stephens, Bastow, and Co.,* Bristol	849

*Accepted.

Bury (Lancs.).—For the construction of main sewering and outfall works in the townships of Unsworth and Bamford, within the rural district of Bury, for the Rural District Council. Mr. A. M. Fowler, C.E., engineer, 1, St. Peter's-square, Manchester:—

Bamford township.

H. M. Newell	£7,761	16	9
J. Bryan, Limited	6,699	0	0
T. Johnson and Sons	6,500	0	0
J. Berry	6,200	0	0
W. Pollitt	6,191	0	0
C. Lomax	5,900	0	0
Edmondson and Wyatt	5,700	0	0
V. Edie and Co.	5,569	0	0
R. C. Brebner	5,490	0	0
G. Jerman	5,275	0	0
J. Horrack	5,265	2	4
Abraham and Sons	4,800	0	0

Unsworth township.

H. H. Newell	£1,628	14	1
J. Bryan, Limited	1,439	0	0
Edmondson and Wyatt	1,420	0	0
J. Berry	1,340	0	0
T. Johnson and Sons	1,321	0	0
W. Pollitt	1,300	0	0
R. C. Brebner	1,288	10	0
C. Lomax	1,200	0	0
Abraham and Sons	1,200	0	0
V. Edie and Co.	1,186	0	0
G. Jerman	1,075	0	0
J. Horrack	1,051	2	4

Frinton-on-Sea. — For street works in Fourth Avenue. Mr. E. M. Bate, surveyor to the Council:—

Josiah Smart and Son, London	£3,978
Constable, Hart and Co., London	3,726
Fry Brothers, Greenwich	3,667
Wilson, Bonder and Co., Romford	3,416
Edward Howes, Norwich	3,411
Albert E. Farr, Frinton-on-Sea	3,378
Percy Wilson and Co., Buckhurst Hill	3,292
Hardy and Co., Herne Bay	3,271
Wm. Sheppard and Sons, Rochdale	3,247
Tarmac, Ltd.,* Wolverhampton	3,220

*Accepted.

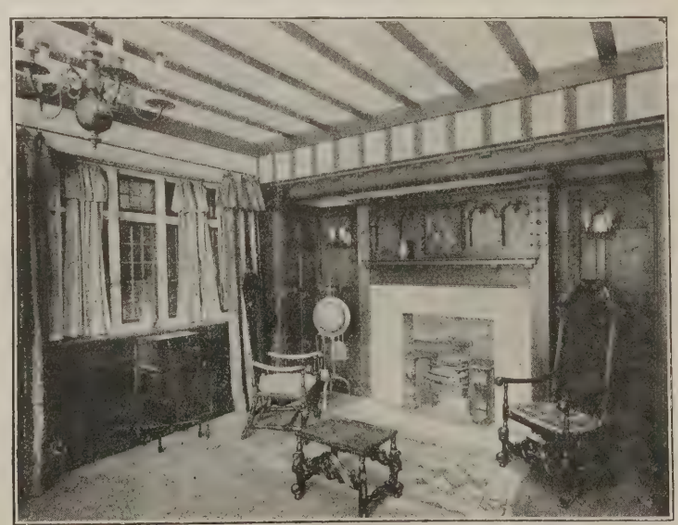
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(*Tenders continued from page 8.*)

Croydon.—For erection of a school for 868 children proposed to be built in Tavistock-grove, Croydon, for the Edulation Committee, in accordance with drawings prepared by Mr. H. Carter Pegg, F.R.I.B.A., Thornton Heath:—

Foster and Dicksee, Rugby	£13,995 0 0
F. G. Minter, Putney	13,783 0 0
Denne and Sons, Queen-street, Deal	13,500 0 0
J. Smith and Sons, Norwood Junction, S.E.	13,300 0 0
R. Cook and Sons, Crawley	13,112 0 0
Patman and Fotheringham, Theobald's-road, W.C.	13,000 0 0
W. Johnson and Son, Wandsworth Common, S.W.	12,990 0 0
J. and C. Bowyer, Upper Norwood, S.E.	12,987 0 0
W. F. Blay, Dartford	12,987 0 0
Grace and Marsh, Croydon	12,950 0 0
E. P. Bulled and Co., Croydon	12,875 0 0
W. Akers and Co., South Norwood, S.E.	12,861 0 0
Spencer Santo and Co., Kensington	12,772 15 0
H. Lovatt, Limited, Wolverhampton	12,712 0 0
W. Moss and Sons, Loughborough	12,600 0 0
E. J. Saunders, Croydon	12,445 0 0
J. Allen and Sons, Kilburn, N.W.	12,400 0 0
W. Smith and Sons, Croydon	12,384 0 0
G. E. Wallis and Sons, Maidstone	12,383 0 0
J. Appleby and Sons, Southwark Park, S.E.	12,355 0 0
Sabey and Sons, Islington-green, N.	12,200 0 0
B. E. Nightingale, Albert Embankment	12,151 0 0
W. Wallis,* 207-209, High-road, Balham, S.W.	12,100 0 0

*Accepted.

Frinton-on-Sea.—For sewering "The Crescent," Mr. E. M. Bate, surveyor to the Council:—

Percy Wilson and Co., Buckhurst Hill	£223
Fry Brothers, Greenwich	221
Hardy and Co., Herne Bay	215
Wm. Shepherd and Sons, Rochdale	212
Wilson, Border and Co., Romford	204
Edward Howes, Norwich	201
Albert E. Farr,* Frinton-on-Sea	191

*Accepted.

Edmonton, N.—For engineering work to the nurses' home of the new infirmary, for the Guardians of the Edmonton Union. Mr. Stuart Hill, architect, 106, Cannon-street, E.C. Mr. Alexander Drew, consulting engineer, Temple-chambers, Temple-avenue, E.C.:—

G. W. Cannon and Sons	£1,439 18 8
E. B. Wilkinson and Co.	1,371 7 7
Buckley and Beach	1,349 0 0
Ashwell and Nesbitt	1,280 0 0
Z. D. Berry and Sons	1,135 0 0
Dargue, Griffith, and Co.	1,126 0 0
J. Keith and Blackman Co.	1,085 0 0
R. and A. Main	1,083 5 6
J. and F. May	1,069 1 9
Clark, Hunt, and Co.	1,050 0 0
A. Grant and Sons	1,032 14 8
Burn Bros.	1,022 0 11
T. Waller and Co.	983 16 10
J. N. Haden and Sons	977 0 0
Mellows and Co.	974 10 0
Moorwood, Sons, and Co.	973 0 0
Beaven and Sons	947 14 3
Brightside Foundry and Engineering Co.	938 10 0
T. Potter and Sons	919 0 0
G. and E. Bradley	911 5 0
W. Watkins and Son	841 18 6
Comyn Ching and Co.	838 19 11
Shelby Manufacturing Co.	797 2 3
Strode and Co.	793 0 0
R. Dawson and Co.	773 16 4
Tiley Bros.*	753 16 6
R. Alger and Sons	718 0 0

*Accepted.

Hutton (Somerset).—For erection of public-house at Hutton, Weston-super-Mare, for Messrs G. and T. Spencer, Bradford-on-Avon, Wilts. Mr. Alfred J. Taylor, M.S.A., architect, 18, New Bond-street, Bath:—

Taylor and Sons	£1,800 0 0
Ford and Sons	1,590 0 0
Addicott	1,576 15 0
C. and E. Stradling	1,576 0 0
Howard, Sons, and Parsons	1,495 0 0

Rhos-on-Sea (Colwyn Bay).—For pair of semi-detached villas, Everard Road, Rhos-on-Sea, Colwyn Bay, for Mr. A. M. Fowler, jun., architect and owner, Rhos-on-Sea:—

H. Davies	£2,011 12 7
J. H. Hughes	1,842 15 0
W. Fawcett	1,749 14 9
H. Hughes	1,639 0 0
Bond and Sons	1,623 0 0
J. O. Davies	1,399 0 0
W. Wood and Co.*	1,225 0 0

*Accepted.

Willesden, N.W.—For extension of subway at the London and North-Western Railway, for the Metropolitan Water Board:—

G. Trentham	£7,033 4 0
T. Docwra and Son	5,586 17 0
J. Mowlem and Co.	5,390 0 0
Westminster Construction Co.	5,060 0 0
Monk and Newell	4,678 14 0
T. J. Davies	4,445 0 0
Kellettes, Limited	4,231 6 4
R. C. Brebner and Co.	4,132 0 0
F. G. Brummell	4,051 2 4
R. M. Parkinson	3,947 0 0
Pedrette and Co.	3,762 9 3
W. Muirhead and Co.,* 35, Queen Victoria Street, E.C.	3,678 6 10

*Accepted.

Woking (Surrey).—For the construction of about eight miles of stoneware and cast-iron pipe sewers, manholes and pumping station (Horsfell main drainage), for the Urban District Council. Mr. G. J. Wooldridge, engineer. Quantities by the engineer:—

Pethick Bros., Victoria Street, S.W.	£19,695 0 0
Neal, Limited, Plymouth	18,228 15 9
Kavanagh and Co., Surbiton Hill	17,269 17 2
Mowlem and Co., Westminster	17,041 0 0
G. Rutter, Barry	15,568 13 10
Potterton, East Molesey	14,724 9 10
Jackson, Wanstead	14,597 4 8
Kelletts, Limited, Holborn	14,196 12 4
Price and Co., Nottingham	13,813 15 8
Prichard, Limited, London, E.C.	13,707 1 5
Playfair and Toole, Southampton	13,235 0 0
G. Rayner, Croydon	13,193 0 0
F. Osenton, Hampton-on-Thames	13,166 0 0
G. Franks, Guildford	13,091 12 2
Bell and Sons, Tottenham	13,070 18 4
F. Osman, Southampton	12,987 12 9
J. Dixon, St. Albans	12,760 0 0
Moran and Son, Kensington	12,537 0 0
T. Watson, jun., Southall	12,475 10 5
Smith and Co., Westminster	12,277 11 9
Murray and Co., St. Leonards	11,861 11 0
T. Turner, Blackwater, Hants.	11,793 10 6
W. Pearce, Forest Hill	11,582 17 8
Wilson, Border and Co., Romford	11,487 7 8
Brixey and Co., Parkstone	11,189 17 2
Hardy and Co.,* Herne Bay	10,937 8 0
Brebner and Co., Edinburgh	10,385 0 0
J. W. Jerram, East Ham	10,297 18 6

*Accepted.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Sept. 17. TREHARRIS.—Additions to shops and altering stables at 35, Fox Street, Treharris, for D. E. Jones, Silbrook House, Whitchurch. Plans and specification may be seen either at 35, Fox Street, Treharris, or at the office of the architect. Endorsed tenders to be sent not later than September 17 to T. Roderick, architect, Clifton Street, Aberdare.

Sept. 17. GUISELEY (near Leeds).—Erection of the Yeadon and Guiseley dual secondary school. Persons desirous of tendering are requested to forward their names and addresses not later than Sept. 17 to Wm. Broadbest, M.S.A., architect, Leeds and Horsforth, when quantities will be forwarded. Plans may be seen and further particulars obtained at the architect's offices, Red Hall Chambers, Guildford Street, Leeds. A deposit of one guinea, payable to M. Rennard, Guiseley, near Leeds, is required.

Sept. 17. READING.—Supply and erection of 220 yds. of cleft oak fence, to replace a part of the oak fence, along Bath Road boundary of Prospect Park, Reading, for the Corporation. Specification and general conditions may be seen and form of tender obtained at the engineer and surveyor's offices, town hall, Reading. The person whose tender is accepted will be required to execute a contract deed with sureties for its due performance, also not to assign or make a subcontract for the execution of any part of the work. Sealed tenders, in the envelope provided, must be delivered not later than noon on September 17, to John Bowen, A.M.I.C.E., borough engineer and surveyor, town hall, Reading. Fair wages clause.

Sept. 18. PENTRE.—Enlarging the boys' department of the Pentre Council School for the Rhondda U.D.C. Plans and specification may be seen, and bills of quantities and tender form obtained at the office of the architect, Jacob Rees, Hillside Cottage, Pentre, upon deposit of one guinea with the accountant. Sealed tenders, endorsed "Tender for Pentre School Extensions," must be delivered before noon on Sept. 18 to the chairman of the building committee, council offices, Pentre, Rhondda.

Sept. 19. St. AUSTELL.—Alterations to Bethel U.M. church, St. Austell. Plans, specifications, etc. may be seen on application to John Mutton, architect, Charlestown, St. Austell, to whom sealed endorsed tenders are to be sent not later than Sept. 19.

Sept. 19. BAILIFFE BRIDGE.—Extension to offices at Clifton Mills, Bailiffe Bridge. Plans and specifications may be seen and bills of quantities obtained until September 19, from Joseph F. Walsh and Graham Nicholas, F.R.I.B.A., architects, Museum Chambers, Halifax.

Sept. 19. CARDIFF.—Conversion into shop premises of 44 and 46, Crwys Road, Cardiff, for R. W. Nicholas. Plans and specification may be seen at the office of W. H. Dashwood Caple, F.R.I.B.A., architect, 2, Church Street, Cardiff, and a copy of the quantities obtained on deposit of £1 1s. Tenders, sealed and endorsed, must be sent to the architect by noon on Sept. 19.

Sept. 19. BUTTERSHAW.—Erection of a new council school at Buttershaw, for the Corporation of Bradford. Drawings and general conditions of contract may be seen, and bills of quantities and form of tender obtained by applying to F. E. P. Edwards, F.R.I.B.A., city architect, Whitaker Buildings, Bradford. Sealed and endorsed tenders must be delivered not later than Sept. 19 to Tho. Garbutt, secretary, education office, Manor Row, Bradford. Fair wages clause.

Sept. 19. MONMOUTHSHIRE.—Alterations and repairs to the following council schools, for the education committee:—Park Terrace, Pontypool; Varteg Infants; New Inn, near Pontypool; Earl Street, Tredegar; Rumney, near Cardiff. Plans and specifications can be seen at the offices of John Bain, architect, High Street, Newport. Sealed and endorsed tenders in separate envelopes for each school are to be delivered not later than Sept. 19, to C. Dauncey, secretary, county council offices, Newport, Mon.

Sept. 19. OBAN.—Enlargement and alteration of the High School, Soroba Road, Oban, for the school board, according to plans by J. A. Carfrae, architect, Edinburgh. Mason, carpenter, joiner, slater, plaster and concrete, ironfounder, glazier, plumber and painter works required. Schedules of quantities and forms of tender may be obtained from the clerk to the board on payment of a deposit of ten shillings for each schedule. Plans may be seen at the school board office, Oban, or of the architect, 3, Queen Street, Edinburgh. Sealed tenders, marked outside "Tender for Works at High School," must be lodged on or before September 19 with William Jolly, clerk to the board, school board office, Columba Buildings, Oban.

Sept. 21. BROCKENHURST.—Construction of an oak footbridge at Brockenhurst, for Lymington R.D.C. Particulars can be obtained of S. Crittall, surveyor, Sway. Sealed tenders, endorsed "Tender for Footbridge," must be delivered on or before Sept. 21, to J. Davis Rawlins, clerk to the council, 38, High Street, Lymington.

Sept. 21 GUILDFORD.—Erection of buildings over the gas-producer plant and machinery at the water works, Millmead, for the corporation. Plans of the buildings may be seen, and copies of specification and form of tender obtained on application to C. G. Mason, A.M.I.C.E., borough engineer and surveyor, at his office, in Tun's Gate. Tenders endorsed "Tender for new buildings at Water Works" are to be sent on or before noon September 21, to F. S. Miller, town clerk, town clerk's office, Bridge Street, Guildford.

Sept. 21. DUNDALK. — Erection of new office on Dundalk Station platform, and conversion of an old stores building at Dundalk into a fitting shop, for the Great Northern Railway Company (Ireland). Parties wishing to tender can see the drawings and specifications at the office of W. H. Mills, engineer-in-chief, Amiens Street terminus, Dublin, or copies of same at the office of the district engineer, Belfast, and can obtain at the said offices forms of tender on payment of one shilling each (not returnable). Tenders on the forms supplied should be delivered, under sealed cover, endorsed "Tender for ——," not later than 10 a.m. on September 21, to T. Morrison, secretary, secretary's office, Amiens Street terminus, Dublin.

Sept. 22. CAMBRIDGE. — Extension of Cambridge post-office, for the commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the postmaster at Cambridge. Bills of quantities and forms of tenders may be obtained at H.M. Office of Works, Storey's Gate, on payment of one guinea. Tenders must be delivered before noon on September 22, addressed to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Cambridge Post-office, Extension."

Sept. 22. HALIFAX.—Construction of the hosiery, tailoring, and millinery departments at the Central Stores, Northgate, Halifax, for the Halifax Industrial Society. Drawings and specifications will lie for inspection, and bills of quantities may be obtained at the offices of the architect until Sept. 22, on which date sealed tenders, properly endorsed, are to be delivered to W. Clement Williams, architect, 29, Southgate, Halifax.

Sept. 23. PARC-GWYLLT.—Taking down and removing the old temporary block at Parc-Gwyllt and re-erecting at Pencoed, according to plans and specifications, to be seen with Tom Williams, London House, Pencoed. Sealed tenders to be in the secretary's hand by Sept. 23, addressed, "Tender," secretary, public hall company, Pencoed.

Sept. 23. LANCHESTER.—Alterations, etc., to Porter's lodge at Lanchester workhouse, for the guardians of the union. Drawings, specification and conditions of contract may be seen, and forms of tender obtained of Geo. Thos. Wilson, architect, 22, Durham Road, Blackhill. Tenders to be sent to W. H. Ritson, clerk, Lanchester, not later than Sept. 23.

Sept. 23. YORK. — Alterations to Pumping Station at York, for the North Eastern Railway. Plans and specification may be seen, and quantities, and further information obtained upon application to William Bell, the company's architect, at York. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "York Pumping Station," to be sent not later than 9 a.m. on September 23 to R. F. Dunnell, secretary, York.

Sept. 23. WALKER GATE.—Erection of Station Buildings at Walker Gate, for the North Eastern Railway. Plans and specification may be seen and quantities and further information obtained upon application to William Bell, the company's architect, Central Station, Newcastle-on-Tyne. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Walker Gate Station," to be sent not later than 9 a.m. on September 23 to R. F. Dunnell, secretary, York.

Sept. 23. LEICESTER.—Erection, completion, and maintenance for nine months after completion, of extensions to the municipal technical and art schools, the Newarke, Leicester, for the education committee. Bills of quantities and forms of tender may be obtained from the architects (Everard, Son, and Pick, 6, Millstone Lane, Leicester), on deposit of two guineas. Sealed tenders, upon forms supplied, to be delivered not later than 10 a.m., on Sept. 23, endorsed "Tender for the Extension of the Technical and Art Schools," to T. Groves, secretary, education offices, town hall, Leicester. Fair wages clause.

Sept. 24. STOKE BISHOP.—Alterations and Additions to conservatory, Bishop's Knole, Stoke Bishop, for R. E. Bush. Plans and specifications can be seen at the office of the architect. Tenders to be sent on or before Sept. 24, to Henry Williams, architect, Alliance Chambers, Corn Street, Bristol.

Sept. 24. DENBY AND CUMBERWORTH. — Erection of a new cloak-room, etc., at the Birdsedge provided school, for the West Riding education committee. Plans may be seen, and bills of quantities obtained, upon application to the architect. Sealed and endorsed tenders to be forwarded not later than 10.30 a.m., on Sept. 24, to J. Vickers-Edwards, county architect, County Hall, Wakefield.

Sept. 24. SOOTHILL. — Erection of new latrines at the Earlsheaton provided school, and improvements at the Gregory Street provided school, Soothill, for the West Riding education committee. Plans may be seen and bills of quantities obtained upon application to the architect. Sealed and endorsed tenders to be forwarded not later than 10.30 a.m. on September 24, to J. Vickers-Edwards, county architect, County Hall, Wakefield. See also "Miscellaneous."

Sept. 24. ARDSLEY (near BARNSLEY).—Erection of a school at Ardsley, near Barnsley, for the West Riding Education Committee. Plans may be seen and quantities obtained on application to the architect, A. B. Linford, of Wombwell, near Barnsley. A deposit of £1 must be paid to the West Riding treasurer, and sent direct to him at the county hall, Wakefield. Sealed tenders, properly endorsed, to be sent not later than 11.30 on September 24, to Thomas Graham, divisional clerk, Obelisk Chambers, Barnsley.

Sept. 25. DUDLEY.—Enlargement of Dudley Post Office, for the commissioners of H.M. works and public buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the postmaster at Dudley, between the hours of 10 a.m. and 5 p.m. Bills of quantities and forms of tender may be obtained at Storey's gate, London, S.W., on payment of one guinea. Tenders must be delivered before noon, Sept. 25, addressed to the secretary, H.M. Office of Works, etc. Storey's-gate, London, S.W., and endorsed "Tender for Dudley Post Office Enlargement."

Sept. 26. NEATH.—Erection of a villa at Neath for F. Manton. Plans and specification may be seen at the office of the architect. Tenders to be sent not later than Sept. 26, endorsed "Tender for Villa," of J. Cook Rees, architect, Neath.

Sept 28. NEWCASTLE-UPON-TYNE. — Construction and erection of about 180 tons of steelwork for the bridge over the Ouseburn, in connection with the quay extension, for the Corporation. On and after September 10, and on payment of £2 2s. to the city treasurer, town hall, Newcastle-upon-Tyne, general conditions, specification, bill of quantities, and form of tender can be obtained, and drawings inspected at the city engineer's office, town hall. Blue prints of any of the eight plans can be obtained on payment of 2s. 6d. each to the city treasurer, which sum will not be returned. Tenders, addressed to the city engineer, town hall, Newcastle-upon-Tyne, and endorsed "Bridge over Ouseburn," to be received not later than 10 a.m. on September 28.

Sept. 28. NEW MALDEN (Surrey).—Internal alterations to ironwork shed and building new stokehole, etc., at Norbiton Common Farm, New Malden Surrey, for the Kingston union. Plans and specification may be seen, and bills of quantities and form of tender obtained, on application to William H. Hope, C.E., architect and surveyor, 12, Clarence Street, Kingston-on-Thames. Tenders to be delivered,endorsed "Tenders for Alterations," on or before Sept. 28 to Jas. Edgell, solicitor. clerk to the guardians, union offices, Coombe-road, Kingston-on-Thames. Fair wages clause.

Sept. 28. KINGSTON-ON-THAMES.—Internal alterations, and erection of small additions to the workshops at the workhouse, Kingston-on-Thames, for the guardians of the union. Plans and specifications may be seen, and bills of quantities and forms of tender obtained, on application to William H. Hope, C.E., architect and surveyor, 12, Clarence Street, Kingston-on-Thames. Tenders to be delivered endorsed "Tender for alterations," on or before Sept. 28 to Jas. Edgell, solicitor, clerk to the guardians union offices, Coombe-road, Kingston-on-Thames. Fair wages clause.

Sept. 28. TEIGNMOUTH. — Construction of sea-defence works, comprising about 470 lineal yds. of masonry and concrete walls, and 680 lineal yds. of reinforced concrete sheet piling, with incidental works, adjacent to the promenade, Teignmouth, for the U.D.C. Plans may be seen, and copies of the general conditions, specification, bills of quantities, and form of tender obtained, on application to Charles F. Gettings, engineer, town hall, Teignmouth, and payment of a deposit of five guineas. Sealed tenders, upon the forms supplied, and priced bills of quantities, must be returned in the envelopes supplied, and addressed to A. Percival Dell, clerk to the council, town hall, Teignmouth, endorsed "Tender and Schedule for Sea-Defence Works," by 9 a.m. on September 28. Fair wages clause.

Sept. 29. BROMLEY.—Erection of a new secondary school, at Bromley, to accommodate 220 girls, for the Kent Education Committee. Plans and specification, prepared by the committee's architect, W. H. Robinson, M.S.A., and conditions of contract, may be inspected at the offices of the committee, on and after September 14, between the hours of 10 a.m. and 4 p.m. (Saturdays and Sundays excepted). Persons desiring to tender and receive a copy of the bills of quantities must send their names, accompanied by a deposit of £3 3s., to the secretary, not later than noon, September 14. Tenders, on the form supplied with bills of quantities, must be enclosed in a sealed envelope, endorsed "Bromley Tender," addressed and delivered not later than 10 a.m. on September 29, to Fras. W. Crook, secretary, Kent Education Committee, Caxton House, Westminster, S.W.

Sept. 30. CAMBERWELL.—Erection of seven working-class cottages in Pitman Street, Camberwell, for the corporation. No quantities will be supplied. Specifications and particulars can be obtained on application to W. Oxtoby, borough engineer, town hall, Camberwell, on deposit of one guinea. Tenders to be delivered on or before 6 p.m., on Sept. 30, to C. William Tagg, town clerk.

Oct. 1. KENSINGTON.—Providing and Laying pitch-pine floor, plastering walls, and sundry decorative works to ward No. 1 of the infirmary, Marloes Road, Kensington, for the guardians. Specification and form of tender can be obtained between 10 and 4 (Saturdays, 10 and 1). Tenders are to be made on the forms provided, and are to be delivered not later than 3 p.m., on Oct. 1, to W. R. Stephen, clerk to the guardians, guardians' offices, Marloes Road, Kensington, W.

Oct. 5 ST. IVES (Cornwall).—Erection of a caretaker's cottage, for the Corporation. Plans may be inspected at the office of the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, where specification, form of tender, and bill of quantities may also be obtained on deposit of 3 guineas. Tenders on the form provided must be delivered under seal, and endorsed, "Tender for St. Ives Waterworks," before 10 a.m. on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Engineering.")

Oct. 6. ELTHAM PARK, S.E.—Erection of a shelter and conveniences at Eltham Park, S.E., for the L.C.C. (No quantities have been prepared.) Persons desiring to tender may obtain drawings and specifications, form of tender, and other particulars at the architect's department, 19, Charing Cross Road, W.C., upon previous payment to the cashier of the council, at the county hall, Spring Gardens, S.W., of 10s. Tenders must be upon the official forms. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W., and marked "Tender for Eltham Park." No tender will be received after 11 a.m. on October 6. Fair wages clause.

Oct. 17. CWMFELINFACH (Mon.). — Erection of a new council school at Cwmfelinfach, near Ynsyddu, Mon., to accommodate 400 children, for the Monmouthshire education committee. Builders desirous of tendering are requested to send their names and addresses to R. L. Roberts, architect, Abercarn, on or before Sept. 23, together with a deposit of £3 3s. for bills of quantities. Plans and specification may be seen at the offices of the secretary, C. Danncey, county council offices, Newport, Mon., to whom tenders, endorsed "Tender, Cwmfelinfach School," must be sent by Oct. 17.

No date. BURNHAM-ON-CROUCH. — Erection of house and shop at Station Road, Burnham-on-Crouch. Plans and specifications can be seen at King and Hines, engineers, Burnham-on-Crouch.

No date. BRODSWORTH (Yorks.).—Erection of a Primitive Methodist school. Copies of quantities may be obtained on deposit of £1 1s., by application to H. Beck, architect, Dolphin Chambers, Doncaster.

No date. WOODLESFORD (near Leeds).—Alterations at the Woodlesford provided school. Specification and bills of quantities on application to Robert J. Smith, education offices, Garforth, near Leeds.

No date. BEDWAS (Mon).—Erection of two houses at Bedwas, Mon. Plans and specifications and all particulars may be had of J. Gibbon, Church Farm, Bedwas; or T. Howell, Rhiwderin, Mon.

No date. MOLD.—Erection of a new house on the Gwernymynydd Road, within one mile of Mold, for Mrs. Cliff, of Chester. Plans and specifications can be seen at the offices of Sam Evans, architect, Bank Buildings, High Street, Mold.

No date. GARFORTH (near LEEDS).—Alterations at the Woodlesford Provided School. Specification and bills of quantities on application to Robert J. Smith, education offices, Garforth, near Leeds.

No date. BRISTOL.—Rebuilding at 75 to 79, Victoria Street. Plans and specifications may be seen, and quantities obtained, on payment of a deposit of one guinea, to La Trobe and Weston, F.R.I.B.A., architects, 44, Corn Street.

No date. LAPFORD (NORTH DEVON).—Reconstruction and conversion into three residences of premises at Lapford, North Devon. Persons desirous of tendering are requested to send their names to J. Archibald Lucas, F.S.I., A.R.I.B.A., architect and surveyor, Guildhall Chambers, Exeter.

ENGINEERING.

Sept. 18. HULL.—Supplying and fixing at the power station, Osborne Street, a surface-condensing plant, with motor-driven pumps, capable of dealing with 28,000 lb. of steam per hour, for the Corporation. Forms of tender and other particulars may be obtained from the city engineer on payment of £1. Remittances should be made payable to T. G. Milner, city treasurer. Tenders, endorsed "Tender for Condensing Plant," are to be addressed to the chairman of the tramways committee, and delivered at the town clerk's office, Hull, before noon on September 18.

Sept. 18. LISNATRUNK (near Lisburn, Ireland). —Improvement of water supply to Glenmore Bleach Works, for J. N. Richardson, Sons, and Owden, Ltd. The contract comprises the cleaning out and deepening the existing mill dam in the townland of Lisnatrunk, near Lisburn, and the excavation and removal of about 31,000 cub. yds. of material therefrom, to the margins, together with laying about 770 yards of 12 inch, and 450 yds. of 9 in. fireclay pipes, the construction of watertight dam, eduction tower, and regulating wells, with sluice valves, penstocks, etc. Plans and specifications may be seen, and the specification, form of tender, and schedule of quantities obtained upon payment of one guinea at the office of the engineers, Swiney and Croasdaile, MM.Inst. C.E., Avenue Chambers, Belfast, on any week days between 10 a.m. and 5 p.m.; Saturday, the office closes at 2 p.m. Tenders to be addressed to the chairman, J. N. Richardson, Sons and Owden, Ltd., and delivered, endorsed "Tender for Waterworks," at the office, Donegall Square, N., Belfast, not later than noon on September 18. Security will be required for performance of the contract.

Sept. 19. LANCASTER. — Supplying, delivering and fixing one cast iron water tank, capacity, 24,000 gallons, for the visiting committee of the county asylum. Forms of tender, together with specifications, may be obtained on application to Jno. R. Wilson, clerk and steward, clerk's office. The site may be seen and other particulars on application to the clerk of works at the asylum. Tenders, endorsed "Tender for Tank," and addressed the chairman of the visiting committee, must be delivered not later than 9 a.m. on Sept. 19.

Sept. 22. CLONAKILTY.—Improvements and additions to the waterworks at Scartagh, Clonakilty for the U.D.C., in accordance with plans and specification prepared by A. W. Barnard, M.Inst., C.E.I. Plans and specification may be inspected daily at the town clerk's office, Clonakilty, between the hours of 10 and 4. Ten pounds sterling, or a cheque for that amount duly certified, to be lodged with each tender. The sum lodged shall be returned upon signing contract and bond within fourteen days of acceptance, or in default, shall be forfeited. The contractor whose tender may be accepted shall sign a bond in which he shall be joined by two sureties or a guarantee society approved of by the council, and shall pay the cost of such bond. Tenders endorsed "Tenders" must reach Jerome Kingston, clerk to council, on or before 2 p.m. Sept. 22.

Sept. 28. LAMINGTON.—Construction of steel work in the renewal of the superstructures of the underbridges at 60 miles 60 chains and 63 miles 5 chains on the main line, near Lamington Station, for the Caledonian Railway Company. Drawings may be seen at the office of the company's district engineer, Princes Street station, Edinburgh, where copies of the specification and schedule may be obtained on deposit of two guineas. Sealed tenders, endorsed "Tender for Steel Work required in the Renewal of the Superstructure of Underbridges at 60 miles 60 chains and 63 miles 5 chains on the main line, near Lamington Station," to be lodged on or before Sept. 28, with J. Blackburn, secretary, Caledonian Railway Company's Offices, 302, Buchanan Street, Glasgow.

Oct. 5. ST. IVES (Cornwall).—Construction of an impounding reservoir at Bussow Moor, providing and erecting filters and filter-house at Hellesveor, and providing and laying about two miles of cast-iron mains varying from 6 in. to 9 in. in diameter, together with valves, etc., for the corporation, in accordance with plans submitted to the L.G.B. Plans prepared by the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, may be seen at his office. Specification, form of tender and bill of quantities may be obtained from the engineer, on deposit of 3 guineas. Tenders, on the forms provided, must be delivered under seal, and endorsed "Tender for St. Ives Waterworks," before 10 a.m., on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Building.")

Oct. 7. LONDON.—Supply and Erection of a steel-wire rope suspension bridge to span the boating lake at Victoria Park, for the L.C.C. Persons desiring to tender may obtain sketch, plan, specification, form of tender and other particulars at the Parks Department, 11, Regent Street, S.W. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London county council, county hall, Spring Gardens, S.W., and marked "Tender for Bridge, Victoria Park." No tender received after 11 a.m., on October 7, will be considered. Tenders must be upon the official forms, and the instructions contained therein must be strictly complied with. Fair wages clause. (See also "Plumbing and Sanitary.")

IRON AND STEEL.

Sept. 15. LONDON, E.C.—Supplying spring steel, for the Assam Bengal Railway Co., Ltd. Specifications and tender forms may be obtained from the offices of the company. A fee of one guinea is charged for each specification, which cannot, under any circumstances, be returned. Tenders must be delivered not later than noon on September 15, to F. A. Lyall, secretary, Bishopsgate House, 56, Bishopsgate Street Within, London, E.C.

Sept. 19. BLACKPOOL. — Supplying the following materials, for the Corporation:—100 tons of steel rails, No. 4 B.S. section; 30 cwts. of fish-plates; 20 cwts. of tiebars; 300,000 (about) hardwood paving blocks. Specifications and form of tender can be obtained from the engineer. Sealed tenders must be delivered, endorsed "Tender for Tramway Materials," not later than 10 a.m. on Sept. 19, to John S. Brodie, borough engineer.

Sept. 23. PAINSWICK.—Providing and fixing about 240 lineal yards of corrugated iron fencing with iron supports, at the sewage disposal works, Painswick, for the Stroud R.D.C. Specification may be seen at the office of the engineer, G. P. Milnes, 6, Rowcroft, Stroud. Tenders marked "Iron Fencing" to be sent not later than 10 a.m. on Sept. 23 to F. Winterbotham, clerk, John Street, Stroud.

Sept. 23. DARLINGTON.—Iron and steel work in the erection of boiler and tender shop, paint shop, messrooms, etc., at Darlington for the North Eastern Railway. Plans and specification may be seen, and quantities and further information obtained upon application to William Bell, the company's architect, at York. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders marked "Loco. Works, Darlington," to be sent not later than 9 a.m. on Sept. 23 to R. F. Dunnell, secretary.

PAINTING.

Sept. 22. HALIFAX.—Painting the interior of three houses in Victoria Road, for the corporation. Plans and specifications may be seen and forms of tender obtained on application to James Lord, M.I.C.E., borough engineer, town hall, Halifax. Tenders, endorsed "Painting Houses, Victoria Road," must be sent not later than noon on Sept. 22, to Keighley Walton, town clerk.

Sept. 23. LLWYNYPIA.—Papering and painting c., the Ivor Hael Hotel, Llwynypia, for David ohn and Co., Ltd., Pentre Brewery, Pentre. pecification may be seen at the hotel or at the ffice of the architect. Sealed and endorsed ten- ers to be delivered not later than Sept. 23, to . D. Morgan, M.S.A., architect, 194, Ystrad oad, Pentre.

Sept. 23. DUBLIN.—Painting 116 gas lanterns id pillars in Terenure and Rathfarnham for the D.C., according to specification, which may be en at the council's office. Sealed and endorsed nderrs, addressed to the "Presiding Chairman" ill be received until 10.30 a.m. on Sept. 23, by . J. Byrne, clerk to the council, 1, James's treet, Dublin. Fair wages clause.

PLUMBING & SANITARY

Sept. 19. STOCKTON-ON-TEES. — Erection f additional lavatory accommodation at the orkhouse, for the guardians of the union. Forms f tender and full particulars can be obtained om John Rodham, 16, Finkle Street, Stockton- n-Tees. Sealed and endorsed tenders to be elivered not later than September 19, to Fred yers Watson, clerk to the guardians, Nelson errace, Stockton-on-Tees. (See also "Iron and teel.")

Sept. 21. SHINFIELD AND SWALLOWFIELD. Supplying and laying about 849 lineal yards of in. cast iron water main and about 250 yds. of in. ditto, including the supply and fixing in posi- on of sluice valves, hydrants, bends, branches, rface boxes, etc., in certain roads, for the Rural istrict Council of Wokingham. Plans may be en, and specification, etc., obtained from the erk, on payment of £1. Tenders must be sent, ndorsed "Tender for Laying Water Mains," not ter than Sept. 21, to John F. Sargeant, clerk, uncil offices, 8, Shute End, Wokingham.

Sept. 21. HOMERTON.—External Painting, etc., cottages, High Street, Homerton, N.E., for e Hackney Union. Specification, conditions of ntract, and form of tender can be obtained etween 10 a.m., and 4 p.m., from the clerk. The ntractor will be required to give approved curity for the due performance of the contract a bond the form of which may be seen at the erk's office. Sealed tenders, endorsed "External ainting, Crozier Terrace." must be delivered not ter than two p.m., on September 21st, to Frank Coles, clerk to the guardians, clerk's offices, dney Road, Homerton, N.E.

Sept. 22. LINGFIELD.—Construction of a tank id filters and certain alterations and additions the sewerage outfall works at Dormans Park, ingfield, for the Rural District Council of God- one. Drawings and specification may be seen application to T. C. Barralet, the surveyor, at e office of the council, Station Road West, Ox- d. Tenders to be endorsed "Tender for Dor- ans Park Outfall Works," and delivered on or efore Sept. 22 to Evelyn Alston Head, clerk, 12, ailway Approach, East Grinstead.

Sept. 22. READING. — Laying 1,580 yards f 9 in. pipe sewage sewer; 1,850 yds. of 12 in. ipe surface-water sewer, and 250 yds. of 9 in. ipe surface-water sewer, or thereabouts, with oncrete foundations and manholes, in Shinfield oad, Reading, for the Corporation. Drawings ay be seen, and general conditions, specifica- on, schedule and form of tender obtained on ap- lication to the engineer and surveyor. One uinea must be deposited with the borough ac- ountant. The person whose tender is accepted ill be required to execute a contract deed, with roper sureties, for the due performance of the ontract. Sealed tenders, in the envelope provided, ust be delivered not later than noon on Septem- er 22, to John Bowen, Assoc.M.Inst.C.E., borough ngineer and surveyor, town hall, Reading. Fair ages clause.

Sept. 28. CHESTERTON. — Construction of ewers at the union workhouse, for the Guardians. lans and specifications can be seen at the office f W. Wren, Castle Street, Cambridge. Sealed enders, endorsed "Tenders for Drainage Work." o be sent on or before September 28, to John F. ymonds, clerk, 9, Bene't Street, Cambridge.

Oct. 12. DUNMURRY (Ireland).—Providing nd laying about 4,800 lin. yds. 12 in., 9 in., and in. stoneware and cast iron pipes, together with he construction of manholes, lampholes, ventila- ng shafts, flushing tanks, and other incidental orks, for the Lisburn Rural District Council. onstructing purification works, irrigation area, nd approach road to works, with bridges over ver, and all works pertaining thereto. Drawings nd specification may be seen, and bill of quan- ies, with form of tender, obtained, on payment of three guineas, from the engineer, James unter, B.E., Antrim Road, Lisburn; or Samuel Hunter, quantity surveyor, Scottish Provident uildings, Belfast; or from the clerk to the coun- il. Sealed tenders, endorsed "Dunmurry Sewer- ge," must be delivered not later than 10 a.m. ct. 12, to William Sinclair, clerk of the council, sburn Workhouse.

Oct. 13. LONDON.—Construction, in the etropolitan boroughs of Deptford and Greenwich. ,026 ft. of cast-iron sewer, for the L.C.C., of hich part is 10 ft. internal diameter, and part in two pipes each 6 ft. 9 in. internal diameter. About 777 ft. of the sewer is to be formed in tunnel and the remainder in open cut. Persons desiring to tender may obtain drawings, specifications, bills of quantities, form of tender and other particulars on application to the chief engineer, Maurice Fitz- maurice, C.M.G., at the county hall, Spring Gar- dens, S.W., upon depositing with the cashier £10. Full particulars of the work may be obtained on application at the county hall, before payment of the fee. Each tender is to be delivered at the county hall, in a sealed cover, addressed to the clerk of the London county council, Spring Gar- dens, S.W., and marked "Tender for Greenwich Road Sewer Extension." No tender received after 11 a.m., on October 13, will be considered. (See also "Engineering.")

ROADS AND CARTAGE.

Sept. 19. FELIXSTOWE.—Steam road-rolling for the U.D.C. Specification and form of tender may be obtained on application to H. Clegg, A.M.I.C.E., surveyor to the council, town hall, Felixstowe. Sealed and endorsed tenders should be delivered not later than Sept. 19 to F. B. Jennings, clerk to the council, town hall, Felix- stowe.

Sept. 19. FELIXSTOWE.—Supplying Guernsey granite, delivered free alongside at Felixstowe docks, or carriage paid to the town station, Felix- stowe for the U.D.C. Specification and form of tender may be obtained on application to H. Clegg, A.M.I.C.E., surveyor to the council, town hall, Felixstowe. Sealed tenders, properly en- dorsed, should be delivered not later than Sept. 19 to F. B. Jennings, clerk to the council, town hall, Felixstowe.

Sept. 19. ROTHERHAM.—Supplying and deli- vering about 2,000 tons of broken granite, to pass through a 2½ in. ring, and for 500 tons to pass through a 1¾ in. ring, for the Corporation. A sample of granite is to accompany each tender; the tender is to state the price per ton of the material delivered at any of the Rotherham stations as directed from time to time by the borough engi- neer. Forms of tender and full particulars may be obtained of Ernest B. Martin, A.M.I.C.E., borough engineer, town hall, Rotherham. Sealed tenders, endorsed "Tender for Granite," to be delivered not later than Sept. 19, to W. J. Board, town clerk, town hall, Rotherham.

Sept. 21. PLYMOUTH.—Making up and com- pleting various roads, for the Corporation. Plans and specifications and conditions may be seen and bills of quantities obtained at the offices of the engineer. Sealed tenders must be delivered not later than 5 p.m. on September 21, to James Paton, borough engineer, municipal offices, Ply- mouth.

Sept. 21. LYMINGTON.—Steam Rolling the main and district roads during the half-year ending March 31, 1909, for the R.D.C. Forms of tender and other particulars can be obtained of S. Crit- tall, surveyor, Sway. Sealed tenders, endorsed "Steam Rolling Tender," must be delivered on or before Sept. 21, to J. Davis Rawlins, clerk to the council, 38, High Street, Lymington.

Sept. 21. RINGWOOD.—Steam Rolling the main roads of the district during the coming season, with one, or (if required) two ten-ton rollers, at per day, inclusive of driver, fuel, oil, and all re- quisites for roller and water-cart, excepting a horse for the latter, for the R.D.C. Tenders to be sent before noon on Sept. 21, to George P. Brown, clerk of the council, Ringwood.

Sept. 21. BARNES. — Paving the carriage- ways of Church Road, High Street, and The Ter- race, Barnes, and High Street, Mortlake, an area of about 15,500 sq. yds., with creosoted Swedish deal blocks laid on a concrete foundation, for the Urban District Council. Plans, sections, and spe- cification can be seen and copies of the schedule and form of tender obtained on application to G. Bruce Tomes, Assoc.M.Inst.C.E., surveyor to the council, the council house, High Street, Mortlake, S.W., to whom tenders, sealed and endorsed "Ten- der for Wood Paving," must be sent not later than noon on September 21.

Sept. 22. ITCHEN.—Execution of street works in a number of roads, for the Urban Dis- trict Council. Plans, specification and conditions may be seen upon application to T. A. Collingwood, surveyor, council offices, Portsmouth Road, Wool- ston, Hants, from whom also bills of quantities and form of tender may be obtained on the de- posit of £3 3s. Tenders, endorsed "Tender for Street Works," to be delivered on or before Sep- tember 22, to W. Henry Bell, clerk to the council, clerk's office, Woolston.

Sept. 22. WEMBLEY.—Making up the second portion of Eagle Road, in the urban district of Wembley. Drawings and specification may be seen at the office of Cecil R. W. Chapman, surveyor to the council, at the public offices. A copy of the quantities, with form of tender, may be obtained upon payment of a deposit of three guineas, at the office of the clerk. Sealed tenders, in the en- velope provided, must be delivered not later than 6 p.m. on Sept. 22, to Fredk. W. Rodd, clerk to the council, public offices, Wembley.

Sept. 23. CHISWICK.—Construction of an underground convenience in Chiswick High Road, for the Urban District Council. Persons desirous of tendering may obtain forms of tender by appli- cation to E. Willis, A.M.I.C.E., surveyor, town hall, Chiswick, where plans, specifications, forms of contract, and bond, and other documents, may be inspected between the hours of 9 a.m. and 1 p.m. Tenders, on the prescribed form, in sealed envelopes (endorsed, "Tender for Underground Conveniences"), together with a schedule of prices, to be delivered not later than 8 p.m. on September 23, to Ernest F. Collins, clerk of the council, town hall, Chiswick, W.

Sept. 24. ROMFORD. — Supplying about 2,250 tons of best blue Guernsey granite, for the U.D.C., broken as to part to 1½ in., and as to other part to 2 in. cube. Forms of tender can be obtained, on application to either J. Turvey, sur- veyor, or the clerk. Tenders, marked "Tender for Granite," with samples, to be sent not later than Sept. 24, to Charles T. King, clerk, council offices, Romford. A contract with bond, with sureties, shall be entered into by the person whose tender may be accepted.

Sept. 26. LETCHWORTH.—Construction of about 2,000 yards of metalled roads in the parish of Letchworth, for the Hitchin R.D.C. Plans and specifications may be seen at the council's offices, old town hall, Hitchin. Tenders marked "Tender for roads ,etc.," to be delivered not later than Sept. 26 to E. A. Passingham, clerk to the coun- cil, old town hall, Hitchin.

Sept. 28. LITHERLAND. — Reconstruction of Violet Road, Litherland, for the U.D.C. Drawings and specification may be seen and quantities, form of tender, and all other particulars obtained, on application to A. H. Carter, surveyor to the council, public offices, Sefton Road, Litherland, on payment of 10s. 6d. Sealed tenders, endorsed "Tender for Violet Road," to be sent before noon on Sept. 28, to William Kirk, or J. W. Allen North, clerks to the council, 15, Lord Street, Liverpool.

Sept. 30. WOKING.—Supplying 2,000 tons of granite, to be delivered at Woking station in such quantities as may be required, for the Urban Dis- trict Council of Woking. Tenders are to be deli- vered, together with sample of material, by Sep- tember 30, to G. J. Wooldridge, surveyor, council offices, Woking.

Sept. 30. LITTLEHAMPTON.—Scarifying and steam rolling of highways, about the district, in the months of November, and December, for the U.D.C. Tenders are to include a ten-ton steam roller, proper scarifier, fuel, oil, driver, driver's house, water barrel, and everything necessary for efficiently carrying on the work. Tenders, under cover, and marked "Steam Rolling," to be for- warded to the chairman of the Urban District Council, town office, Littlehampton, not later than Sept. 30, on forms to be obtained of the surveyor, H. Howard, F.S.I.

MISCELLANEOUS.

Sept. 17. West Norwood.—Manufacture and Delivery at the depot situate in Romany Road, West Norwood, of about 755 lineal feet of Stafford- shire blue purpose-made copings, details of which can be obtained on application to the office of the borough engineer, Lambeth town hall, for the Lambeth borough council. Tenders accom- panied by a sample of an ordinary blue brick for quality, to be delivered in the envelopes provided not later than noon, on September 17, to Henry J. Smith, town clerk, Lambeth town hall, Brixton, S.W.

Sept. 22. RHONDDA (Glam.).—Supplying lead and compo pipe and block tin for the half-year ending March 31, 1909, for the U.D.C. Form of tender may be obtained on application to Octavius Thomas, engineer and manager, gas and water offices, Pentre, Rhondda, Glam. Tenders to be addressed to the chairman of the gas and water committee, endorsed "Tenders for Lead Pipe, etc.," and sent not later than 10 a.m., on Sept. 22, to Walter P. Nicholas, clerk to the council, coun- cil offices, Pentre, Rhondda, Glam. Fair wages clause.

Sept. 23. LANCHESTER.—Fitting-up the work- house, board room, offices, cottage homes, etc., with gas pipes, etc., complete, for the guardians of the union. Drawings, specification and condi- tions of contract may be seen, and forms of ten- der obtained of Geo. Thos. Wilson, architect, 22, Durham Road, Blackhill. Tenders to be sent to W. H. Ritson, clerk, Lanchester, not later than Sept. 23. (See also "Building.")

Sept. 24. THORNTON-IN-CRAVEN.—Asphalting at Elslack new schools Thornton-in-Craven, for the West Riding Education Committee. Plans may be seen and bills of quantities obtained on applica- tion to the architect. Sealed tenders, properly endorsed, to be forwarded not later than 10.30 on September 24, to J. Vickers-Edwards, county architect, County Hall, Wakefield. (See also "Building.")

No date. LONDON, E.C.—Pulling-down and clearing away to cellar level the premises 33, 34, and 35, Gutter Lane ,and 6, Carey Lane, E.C. Applications for specifications, keys, etc., to James W. Jerram, builder, Crown Works, Boundary Road, East Ham, E.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxvi.

REFINED Detail, architect's assistant, fully qualified, 10 years' experience, best work—school, municipal, domestic work. Give part time evenings to competition work; specimens; highest references.—Apply Classic, Box 4533, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant (7 years), thoroughly qualified in ferro-concrete work, London and Paris experience, requires permanency at home or abroad.—Apply Box No. 4562, BUILDERS' JOURNAL Office.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22½) desires engagement; six years' experience; good knowledge of domestic and city warehouse work; 1st class honours construction. Student R.I.B.A.—A. T., 2, Avenue Road, Forest Gate, E. 4568

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT (age 29), desires post as traveller calling on architects, builders, etc. (north preferred).—Address Box 4497, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4498

ARCHITET'S and Surveyor's Assistant (21) requires engagement with good architect, 3½ years' student in architect, construction and kindred subjects, land surveying and levelling. Board of Education qualifications; prelim. R.I.B.A., refs.—Apply Box 4572, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ARCHITECT and Surveyor's Assistant (21), good draughtsman, details, perspectives, surveying, levelling, etc. Prize-winner, first class advanced building construction, and architecture certificates —S. K., Prob.R.I.B.A., first-class refs.; moderate salary.—Box 4578, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant, experienced in working drawings, details, surveys, etc.; first-class references; specimens of work; orders taken for water colours, perspectives, deed plans for conveyancing, drawings, designs, etc.—Aubrey Pritchard, Bryndenden, Rhyl, N.W. 4549

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

CARPENTER and joiner, 32, wide experience, all branches of building, take charge; good references; very energetic; good manager and timekeeper.—Pearson, 53, Hartham Road, Isleworth, W. 4552

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CLERK of Works; age 30; practical and reliable; exceptional experience with buildings, plans, etc.; architectural training; would serve part time in office; cyclist.—Box 4464, BUILDERS' JOURNAL Office.

CONTRACTS.—Estimator, measurer, etc. (London and country experience), requires position. Successful in tendering. Can guarantee brisk business. Make most of measured accounts, and practically and efficiently help with management. Country preferred. Small salary. — Estimator, Durston House, The Grove, Deal. 4564

ENGINEER wants post, London or provinces; 12 years' experience; or undertakes preparations, calculations, quantities, designs, detail drawings, structural steelwork, and reinforced concrete.—Box 4451, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

ESTATE Clerk of Works, all-round town and country experience; surveying, plans, quantities, etc.; considered good manager of men; character will bear strictest investigation.—Apply Box 4566, BUILDERS' JOURNAL Office.

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

GENERAL Foreman, long and varied experience in town; thoroughly practical; good at reinforced concrete work; trade joiner; moderate wages; good references.—50, Peel Road, Wembley. 4565

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

IMPROVER or junior assistant (23), varied experience, neat draughtsman, surveying, assist with quantities; excellent references; small salary return for first-class experience. — Apply Box 4559, BUILDERS' JOURNAL Office.

JUNIOR requires situation in builder's or surveyor's office; capable tracer, draughtsman and colourist, knowledge of quantities and perspectives, and land-measuring; moderate salary.—Muggeridge, 152, Fleet Street, E.C. 4577

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good references.—H. Cruse, Boxford, Newbury, Berks. 4537

PAPERHANGER, practical, wants piecework; builders' flats, hotels, and clubs.—S. Jamer, 48, Carlisle Street, N.W. 4539

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

PLUMBER (Registered) wants re-engagement as leading hand or otherwise. Thoroughly practical in all latest sanitary improvements. Town or country.—R. P., 18, Chertsey Street, Tooting, S.W. 4482

QUANTITY surveyor and draughtsman requires engagement; 15 years' experience; taking-off, etc., working drawings, specifications, supervision; passed final examination, Quantity Surveyors' Association; provinces preferred; low salary.—Box 4544, BUILDERS' JOURNAL Office.

WRITER, grainer, paperhanger, and painter. Builders' painting taken (piecework if desired). Any distance. Reliable and energetic. Estimates free. Life experience. Moderate.—H. Rivers, Evesham Road, Reigate. 456

Appointments Vacant.

TRAVELLER wanted, with established connection amongst architects, builders, contractors, decorators, etc., to sell marble and other reproductions. Must have exceptional references as to ability.—Apply 2, Church Row, Limehouse, E., between 10.30 and 4 p.m. 457

BUILDER'S Assistant desires situation. Sixteen years' experience in office routine, estimating, measuring, accounts, etc. Also experienced in out door management. Moderate salary.—W. P., 65 Leicester Road, East Finchley. 456

ARTICLED pupil, boy just leaving school, required by architect and craftsman for special work. Must have good aptitude for draughtsmanship. Premium required. — Geo. P. Bankart, Baldwin's Gardens, Gray's Inn Road, E.C. 457

ARCHITECT'S pupil, vacancy in busy West-end architect's office; small premium required but must be fond of drawing.—Stanley-Barrett and Driver, 23, York Place, Baker Street, W. 452

Miscellaneous.

BUILDERS' Books at tremendous reductions! Books on every subject and for all examinations supplied; sent on approval. Catalogues free; state wants. Books purchased.—W. and G. Foyle, 133, Charing Cross Road. W.C.

SECOND-HAND Optical Mart. for the Purchase and Sale of LEVELS, THEODOLITES, DRAWING INSTR —Clarkson's, 338, High Holborn, London, W.C (Opposite Gray's Inn Road).

FOR sale, mortar mills, stone breakers, portab engines, portable railway side tip wagons, stea and hand pumps; hand Derrick cranes; woo working machinery; brick and tile plant.—Georg Dean, Foley, Longton. 45

TO close an estate. — Large quantity of woo chimney pieces and overmantels for sale; great reduced prices to clear quickly.—Executors of W. Grove, 27, Parade, Leamington Spa. 45

CONCRETE BALLAST, open to cheap offer; an quantity, or will correspond. Can be seen at L Maynard, Dawley, nr. Hayes, Middlesex.

Businesses for Sale.

NEWPORT, SHROPSHIRE.

To be sold, the old-established builders' an contractor's business for many years carried by Mr. George Ingram Muirhead, and for som time past known as "George Ingram Muirhea Ltd.," situate adjoining and fronting the ma road near the station (L. and N.W. Railway Newport, Salop.

The yard is well equipped with all mode machinery and plant, and immediate possessi can be given; all contracts just completed, stoc in-trade, machinery, etc., at a valuation; insp tion by appointment.—Apply to Messrs. Poo and Davies, Auctioneers and Valuers, Newpo Shropshire. 4

Competitions Open.

COUNTY BOROUGH OF BURY.

EDUCATION COMMITTEE.

The Council invite COMPETITIVE DESIG for a NEW SECONDARY SCHOOL to be erec in the borough.

A competent Assessor will be appointed, and the designs adjudged by the Assessor to be 1st, 2nd, and 3rd in order of merit, premiums £50, £25, and £10 respectively will be awarded

For copy of conditions, instructions, etc., plan of site, address the Director of Educati 8, Bank Street, Bury.

JOHN HASLAM, Town Clerk 4

TO ARCHITECTS PREPARING COM PETITIVE DESIGNS.

SCHEMES FOR ENGINEERING WORK, with proximate ESTIMATES, furnished free of cha by Strode and Co., Lighting, Heating, and Ventilating Engineers, 48, Osnaburgh Street, London.

September 23, 1908. Volume 28, No. 711

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Municipal Architects.

The case against the appointment of municipal architects is succinctly stated in a letter, signed "Architect," that appears in the Press of Bradford, where the question happens to be of immediate interest. While, however, the instance is merely local the principle involved is, of course, of common application, and is, therefore, open to general discussion. The post of Bradford City Architect being vacant, the consideration of the subject was deputed to a Corporation committee, and "Architect" very thoughtfully contributes a few observations that may possibly assist them to a just conclusion. That it may conceivably have exactly the opposite effect is a contingency that need not greatly concern us. It is pointed out that in Bradford, as elsewhere, architects cannot just now get enough work to keep them healthily occupied (that being possibly a reason why so many of them are writing letters to the Press), and he thinks that, in mitigation of this deplorable epidemic of unemployment, municipal commissions should be fairly distributed among competent architects, who it is urged—perhaps somewhat fortuitously, considering the depression of trade—"all pay rates." He claims that without doubt the work would be as well done by private practitioners as by a city architect, and that it would probably be done more economically by the former, who, moreover, by force of their mere numerical superiority, must necessarily represent a greater diversity of gifts, and attain to greater variety in design than would be possible in a one-man series of buildings. That is, we think, a fair summary of the arguments by which "Architect" seeks to show that the office of city architect should be abolished. His views are probably held by the majority of architects who as yet lack official appointments, and have no strong sustaining hope of getting them. It will not be denied that monotony of production almost invariably tends to monotony in the product: as, for instance, the elementary schools in many a official-ridden city bear drearily reiterative witness. There is less to be said against the retention by a municipality of the services of an architect whose function is understood to be advisory rather than executive. Even in his consultative capacity, he enjoys quite sufficient opportunities of impressing his personality on designs that are prepared in accordance with his advice, and in more or less spiritless compliance with his known preferences and proclivities, not to say fads and fancies; but to expect the official architect to design outright every building, large or small, that an expanding municipality requires, is to impose too heavy a burden on the architect, and "too much Johnson," or whatever the architect's name may happen to be, on a long-suffering community.

The Palace, the Monument and the Marble Arch.

Mr. William Woodward, F.R.I.B.A., has communicated to the press some characteristically breezy and bracing notes on the Mall and Marble Arch improvements. His chief point is that the grandeur of the monument to Queen Victoria, with Sir Aston Webb's architecture and Mr. Brock's sculpture, will, by its grandeur, so accentuate the meanness of Buckingham Palace, "that the cry for a new palace, worthy of the Majesty of King Edward VII., and of his successors, will be strongly asserted." Few architects will consider that Mr. Woodward's condemnation of Buckingham Palace is too severe. Originally known as Arlington House, it was rebuilt in 1703 by that Duke of Buckingham who was the patron of Dryden. It was bought by George III. in 1761; but it was under George IV. that, in 1825, John Nash began its conversion into a palace. Then, according to a critic who, writing nearly sixty years ago, naturally lacked the suavity of Mr. Woodward's epistolary style, Buckingham Palace became "such a complex medley of the costly and the shabby, in various styles and various materials, as to defy description." It was altered by Mr. Blore for the reception of Queen Victoria; and the same architect, in 1846, was commissioned to add the east side, which cost about £150,000. Granting the desirability of substituting a palace that shall be worthy of the Empire and of its capital, what a glorious opportunity has been missed of designing the palace as an integral feature of the scheme! Whether it is easier to build a palace to fit a memorial, or to build a memorial to fit a palace, is not the question. The point is that it would be better for both to be designed simultaneously, and this is the opportunity that has been thrown away. Sir Aston Webb's design for the monument must have been influenced by the present palace; and therefore the future palace, if we are to have one, must, if it is to agree with the monument perpetuate certain features that are perhaps undesirable, and might have been eliminated if the architect had been free to design a complete scheme. That the architect has been seriously hampered in other ways is very obvious from Mr. Woodward's confident appeal for the immediate demolition of Drummond's Bank and a few houses adjoining, and for the widening of Charing Cross "at the bottle-necked end." As to the Marble Arch, Mr. Woodward is by no means alone in his complaint that the arch "is now left alone in glorious isolation, divested of its former clothing of railings and lodges, and absolutely without meaning." It should, he thinks, be moved bodily back to the new gates at the centre of the new curve. Here, as in the case of the Mall improvement, Mr. Woodward makes a very palpable hit.

Arbitration and Conciliation.

Mr. Winston Churchill's proposed Standing Court of Arbitration for the settlement of trade disputes is of more interest to builders than to any other section of the community, because of the enormous number of persons comprised in the trade, and because the circumstances and details of building lend themselves peculiarly to the marked tendency to disputatiousness which they have probably engendered. Builders are spread over the kingdom more evenly than other industrial classes. Hence the disputes that arise are local and numerous, so that builders are likely to figure with unrivalled frequency in the annals of the Arbitration Court: that is, if they can be induced to resort to it. But, since they have anticipated it by the formation of Conciliation Boards, which, so far, are working very satisfactorily, it is very doubtful whether they will consent to abandon them in favour of Mr. Churchill's scheme. The court is to comprise (1) "persons of eminence and impartiality;" (2) assumed impartial persons of the employer class; and (3) assumedly impartial workmen and trade unionists. It seems clear to us that, on the face of it, a court thus composed would be far less competent to deal with building disputes, and far less sensitive to the nice points that occasionally arise (and nice points sometimes form the very essence of the argument) than are the Boards that are now winning or have already won the confidence of employers and employed in the building trade. These Boards may possibly be more

rough-and-ready in their constitution and in their methods of procedure than the proposed court; but they are for this very reason likely to be preferred. There is in them an element of warm-blooded humanity that is likely to be absent from the Arbitration Court, which will be curiously untrue to type if it escapes the usual arid and academical formality of official institutions. The new court may be useful as a last resort or court of final appeal when all other means have been exhausted; but we confess that we should be surprised to find it superseding the admirable Conciliation Boards which the building trades, and in particular the Master Builders' Federation, have established so wisely and so successfully. Domestic quarrels are best settled at home, when "the stranger intermeddleth not." These views are our first impressions of the new proposals, upon which, doubtless, the National Building Trades Federation and other bodies will shortly deliberate.

Inviting Tenders for Professional Services.

An advertisement in a contemporary inserted by the St. Marylebone Borough Council, in which qualified quantity surveyors are invited to tender for preparing bills of quantities for some new buildings about to be erected, introduces what we believe to be a novel method of engaging responsible professional services, and one which in the public interest it is devoutly to be hoped will not become general. We note with satisfaction the extension of the practice of the direct appointment of quantity surveyors by public bodies, and fully recognise that the members of the Borough Council to whose advertisement we refer have adopted this course in the mistaken belief that they are acting in the best interests of their constituents. Indeed, the mere fact that *this* system has been followed is sufficient evidence (in the absence of any other) that they are unfamiliar with the technicalities of the work, and cannot appreciate the fiduciary nature of the position a surveyor is called upon to fill.

A quantity surveyor is in nearly every instance employed in a dual capacity, *i.e.*, in the first instance as a servant or agent of the employer in the preparation of the original bill of quantities, and, on the completion of the work, as an arbitrator to settle the amount which should be paid or credited for variations between the contractor on the one hand and the public authority on the other, and therefore these appointments should only be conferred on those gentlemen whose integrity is beyond question and who possess the highest possible professional qualifications. The St. Marylebone Borough Council, however, which has resorted to the practice of inviting surveyors to tender for employment, and which no doubt intends to entrust the work to the lowest tenderer, will probably obtain the services of some irresponsible person with little training, knowledge, or experience. He will no doubt quote a fee for preparing their quantities which would be an altogether inadequate remuneration for the work involved in their accurate preparation, and for the responsibility incurred. The interests of the ratepayers will suffer by the fact that the best services obtainable are not secured, and also from the fact that the underpaid person employed may not be proof against the temptation to seek other means of recouping himself.

It is impossible for a layman to decide what are fair and reasonable fees, as quantity surveyors' charges vary widely according to the character of the work, and in order to minimise this difficulty, the Surveyors' Institution has recently issued a memorandum (circulated amongst public authorities) in which they offer to advise (in an honorary capacity) a public body desirous of settling the proper fee to be paid for any particular work. In addition, the more practical Quantity Surveyors' Association some years ago issued a moderate scale of charges (also circulated amongst all public bodies) in which sliding scales of fees are given for public buildings of any character and of varied magnitude. The St. Marylebone Council elects to ignore both the professional societies to which we allude, and will, presumably, appoint to a position in which judicial or quasi-judicial services are required, the candidate willing to accept the lowest remuneration.

Notes on Competitions.

Linthorpe New Secondary School.

Messrs. Clarke and Mosscrop, and Mr. Whipham, architects in Middlesbrough, have written to the Middlesbrough Education Committee complaining that though ratepayers in the town, they were not invited to compete. Though the principal office of Messrs. Clarke and Mosscrop is at Darlington, they have one at Middlesbrough, and they point out that at least three of the competing architects had offices in other towns. Mr. Whipham both resides and practises in Middlesbrough. The chairman feared that it was now too late for any reconsideration. He suggested that the clerk be instructed to make a memorandum of the letters in the minutes.—Dr. Ellerton thought the committee had made a very big mistake. The two firms were both ratepayers, and were not asked to compete.—Councillor Dorman thought that in future they ought to ask all architects in the town to send plans.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Oct. 7	INVERNESS. BOAT SHELTER. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
Oct. 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8 Bank Street, Bury. Deposit £1 1s.
Oct. 31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk Glamorgan County Council Offices Cardiff.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s £31 10s. and £21. Particulars and site plan from T. Loftos. Town Clerk Town Hall, Blackpool. Deposit £1 1s
No Date.	CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited Premiums of £50. £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council Bodmin. Deposit, £1 1s.

* *This competition has been unfavourably reported upon by a Correspondent.*



S. SERNIN, TOULOUSE: THE EAST END. DRAWN BY LESLIE WILKINSON.

This church, the finest example of the round-arched barrel-vaulted style as distinguished from the dome Romanesque churches of Aquitania, was dedicated in 1096. It is 375 feet long and 217 feet in width across the transept externally, and consists of a nave with double aisles. Transept with an aisle all round, an four eastern chapels and a chevet of five more chapels. At the crossing is a graceful octagonal towe in five stages crowned by a spire reaching to a height of 230 feet from the ground. It is built of red bric and light stone most beautifully weathered and blended together by age. The roofs are covered wit lead, and there is some interesting and well-executed carving.

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View from the Lawn.

THE COTTAGE, BULSTRODE WAY, GERRARD'S CROSS. FAIR AND MYER, ARCHITECTS.

Salisbury.—The open competition for an isolation hospital for 44 beds, to cost about £12,000, has just been decided, and the first premium of twenty guineas awarded to Mr. J. H. Goodman, of Reading, and the second premium of ten guineas to Messrs. J. I. Barton and George Boughton, M.S.A., of Ryde, I.W.

THE ARCHITECTURAL PROFESSION OF TO-DAY.—II.

It can scarcely be urged, at least with any show of reason, that the few measures of reform which, we understand, are to be incorporated in the mysterious document (now for so long in course of preparation) known as the Revised Charter of the Royal Institute of British Architects, will be productive of any very beneficial results to the profession at large. For most of the suggested alterations connected with the conduct of architectural affairs which it embodies are only intended to apply, and of necessity can only apply, to the internal administration of a society whose total membership numbers, in all probability, considerably less than one-third of the practising architects in the United Kingdom. Thus restricted, the Institute cannot aspire either to speak or to act as it would were it strengthened by the full weight of the authority of a large proportion of the whole profession. But, apart from this circumstance, the R.I.B.A., which is, unfortunately, at present far too organically weak to control effectually the actions of its own members, could not, even if it were so disposed, do more than take part in any movement for the eradication of the evils which more or less affect the welfare of *all* architects, whether members of the Institute, of any other society, or of the numerically large body of practitioners which has hitherto held itself aloof from any professional organisation whatever. But in any scheme of progressive reform that may be inaugurated in the near future the diverse material interests of the representatives of these three component parts of the whole architectural profession must assuredly be taken into account, for otherwise the remedial measure proposed will be foredoomed to failure.

Yet whilst it must thus, in all fairness, be conceded that the R.I.B.A., despite its standing as the premier architectural society, is not in a sufficiently favourable position to formulate, and carry to a successful termination by its own unaided efforts, a wise and comprehensive scheme of reform framed to benefit the entire profession, yet, on the other hand, the record of its own governing body appears to show that it is, to say the least, extremely doubtful whether, if officially approached on the subject, it would be found to be in sympathy with, and willing to bear its share of the labour involved in, any such salutary proposal.

For example, has not the R.I.B.A. on several occasions allowed its own conditions and regulations of membership to be set aside, if not absolutely ignored, by architects who were pledged to observe and respect them? Has not its Council permitted, and even encouraged, certain privileged persons to act in the dual capacity of assessor and joint architect, and can the Council of the R.I.B.A. be said to have faithfully fulfilled its obligations to the general body when it allowed a member of the Institute to act as assessor in a limited competition in which one of his own employees was engaged? For these and for many other reasons, in our judgment, the Royal Institute of British Architects is unlikely to take the initiative, or, indeed, a leading part, in any movement intended for the amelioration of the existing unsatisfactory conditions under which the rank and file of the profession follow their avocation, and some other means must, therefore, be sought out for forming an organisation to protect the interests of architects, and to increase the commercial value of the services of the properly equipped and trained practitioner. As is well known, the Institute's own half-hearted efforts to formulate and present a Bill for the Registration of Architects ended in a ludicrous compromise, which, if it ever take tangible shape, may, perhaps, prove of some benefit to the R.I.B.A. itself, but outside the body is not unlikely to be absolutely useless.

It is an open secret that, in addition to the apparently unaccountable *volte-face* displayed by the electorate of the R.I.B.A., many of the misfortunes which so persistently dogged the progress of the last Registration Bill were due, in a large measure, to the petty jealousies and selfish conduct of some commercially successful architects who objected to the enrolment of their own names side by side with those of their less fortunate brethren.

If this small-minded and, as we venture to think, even contemptible prejudice is too deeply rooted in the minds of these so-called "leaders" of the profession to be displaced by logical arguments, it should be made quite clear to all architects who thus base their opposition to the principles of registration upon these petty personal grounds that the Institute was formed for "the general advancement of civil architecture," and "for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith," and *not* for the personal glorification and aggrandisement of a few of the more prominent or more self-assertive of its members. It may here be not out of place to refer in terms of strong deprecation to the conduct of those members of the R.I.B.A. who, on the appeal of the occupant for the time being of the Presidential chair, or at the instance of some fluent past or present member of the Council (whose oratorical services have been specially secured for the occasion) often set aside their personal convictions, and by voting against their own better judgment, prevent the adoption of some of the well-considered measures of reform which are brought forward from time to time at the general meetings of the Institute. Such conduct is neither honest nor reasonable, and exhibits a great want of loyalty to the general body of the Institute, the large proportion of whose members are undoubtedly in favour of a wise progressive policy; and the sooner the exercise of this *undue* personal influence is abolished at the Royal Institute of British Architects, the better it will be for the welfare of that somewhat inscrutable body.

Men who are, naturally, too old to exchange the cherished convictions of a lifetime, and have had neither the opportunity nor the inclination to examine personally the seamy side of an extremely ill-regulated and arduous calling, are not always the best possible guides to follow in any burning question of the day. Thus many of these "leaders," although they are probably ignorant of the fact, are so unsound in their architectural scholarship that it is well nigh impossible to make them realise that the sole hope of rescuing architecture from its present state of decadence lies in the adoption, *inter alia*, of some well-devised system of compulsory education and training for its students. And it is the deplorable lack of scholarship perceptible in the works of many of the best-known architects of the day which often re-acts so injuriously on the prospects and welfare of some of the younger and better trained men. How many architects, in these days, are prepared to throw their whole energies into the preparation of competitive designs for a building to be adjudicated upon by an assessor, or assessors by whom the very first principles of design are either unknown or consistently ignored? True, there must necessarily be *something* in the nature of a lottery in every architectural competition, but this element of chance should never have been allowed to assume its present colossal aspect. Architects who are accustomed to produce work of a scholarly type ought not to be too severely penalised by the predilection of an unscholarly assessor for architecturally inferior designs. Although the adoption of some system of registration, by means of which it would be possible to exercise sufficient control over the professional conduct of all enrolled members—to limit, from time to time, as occasion required, the number of young men allowed to enter the ranks of the profession; to devise a satisfactory scheme of compulsory education; and to solve the difficult problem relative to the equitable and just conduct of architectural competitions—could not fail to be conducive to the welfare of the profession, there would still remain many grievances, for which no Registration Act that could possibly be drafted would prove an immediately effectual remedy. How, for instance, do those in favour of closing the profession hope to entice the public, still swayed by the bizarre attractions of the profane love—the tradesman-architect—back to the sacred fire of the devotees of the art of architecture? In short, after the schools of architecture have been firmly established and properly organised, when the architectural "business" of to-day, in which the spirit of commercialism is far too often in evidence, has possibly been transformed into the great "art" of to-morrow, will architects then really enjoy a larger share of the patronage of the "bargain-loving" public than they do to-day? Even should the art of architecture once again resume its proper function as the very centre of all artistic life and activity, how can the public, should it still desire to do so, be prevented from availing itself of the all too freely proffered services of the tradesman-architect, the untrained genius, or the building surveyor, in preference to those of the highly cultured and well-educated artist?

Our Plate.

The cottage, Bulstrode Way, Gerrard's Cross, was built for Admiral Dunlop from the designs of Messrs. J. W. Fair and Val Myer, A.R.I.B.A., of London. It has cavity walls covered with coarse roughcast, with quoins and base in red sand stocks; the roofs are covered with hand-made tiles. Internally the house has brick fireplace and ingle, with beamed ceilings to the drawing-room and hall, and enriched ceiling to the dining-room. In addition to the ordinary water service to the lavatories, there is also a rain-water service.

Proposed New Works.

Atherstone.—The R.D.C. have passed plans for two cottages for Mr. C. Atherton-Brown.

Billericay, Essex.—Plans for the rebuilding of the gymnasium at Brentwood Grammar School have been approved by the Billericay R.D.C.

Billinge.—The L.G.B. have held an enquiry into the application of the U.D.C. to borrow £12,000 for water supply work, including the construction of a reservoir to contain 8,000,000 gallons.

Bolton.—Mr. Andrew Carnegie has expressed his willingness to contribute £15,000 towards the erection of three branch libraries, and the Libraries Committee have recommended the Council to accept the offer.

Boston.—The Education Committee are proposing to spend about £3,600 on a new school on Carlton Road. The plans have been forwarded to the Board of Education.

Bradford.—The City Council will shortly consider the question of erecting a sanatorium for consumptives, to provide accommodation for fifty patients. The cost is estimated at £230 per bed, exclusive of the land.

Brimington.—Mr. R. F. Mills, of Tapton Grove, having given a free site, the parishioners of Brimington are collecting funds for the erection of a church institute and Sunday school, estimated to cost £2,038.

Burnley.—The Corporation have several improvement schemes maturing. Application for a loan of £500 to lay out a new street from Parker Lane to Finsley Gate, and for a loan of £1,925 for improvements in Cog Lane, will be made to the L.G.B. immediately.

Bury St. Edmunds.—The Borough Surveyor's plans for the conversion of the Town Hall into municipal offices have been generally approved by the Town Council, and referred to the General Purposes Committee to ascertain the probable cost.

Chatham, Kent.—The Town Council have approved plans for the following:—Cesspool at No. 168, High Street, for Messrs. W. Paine and Co.; villa at Maidstone Road, for Mr. A. Burtenshaw; shop front at Magpie Hall Road, for Mr. C. Moakes; stables at Walderslade, for Mr. F. Friday; club room at rear of mission room, Pagitt Street, for Rev. C. J. La Touche; Mission Church, Walderslade, for Rev. C. J. La Touche.

Clackmannan.—Tenders are to be invited for the extension of the county buildings for the Clackmannan County Council. The cost estimated by Messrs. Melvin and Kerr, the architects, is about £5,000.

Darlington.—The following plans have been passed by the Town Council:—Messrs. J. P. Pritchett and Son, alteration of house and shop, 7, Cleveland Street; Messrs. Kitching and Lee, additions to two houses, Staindrop Road; Messrs. Hoskins and Brown, three houses, Elton Parade; and additions to Union Offices, Crown Street.

Elland.—Sites have just been secured here for a new post office and a new secondary school. The former will be erected at the corner of Timber Street and Southgate Street, and the existing buildings are to be altered for the purpose. The school is to be erected in Victoria Road.

Glasgow.—The munificent gift of £100,000 by Mr. Carnegie to supply 14 libraries in Glasgow has only sufficed for 12, and on these the sum mentioned has been exceeded by £5,000. Mr. Carnegie has, in consequence, offered to give another £15,000 for the two remaining libraries at Hillhead and Langside.

Grimsby.—The Corporation are considering the question of erecting Municipal Offices. The design, prepared by the Borough Engineer, was criticised by one councillor as being like a factory, but that official pointed out that a handsome building could be provided if the Council would assent to the cost. £16,000 is about the cost of the present scheme. A sub-committee was appointed subsequently to confer with the engineer as to the amendment of the scheme.

Guiseley.—Dr. Tristram, Chancellor of the Ripon Diocese, has held a Consistory Court at Guiseley to enquire into an application by the rector and churchwardens of the parish church of Guiseley for a faculty to authorise "the taking down of the present north aisle of the church, and the erection of a new chancel, central and north aisles, transept, organ chamber, and choir and clergy vestries, and the interference with certain vaults and graves on the east and north sides of the church." Dr. Tristram decreed the faculty in the terms prayed. The accommodation in the church will be increased from 300 to 642, and the cost of the alterations is estimated at £5,000. The plans have been prepared by Sir C. A. Nicholson, F.R.I.B.A., of London.

Hammersmith.—The Workhouse, which from its luxurious fittings and appointments, achieved a rather unwelcome notoriety, and the burden of a Local Government Board enquiry thereby last year, is now declared says the "Daily News," to be too small, and that the question of its extension will shortly come up before the Guardians.

Hull.—The Board of Guardians are considering a much-needed extension to the workhouse building, to provide accommodation for another 120 inmates. Messrs. Gelder and Kitchen are the architects mentioned in the matter.

Inverurie.—Mr. George Gray has prepared plans for the extension of the library and town hall, for which Mr. Carnegie has been asked to make a grant. At present Mr. Carnegie is not inclined to accede to the Town Council's request, owing to some disagreement as to the best scheme for the extension.

Llandaff Diocese Churches.—The Llandaff Diocesan Church Extension Society has made the following loans and grants: Bargoed, parish hall, grant £60, loan £200; Cadoxton-juxta-Neath, church at Crynant, grant £50, loan £300; Ebbw Vale, mission hall, grant £50, loan £200; Llanhilleth, new church, loan £300; Mountain Ash, new church at Miskin, grant £50, loan £200; Pontypridd, new church at Coedpennmaen, grant £50; loan £300; Garw Valley, new Welsh church, grant £50, loan £300; St. John's, Ebbw Vale, new church, grant £100, loan £400; Tylorstown, new Welsh church, loan £200; St. John's, Canton, new church, grant £100, loan £400; Treharris, new church at Bedlinog, grant £100, loan £400; Cwm, enlargement of church, loan £200.

London.—Sir Aston Webb, R.A., has been commissioned to prepare plans for the Mining and Metallurgy Department of the Royal School of Mines, which is to be erected at South Kensington on land adjoining the Royal College of Science, by the same architect.

London: Bethnal Green.—The Local Government Board have granted the Borough Council a provisional order for the compulsory purchase of the property in Patriot Square, which is required for the site of the new municipal buildings to be erected at a cost of £30,000.

London W.C.—The church of Holy Trinity, Kingsway, has been closed as a dangerous structure, by order of the County Council. Its condition is reported by experts to be due to the neighbouring excavations and building operations of the County Council and one of the tube railways, who have offered, between them, £1,200 as compensation, towards the £4,500 which will be required for repairs.

Lynn (Norfolk).—The Town Council have approved the following plans:—New shop front, Saddlebow Road, Mr. J. Medwell; shed, South Quay, Messrs. A. and J. Bowker; new scullery, Linay's Yard, Church Street, Mr. Huddlestone's executors; two new houses, Sidney Street, Chase Estate, Mr. C. D. Allflatt; new shop front, 49, High Street, Mr. G. Goddard; four new cottages, Cresswell Street, Mr. S. Baker; covered way, Sir Lewis Street, Mr. S. Baker; new warehouse, Surrey Street, Mr. J. Skinner. By their approval of the plans for the four cottages in Cresswell Street, the Council are breaking their own by-law requiring an open space of 150 square feet, the space provided being 132 sq. ft.

Norton Woodseats with Norton Lees.—Plans have been prepared for the new parish-room and new Sunday schools at an estimated cost of £3,000.

Penzance.—The Town Council has approved plans for the following:—Mr. Bartlett (per Mr. O. Caldwell), erection of two dwelling-houses at Pendarves Road, on the Tremenheere estate, subject to proper lighting and ventilation of outside w.c.'s. Mr. Walter Reynolds (per Mr. H. Maddern), erection of bay window and alterations to wash kitchen at Glendower, Mennave Road, subject to the consent of the adjoining owners being obtained to the erection of bay windows, and also proper cleaning arrangements being provided for "copper" flue, and pipes being covered with asbestos from inside of wall to flue.

Perth.—The City and County of Perth Royal Infirmary Directors are considering plans, prepared by Mr. J. J. Burnet, A.R.S.A., of Glasgow, for a new infirmary, to contain 100 beds. The estimated cost is £50,000.

Poole.—The Town Council have approved plans for the following buildings:—C. H. Goater, for A. G. Barralet, club buildings, Ringwood Road; F. Scammell, house, Chester Road; T. Heath, for S. Yeatman, house, King Crescent; H. L. Vahey, for Mrs. Reeves, house, Birchwood Road; W. Andrew, for J. Hillman, house, Mount Road; W. Andrew, five houses on new road, off Church Road East; C. H. Goater, for C. R. Welch, house, Birchwood Road; T. J. Philpotts, four houses, Douglas Road; C. H. Goater, for C. R. Welch, stabling, etc., Britannia Road; Canford Estate Office, for G. Duke, cowsheds, Hamworthy; J. Jones, addition to house, Carter's Avenue; E. E. Clarke, for J. Marsh, house, Rossmore Road; E. Pitcher, shed and store at rear of house, Uppleby Road; W. Southgate, house, Langdon Road; W. Buckley, for Mrs. Fletcher, additions to "Vallombrosa," Mount Pleasant Road; W. J. Turl, for F. R. Eyre, motor gar-

age and stabling rear of Branksome Gate, Western Road; A. W. Miller, for F. Mate, house, Marnhull Road; W. Andrew, New Road, off Church Road East; E. Norrish, additions to house, Ashley Road; F. G. Nutt, for Mr. Wood, shop front additions, Bournemouth Road.

Polesworth.—In connection with the Polesworth Sewerage Scheme, a portion of the land acquired has been sold for building purposes. Plans for 50 houses have been passed, and probably another 80 will be erected. Amended plans for the sewerage scheme were necessitated by this development, and the Atherstone R.D.C. agreed to apply for sanction to borrow an extra £500, making the total amount to be borrowed £6,500.

Pontypool.—Mr. J. C. Hanbury has given £2,000 to the hospital for a new wing to be erected in memory of his son.

Rastrick.—About £460 has been collected towards the cost of a new church to replace the mission church of St. John, which was demolished some years ago in anticipation of the site being required by the Lancashire and Yorkshire Railway Co.

Rochester, Kent.—The Town Council have approved plans for the following: House, Mount Road, Borstal, St. Margaret, for Mr. H. A. Saward; house, Cliffe Road, Strood Intra, for the trustees of the Wesleyan Church; stable and van shed, Old Foundry Wharf, Chatham, Rochester, for the trustees of St. Bartholomew's Hospital; house, Goddington Road, Strood Intra, for Mr. G. A. Martin; class room, King's School House. St. Margaret, for the Governors of the school.

Skye.—Sir Donald Currie has offered to erect and equip the proposed McKinnon Memorial Hospital at his own expense, and also give an annual subscription to it. This generous offer will enable the capital already collected to be used as an endowment fund.

Slateford, Longstone.—A meeting of the Slateford citizens has been held to consider the provision of a public hall. A committee has been appointed to make arrangements for procuring funds and to purchase a suitable site.

South Bank.—The U.D.C. are considering the question of erecting a town hall, for which the surveyor is to get out an estimate, preparatory to inviting architects to submit designs.

Sugley.—The Local Government Board has held an enquiry at Lemington into the application of the Northumberland County Council to borrow £6,830 for a new public elementary school at Sugley.

Sunderland.—The scheme for the new parish church of St. Gabriel is being actively put forward. The vicar has already raised between £5,000 and £6,000.

Swansea.—It is proposed to build a drill hall, at a cost of £20,000, for the Territorial forces. Negotiations are in progress with the Corporation for a site.

Swansea.—The Housing Committee have applied to the L.G.B. for a loan of £24,000 for working class houses.

Swansea.—The widening of Castle Street will be commenced almost immediately. The Corporation have been negotiating for the last 20 years for the necessary property, which has now all been secured.

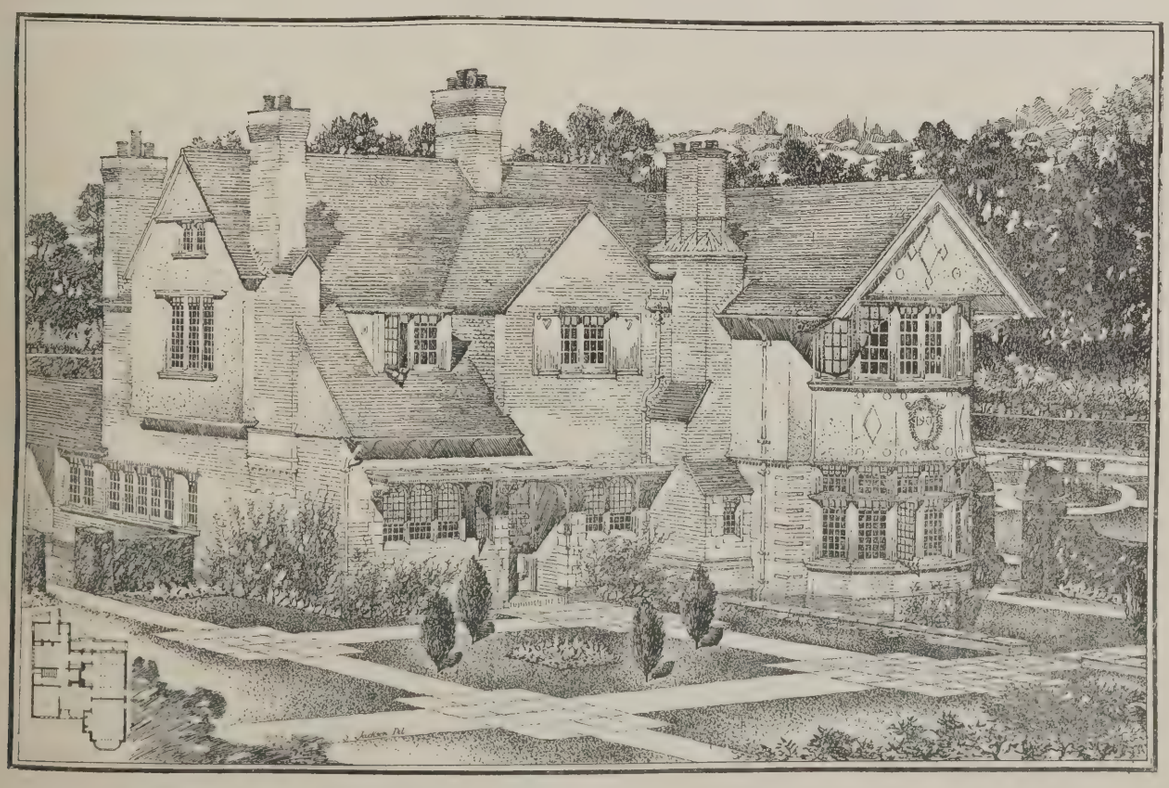
Thirsk.—The District Council have agreed to buy a site for the infectious diseases hospital at a cost of £260.

Willington Quay.—The District Council has approved plans for the following:—Three houses in Armstrong Road and Carlyle Street, and two houses in Station Road, for Mr. C. D. Smith; house and shop in Western Road, for Mr. MacLaren.

Woking.—The U.D. Council have approved plans for the following:—Major Wreford Brown, detached house, Bagshot Road, Bridley; Miss D. Bristowe, detached house, Bagshot Road, Bridley; E. Nisbet, detached house, Heath House Lane, Bridley; H. A. Waters, pair of cottages, Boundary Road; E. J. Waters, pair of cottages, The Avenue, Church Street; L. S. Hart, pair of villas, Kingsway; C. C. Colborne, detached house, Blackbridge Road; G. Tipping, motor garage, Star Hill, Messrs. Scrivens, additional room at the rear of house, High Street, Knaphill; Rev. J. M. Harris, re-erection of existing Mission church, Connaught Road, Brookwood, on a new site; Mrs. Allan, alterations and additions to The Hollies, Upper St. John's Road; Lady Northcliffe, additional room at The Firs, Prey Heath Road; G. Statham, detached cotage, White Rose Lane.

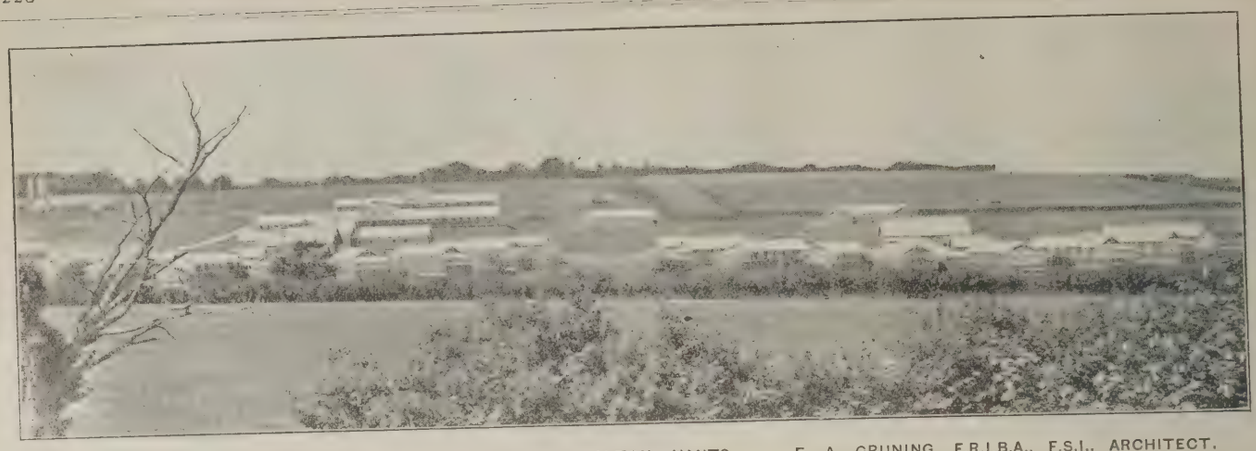
Worthing.—The Local Government Board have given formal sanction to the borrowing of £2,520, and £80, for the purposes of the Christ Church Council schools alterations, and £480 for the erection of an iron building to serve as a temporary school.

York.—The City Education Committee have recommended to the City Council that the tender of Messrs. Wm. Airey and Son, of Leeds, amounting to £10,524, be accepted for the erection of the Municipal School for Girls.



PROPOSED HOUSE AT CHINGFORD, ESSEX. S. JACKSON, ARCHITECT.

This house was designed to be erected adjoining Epping Forest, Chingford, but the client for whom it was designed having bought a house in the vicinity, the project has been abandoned. The materials proposed were sandfaced bricks for the walls generally, rough-cast, finished white, to portions of the upper floors, and the roofs covered with Westmorland slates. Woodwork generally to be painted white.



LORD MAYOR TRELOAR CRIPPLES' HOME AND COLLEGE, ALTON, HANTS. E. A. GRUNING, F.R.I.B.A., F.S.I., ARCHITECT.

Buildings in Progress and Completed.

Devonport.—The new Hippodrome, from the designs of Mr. Bertie Crewe, of London, has been opened. Messrs. J. Parkinson and Sons, of Blackpool, were the contractors.

Ebbw Vale.—A workmen's hall for the Ebbw Vale district of the Miners' Federation has been erected at a cost of £5,000. The hall consists internally of three floors, viz., ground floor and two galleries, one above the other. The principal entrance opens into a crush-hall, and access to the gallery floor is obtained by a broad flight of granolithic steps. The floors are fireproof throughout. Accommodation is provided for about 1,000, fixed seats being provided in the galleries and chairs on the ground floor. The proscenium has a framed up arch, and jambs ornamented with Tyne Castle decorations. The stage is provided with a portable raising gallery. Behind the stage ante-rooms are provided with miners' agent offices above. These rooms are divisible by patent sliding partitions. The lighting is electric, with gas in case of emergency. The heating is low pressure, and the ventilating on the natural system. Ample exits are provided, which enable the building to be cleared in a short time. Mr. H. Waters, of Ebbw Vale and Beaufort, is the architect, and Mr. David Morgan, of Beaufort, the contractor.

Evenwood, Yorks.—A new Wesleyan Sunday School is being erected at a cost of £800.

Greatham, Yorks.—A new tower to the ancient church of St. John the Baptist is being erected at a cost of £1,550.

London: Bethnal Green.—Rapid progress is being made with the first block of workmen's dwellings, erected under the will of the late Mr. W. R. Sutton, the well-known carrier, who left nearly £2,000,000 for the provision of houses for the poor. The block in question, situated in James Street, has cost about £40,000, in addition to £11,000 paid for the site, and the dwellings are intended for people with a maximum wage of 25s. a week. The number, size, and rental of the dwellings will be:—4 of four rooms. 10s. a week; 66 of three rooms, 7s. 6d. a week; 66 of two rooms, 5s. (average): 24 one rooms, 2s. 6d. a week. Each flat will have a roomy kitchen attached, and every bedroom a permanent wardrobe, while every tenant will have a private bathroom and bath. By pulling a lever it will be possible to transfer the fire from the kitchen through an iron shutter into the stove of the sitting-room. On the completion of the James Street dwellings, a similar block will in all probability be erected on a site already purchased in the City Road, and further buildings may eventually be put up in large provincial towns.

London, W.C.—The new stage at Drury Lane Theatre, to replace that burnt out in the spring, has now been completed. It is 100 ft. wide, 100 ft. deep, and 100 ft. high, nearly half as large again as the old one. The floor has used up 10,000 square ft. of teak from Burmah. The new roof is 20 ft. higher than its predecessor, and is constructed of steel trusses 10 ft. high and 90ft. long, fixed by some 5,000 rivets. A glass roof surmounting the "grid" avoids the necessity of artificial light for the day work. An improved electric lighting installation gives an illumination equal to 150,000 candle-power. It uses up three miles of steel tubing and eighteen miles of wires and cables. Immediately behind a new fireproof curtain is a water sprinkler, which in the event of fire automatically discharges a continuous stream on the back of the curtain to keep it cool. Fly galleries, from which the scenery is worked, have a total length of 250 ft., and are constructed of steel. The limelight galleries are nearly 200 ft. long. The cost has been £20,000.

Milford Haven.—A dwelling-house and extensive premises for Mr. C. C. Morley are being erected by Messrs. Hayward and Worcester, of Bath, who are also building the new post office here.

Newport (Mon.).—The contract for the construction of the new tunnel on the Great Western Railway, on the Cardiff side of Newport Station, has been let to Messrs. C. J. Wills and Co., of Westminster, and the firm propose starting operations immediately. The tunnel, which will be three-quarters of a mile long, will duplicate the existing tunnel, which contains two sets of running lines, and will, therefore, double the accommodation for the increasing traffic, not only on the main line between Cardiff and Newport, but also to and from the Western Valleys now teeming with new collieries. The approach works have been carried out by the railway company and by Messrs. McKay and Davies, contractors. The work is expected to take two years to complete.

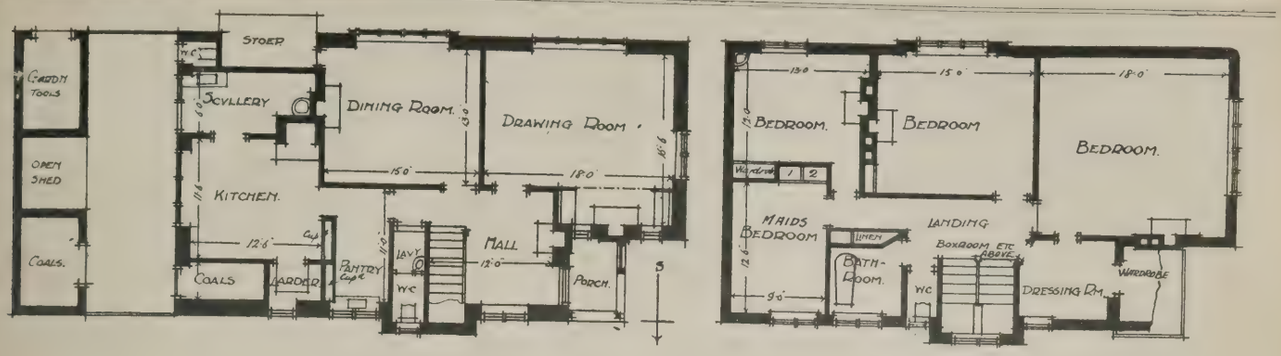
Perth.—For the new city hall, to cost about £29,000, the following tenders have been accepted by the Town Council:—Mason work, R. Brand and Sons, Perth; steel and iron work, Bladen and Co., Glasgow; joiner, D. S. and J. Anderson, Perth; plumber, McLeish and Co., Perth plasterer, John Sharp, Perth; glazier, G. R. Douglas and Son, Perth; electric lighting, A. Westwood and Son, Perth; heating and ventilating (Plenum system), Ashwell and Nesbitt, Glasgow.

Scarborough.—St. Mary's schools have been reconstructed, and a new playground added at a cost of £1,400.

Sheffield.—The new Victoria Wesleyan Mission Hall in Norfolk Street is rapidly approaching completion, and will be one of the largest buildings in the city, giving accommodation for 2,000 people. Tip-up chair seats have been provided, with accommodation for hats under and receptacle at the back for books, etc. The platform will accommodate a choir of 250 people, and the top tiers of the choir seats being on a level with the balcony, the choir accommodation can, if necessary, be extended by an overflow into that part of the hall. The hall is top-lighted, and has also side windows. In addition to the main meeting-hall are seventy other rooms, comprising class-rooms, offices gymnasia, two or three lecture halls, a club for young women, and tea-rooms The heating accommodation throughou is on the low-pressure hot water system supplemented with hot air pipes. In th public hall and corridor the illuminan will be electricity, but in the class-rooms etc., incandescent gas will be used. Th tower will be used in ventilating the build ing, and extracting fans have been in stalled. The total cost of the building including a plot of land of the value o £6,000, which has been given by Mr Thomas Cole, is £41,000.

Swallownest.—A new Baptist chapel accommodating 350 people, has bee erected at a cost of £950. The buildin is of red brick with brown stone facing in a freely treated Gothic design. Th floor is of mosaic, the windows hav leaded lights, and the furniture and fi tings are of pitch-pine. The heating on the low-pressure hot-water system. M J. W. Winter, of Handsworth, is th architect.

Tamworth.—A new reredos in alaba ter was unveiled on August 30th in S John's R.C. Church. The work w executed by Messrs. Jones and Willis, Birmingham, and the silver plate a brass-work in connection with the rered was carried out by Messrs. Hardman a Powell, also of Birmingham.



THE COTTAGE, BULSTRODE WAY, GERRARD'S CROSS. FAIR AND MYER, ARCHITECTS. *(See centre plate.)*

Correspondence.

Out of Work Architects.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—How can we prosper when those who keep us off the land go untaxed? The materials we use (bricks, mortar, wood, etc.) are taxed to the utmost. Who finds work for architects? Do the dukes who hold the land? Not much! We have to beg of them to sell or lease. If they paid anything like their share of the common burden, they would beg of us to come and buy. This isn't socialism. ANOTHER ARCHITECT.

[The desire to tax land values is based on the belief that there is a large unearned increment from the land, which should bear its due share of taxation. That is a political qestion for which our columns are not open to discussion. But it is coupled with another belief, that the taxation of the land would bring great areas into the market for building purposes; and it might possibly have this effect in cities and urban areas. We can assure our correspondent that we have lived in a district in Essex where the landlords had themselves to farm practically all their land because nobody wanted it, and because even Scots farmers could not, rent free, make a living on it. And our correspondent also forgets that nearly all our cities and towns are over-built—that in London we have, on a recent estimate, 50,000 empty houses, and the fact, mentioned in this issue, that warehouses are a "drug on the market." Need we point out again that nine-tenths of the house property erected is built without the intervention of an architect. So far as the dukes are concerned, they have a good record for employing architects to design the buildings they erect.—Editor B.J.]

To the Editor of THE BUILDERS' JOURNAL.

SIR,—*Re* your articles on the "Architects' Distress Question," may I make a suggestion? Why should not some building paper call together an architects' union of the United Kingdom? This union would be outside the R.I.B.A., but nevertheless would not be antagonistic to it. All who joined would agree to the following clauses:—

1. To keep to the R.I.B.A. standard of fees.
2. To accept no situation as official architect to any public body or town council unless paid the R.I.B.A. fees on all work done.
3. Not to directly advertise his profession either in papers or by notices or works. The union would have to issue these regulations and seal agreements with members, and this, being done by a small central body, could be effected economically, and the expenses of a union should be very small. I think that nearly all architects would join such a call to arms, and the union would be a success in relieving our distress somewhat by preventing the undercutting of fees, by stopping the appointment of official architects, and by ensuring that all large works would be open to competition. To be a member of this union only a small fee need be paid—about one or two shillings. All members would be bound to pay a penalty to the union if found breaking these rules, architects being encouraged to keep watch on each other and report any transgression. Yours, "U.I.S."

[This is the first practical suggestion to hand; but the machinery required is already available in the R.I.B.A.. It is unfortunate that our correspondent can only suggest the formation of another body to spur the R.I.B.A. on to a proper sense of its duties. The first essential of such a scheme is union amongst the architects themselves, and, as we show, in our second article on "The Architectural Profession to-day," this important factor is lacking.—Editor B.J.]

Lighting Rooms.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The interesting suggestion of M. Augustin Rey, published in your last issue, for alterations in rooms to secure better lighting, can hardly be regarded as absolutely novel, as large windows with splayed reveals and deep white coved friezes are not quite unknown to English architects. The figures given would be of greater value if one knew what is the criterion by which M. Rey decides that daylight illumination is good, medium, or bad. The daylight illumination at any point in a room is simply a proportion of the outside uninterrupted illumination from the sky. It may interest your readers to know that, whatever this proportion may be for any given conditions of window space, glass, obscured horizon, etc., it is practically constant from sunrise to sunset from June to December, except when direct sunlight is entering the room or is directly reflected into it. This proportion



A SHOP-FRONT IN WESTMINSTER. C. H. B. QUENNELL, F.R.I.B.A., ARCHITECT.

can be easily and rapidly measured, and has been obtained for a considerable number of buildings and schools. It can be as easily measured in models as in actual rooms. M. Rey's suggestion that the window should reach from floor to ceiling is, I fear, based upon a mistaken view of the relative values of different parts of window walls for lighting purposes. The space immediately below the ceiling is of very great value, but the space near the floor is practically useless. In a very ordinary town situation lowering the top of the window from 12ins. below the ceiling to 24ins. in a room 10ft. high, would reduce the daylight illumination by, roughly, 50 per cent. I have never measured the actual difference caused by different depths of white frieze, coved or vertical, with wall-papers having average co-efficients of reflection, but the probability is that M. Rey's results were due not so much to the coving of the white frieze as to its depth, and more especially to making the top of the window flush with the ceiling. It would be interesting to know whether M. Rey measured the sky brightness on both occasions, or merely judged it with the eye. This is decidedly important, as a slight cloudiness, by diffusing the sun's rays, will more than double the illumination received by a room.

London, W.C. PERCY WALDRAM.

Relations Between Architects and Insurance Surveyors.

To the Editor of THE BUILDERS' JOURNAL.

Sir,—The writer of the article in your issue of August 26th, headed "The late Mr. James Sheppard," with a secondary title, "The Relations between Architects and Insurance Surveyors," seems to be rather prejudiced against the latter body of men.

I do not know, but possibly he may have had an unfortunate experience; but, at any rate, I think some of the surveyors of the fire offices could cite instances of equally unsatisfactory treatment at the hands of architects.

The majority of architects consider that the question of fire insurance does not come under their purview in any way, and many of the remainder never suggest to their clients the desirability of a conference between all three parties. They are, I am afraid, too often enamoured with some pet schemes or systems of their own, to give any consideration to any practical suggestions that could be willingly offered by an insurance surveyor if he only had the opportunity.

Another reason for the apparent want of interest on the part of the insurance surveyors is that they often do not know anything of the proposed new buildings until they are actually erected and much of the plant is installed, whilst this omission could be easily remedied if the architect would but bear in mind the desirablity of the above-mentioned conference. Such a conference, were it held, would also help to obviate the annovance which is felt by the owner of the property when the insurance surveyor suggests some slight structural alteration, or the re-arrangement of the laying out of some of the plant, by which means there might be a material reduction in the fire-insurance premium; as not only the architect's plans, but the whole of the proposed internal arrangements, could have been fully discussed before any operations had been commenced.

Yours truly,
AUDI ALTERAM PARTEM.

Notes and News.

The "Stock" prize for designs for architectural decoration, offered by the Royal Society of Arts for competition among students of schools of art in the United Kingdom, has been awarded to Frederick Sydney Smith, of the School of Art, West Bromwich, for a design for the decoration of a church interior. The prize consists of the Society's gold medal or a sum of £20.

* * *

"Queen Elizabeth's House," otherwise Ivy Lodge, Brixton Hill, which has just been demolished to make room for new buildings, was interesting chiefly from its age, and from the legend (probably false) that it had been used by Queen Elizabeth. Apparently it was of later date, and as it presented no very striking features, it will not be greatly missed.

* * *

A proposed Leeds Corporation loan of £55,000 for gasworks purposes is being strongly opposed. At an inquiry held on Wednesday week, on behalf of the Local Government Board, it was stated that in a judgment that had been delivered by one of the High Court judges with reference to borrowing powers, it had been held that all overdrafts at the bank were really borrowing powers, and the Leeds Corporation had no right to have an overdraft at the bank, unless the Local Government Board granted them powers to borrow the amount overdrawn. Mr. Joseph Dransfield, who raised objection, said that the rates of the city were 9s. in the pound, and he prophesied that seven years hence they would be 11s. 6d.

* * *

A discovery of importance for the history of Umbrian architecture has just been made beneath the cathedral of Citta della Pieve, the building which contains some of Perugino's masterpieces. On a wall being removed, a crypt, supported by nine columns, has come to light, and it is supposed that this chamber was a portion of the original cathedral.

* * *

The water-supply of Paris is regarded as being unsatisfactory, both as to quantity and quality, and there is an agitation in favour of a large and comprehensive scheme to meet modern requirements. The most striking of several proposals that have been made is to draw the supply from the Lake of Geneva.

* * *

The inartistic and unsuitable buildings which disfigure the countryside are due, Mr. Delissa Joseph declares, in a letter published in a recent issue of the "Times," not to the want of men capable of designing the right kind of building for its situation, or capable of using the right materials, but to the fact that the larger proportion of buildings are erected without the intervention of the architects. The character of the foundations of a building, the strength and union of materials, the air spaces surrounding buildings, their sanitary appointments, he points out, are all controlled by local authority; but the questions of design and amenity are entirely uncontrolled, except in the case of the great estates. The remedy for this, he thinks, is in the establishment of a Ministry of Fine Arts, which, with local committees of taste, should control the design of buildings, in the same way as the more utilitarian circumstances of building are already controlled. This will necessitate the employment of the talent of the hundreds of capable architects who could bring their powers of design and their knowledge of the suitable use of materials into the service of beautifying and preserving the countryside; and he believes that it is only by the establishment of a system of public control of the design of buildings, either by a Ministry of Fine Arts or by some other suitable official machinery, that we can hope to ensure a cessation of the present distressing disfigurement of the country.

* * *

A discovery of two bas-reliefs, representing a couple of Byzantine crosses, with a Roman inscription of the third century, has been made by the workmen engaged in the restoration of the cathedral at Ancona.

* * *

An interesting discovery at Exeter Cathedral, parts of which are now undergoing repair, seems to point to the existence of an earlier building on the same site. Through a crack in the south tower, workmen have extracted a carved head, which is said to be of Egyptian origin. Some time between the eleventh and fifteenth centuries the head was used, with other rubble, for the purposes of filling up. The Norman towers, commenced in the eleventh century, are usually spoken of as the most ancient portion of the cathedral.

* * *

The consolidation and amendment of local Acts is recommended in the special report of the Select Committee of the House of Commons; and it is further advised that certain common terms, such as "new street," and "common lodging house," be defined by statute, as their local interpretation could only lead to confusion and divergence in practice.

* * *

The slate quarries at Corris, near Machynlleth, Montgomeryshire, are about to be reopened; Lord Herbert Vane-Tempest having announced that he has signed the lease of the quarry, and that he hopes to see it in full working order very soon.

* * *

Wolverhampton Model Housing Exhibition, which was opened on Saturday last by Sir Oliver Lodge, has for its object "to encourage the building of well-designed, economical, and durable houses, suitable for erection in the suburbs of towns in the Midlands, and to provide architects and builders with an opportunity of showing the best methods of construction in a definite and practical way; to demonstrate the advantages of more systematic development of new building areas in the suburbs of large towns; and to provide examples of the best furniture for workmen's homes, and of the best building materials suitable for improving the construction and conveniences of small houses." The site is on the Fallings Park Estate, which is owned by Sir R. A. S. Paget. Twenty-two architects and builders will be represented in the competitive classes, and fifty-one houses will be completed, costing from £150 to £300 each, while about twenty additional houses will be in course of erection.

* * *

Coventry's new water supply, which was turned on by the Mayor of Coventry on Thursday last, is conveyed from Whitacre reservoir to Coventry by a main that is nearly twelve miles long. The cost has been about £50,000.

The 33rd annual report of the Public Works Loan Board, which has just been issued, shows that the Commissioners during the financial year 1907-8 made 883 advances for sums amounting to £2,116,060, as compared with 906 advances for £2,123,496 in 1906-7. A sum of £1,994,838 was advanced on the security of local rates, and £121,222 on that of property. The rates of interest receivable averaged £3 11s. 6d. per cent., as against £3 13s. 7d. per cent. in 1906-7. The various advances, under their several classifications, were:—Allotment Acts, England, £3,510; Education Acts, England, £748,147; Scotland, £243,708; Poor Law Acts, England, £28,151; Scotland, £1,000; Public Health Acts, England, £847,788; Scotland, £56,195; Small Dwellings Acquisition Act, England, £12,862; Small Holdings Act, England, £4,436; Welsh Intermediate Education Act, £4,044; local authorities under other Acts, England, £18,677; Scotland, £26,320; canals, etc., England, £9,000; Harbours, etc., Act, 1861, England, £24,940; Scotland, £15,000; Housing of the Working Classes Acts, England, £51,010; Scotland, £7,000; Military Lands Acts, England, £12,792; Scotland, £1,480.

* * *

Northampton Polytechnic Institute, St. John Street, London, E.C., re-opens its evening classes on Monday, September 28th, and its day classes on Monday, October 5th. From the bulky syllabus sent to us for notice, it appears that there is a strong building trades section, in which instruction is available for building trades students generally, designers of buildings, carpenters and joiners, stonemasons, plumbers, bricklayers, and shopfitters and show case-makers. There are also classes in structural engineering, electrical engineering, and surveying and levelling; and there is also an artistic crafts department.

* * *

Ventilation by piston-action for the New York subway is proposed by Mr. Bion J. Arnold, consulting engineer to the Public Service Commission, who found that, in summer, the temperature of the subway is some six degrees higher than that of the street. As constructed, the subway, for the most part, is a wide enclosed roadway, with no segregation or partition of tracks. Its two south and two north tracks have four sets of trains constantly in movement, and a large proportion of the energy used in driving these fast-following trains is transformed into heat. Mr. Arnold recommends the building of a solid, continuous wall (preferably, for economy, of terra-cotta) between the north and south express tracks, except where the subway runs into single tube construction. The aim sought is ventilation by piston action as through a cylinder. The system was first adopted on the London electric railways.

* * *

A model colliery village is being attempted near Doncaster, where two new mines are at work, while a third is being sunk. In order to house the miners, Mr. A. B. Markham, M.P., chairman of the Brodsworth Main Colliery Company, has created a model village, in which 620 houses are being built on 127 acres of well-wooded land. The houses are described as being of "mediæval style," and some of them have been set back or brought forward from the general line, in order to avoid the destruction of "spreading sycamores of fifty or sixty years' growth." Lawns, hedges, and rose-trees, and a sufficient variation in the design of the houses, make a very charming ensemble. Libraries, clubs, and public baths form important features of the scheme.

* * *

A new system of building hospitals and dwelling houses was suggested in an interesting paper read at the recent International Congress of Hygiene, held in Berlin, by Dr. D. Sarason, of that city. His object has been to so construct these buildings that the air may have free circulation, and that there should be no obstruction to the entrance of light. His plan, as elaborated in the paper referred to, is to build a series of terraced dwellings, so to speak, one over the other. The lowest of these reaches furthest out, and the topmost extends for only about one-third the distance of the one situated on the ground. Such a system, a writer in the "Medical Times" supposes to be well suited for sanatoria, and also for dwelling houses. Entire streets, and even districts of a town, might with advantage be constructed according to this system. It also lends itself well to decorative and architectural embellishments. The great objection from the builder's point of view to this system, which, by the way, is not quite original, is that much more space is necessary to house a given number of persons on the terrace system than on the ordinary method of building in blocks.

* * *

Attention may be called to the fact that Messrs. Thos. Parsons and Sons are making a special offer to send their book, "Specifications for Decorators' Work," by F. Scott-Mitchell, free to any architect who fills in the coupon printed in their advertisement last week. It may be remembered that in our issue of August 26th, on p. 151, in a notice of this book, we expressed the opinion that "architects will be glad to have this book, which, so far as we can see, affords excellent guidance as to choice of methods and materials in decorators' work."

* * *

The Associated Portland Cement Manufacturers (1900), Ltd., show, in the report to be submitted to the ninth ordinary general meeting of the company, to be held at Winchester House, Old Broad Street, E.C., on September 25th, that the company's profits for the past twelve months amount to £353,485 5s. 1d., and it is claimed that "this result must be considered satisfactory, if regard be had to the industrial depression which has seriously affected constructional enterprise all over the world." The directors recommend that £25,000 be carried to the general reserve and depreciation account, bringing it up to £170,000. Lord Hillingdon having retired in consequence of continual ill-health from the office of joint trustee for the debenture stock-holders, his brother, the Hon. Algernon Mills, of Messrs. Glyn, Mills, Currie and Co., has consented to take his place.

* * *

An extensive canal scheme for Somerset and Devon is under consideration. Some such scheme, which then aimed at connecting Bristol and Exeter by canal, was propounded many years ago, but nothing came of it. It is now proposed, as the first step towards the realisation of the revived and revised project, to develop the Exeter Canal, which is the oldest ship canal in the kingdom.

The proposed memorial to Cowper at Olney seems hardly likely to materialise. About £2,500 is needed, and although the newspapers of the United Kingdom, the Colonies, and America, have given wide publicity to the scheme, the committee received only £3 in subscriptions.

* * *

Criticising the Housing and Town Planning Bill, Mr. F. G. Holmes, borough surveyor, Govan, speaking at the Scottish Sanitary Congress, on September 3rd, argued that the town planning portion of the Bill did not go far enough. It ought to apply, he said, to all land suitable for building. One of the principal points to consider in a Town Planning Bill was the proper width to be adopted for new roads. This Bill gives no lead on this point, and the width prescribed in the Police Acts is inadequate. Such a width should be adopted as would ensure that the expensive street widening schemes rendered necessary in many of the larger cities owing to the mistakes of past generations must not be repeated. Mr. Holmes would like to see the Bill withdrawn.

Law Case.

Water Fittings Test Case.

At Kingston, on August 28th, Mr. P. Nesbit, of Cadogan Road, Surbiton, was sued by the Metropolitan Water Board for failing to comply with the requirements of the Board with regard to water fittings at his premises. Other residents in Surbiton were similarly summoned, sixteen summonses altogether having been issued. Mr. H. Courthope-Munroe, who appeared in support of the summonses, said that in this matter the Water Board was in a difficulty. The Surbiton Urban District Council had exercised their statutory power under the Water Act of 1871, and demanded a constant supply of water for Surbiton. The Water Board was willing to grant Surbiton a constant supply, but by the same Act it was bound to insist that certain regulations with regard to the water fittings on the consumers' premises should be complied with before a constant supply was given. Notices had been sent out requiring the introduction of new fittings in houses where they were required, but though the Surbiton people appeared to be anxious to have a constant supply, they were not in a hurry to bring their premises into consonance with the regulations. There were 3,500 premises in Surbiton, and when an inspection was made to see whether the fittings precedent to a constant supply were satisfactory, it was found that only 1,100 were right and 2,400 were wrong. Mr. Patrick Shaw, on behalf of Mr. Nesbit, raised an objection to the summons on the ground that the regulations did not apply to Surbiton until 1897 and that many of the fittings, being on the premises before, were prescribed fittings under the Act of 1871. The Bench, however, overruled the objection. Evidence was then called as to the character of the fittings on the defendant's premises, and in three of the five summonses the Bench imposed a nominal fine of 1s., and ordered the regulation to be complied with. The chairman (Sir Charles Scotter) said the Bench would give the defendant every possible facility for appealing against the decision. A similar decision was given against another householder. The summonses against the other defendants were withdrawn.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

Repairs to Church Properties.

BANBURY. — DILAPIDATIONS writes: "Will you inform us as to the procedure adopted with respect to dilapidations and repairs to church properties, when occasioned by the living becoming vacant, through death or other causes, showing what control is exercised over same by the incoming and outgoing clergyman, and also by the diocesan surveyor. Also who pays for the repairs, and who gives orders for same to be carried out?"

The proceedings are as follows: As soon as the living becomes vacant a "direction to survey" is sent to the diocesan surveyor, who then inspects the buildings and reports to the Bishop what repairs are required, and gives an estimate of their value. A copy of this report and estimate is sent to both the outgoing and incoming incumbents. One month is allowed for appeal, and at the expiration of that time, or sooner if agreed by the representatives of the outgoing and incoming incumbents, the Bishop makes an order, the amount of this order then becomes a debt due from the outgoing to incoming clergyman. As soon as the money is received by the new vicar it is his duty to pay the amount to the Governors of Queen Anne's Bounty, and to get the dilapidations put right, and Queen Anne's Bounty pay the amount to the builder who does the work, upon the certificate of the diocesan surveyor, countersigned by the Bishop. E.M.

Reinforced Concrete Equation.

DUBLIN.—J. M. writes: Would you kindly explain in the next issue of your journal how the figures $\frac{4\times 20{\cdot}25}{4}$ have been arrived at in the following example, taken from "Manual of Reinforced Concrete," by Marsh and Dunne, page 105: A column 12in. square, 30ft. high, with fixed ends reinforced with 1⅛in. diameter rods near each corner. Centre of rods 3in. from outside column

$$P_1=\frac{100{,}000}{1+\frac{900\times 144}{4\times 84{\cdot}6\times 100\left(\frac{144}{12}\times\frac{4\times 20{\cdot}25}{4}\right)}}$$

from the formula:—

$$P_1'=\frac{P}{1+\frac{k^2\,l_1^2}{84{\cdot}6\times 10^2(r_c^2+r_s^2)}}$$

where P = safe load calculated as a short column in lbs.; P = safe load on long column in lbs.; l = length of column in ins.; r_c = radius of gyration of the concrete assumed as being of total sectional area of the column; r_s = radius of gyration of reinforcement; k = a co-efficient for a rectangular column with least side b_1 $r_c^2=\frac{b^2}{12}$

The values of $r_s^2=\frac{\Sigma 7^2}{n}$.

The equation on p. 105 of the manual should be:—

$$P_1=\frac{100{,}000}{1+\frac{900\times 144}{4\times 84{\cdot}6\times 100\left(\frac{144}{12}+\frac{4\times 20{\cdot}25}{4}\right)}}$$

the 4, owing to a printer's error, has been changed into a X. The further reduction is correct.

C. F. MARSH.

Stress Calculations.

KINLOCHLEVEN.—QUERY writes asking for more detailed explanation of the manner in which the thrusts and moments were found in the answer to the query on the above subject on July 8th, 1908.

Fig. 1 shows the frame diagram for the roof truss, with the loads on it. The horizontal thrust H must be such that when it is combined with the resultant vertical force at A, the resultant will be in direction AB. Resultant vertical force at A = 67 —16.75 = 50cwt. nearly, and by the triangle of forces since the pitch is 45°, H also carries 50 cwt.

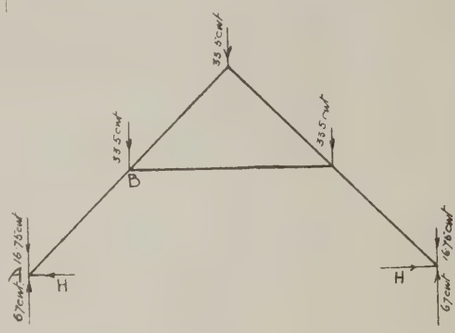


FIG. 1.

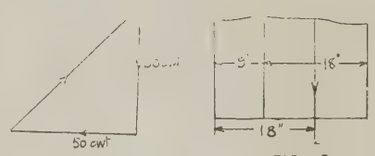


FIG. 2.

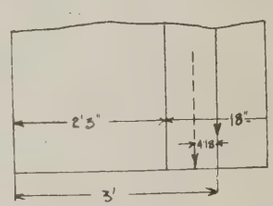


FIG. 3.

The moments of stability are obtained as follows:—Fig. 2 shows the proposed section. The weight of wall and pier is 313cwt., and the vertical force transmitted by the truss is 67cwt., giving a total of 380cwt. Taking this as acting, roughly, down the centre of the wall, the distance from the edge is 18in. In the reply on July 8th this was given by error as 13½in., the width of the pier having been taken instead of the thickness, and a printer's error occurs in the last line of the second column, which should read "truss is equal to $\frac{134}{2}$=67 cwt., so that," etc. ∴Moment of stability = 380 × 18 cwt. in = $\frac{380\times 1}{12}$ ft. cwt. = 570cwt. about.

Fig. 3 shows the section suggested in the reply of July 8th. As therein stated, we have roughly moment of stability = 432 x 3 = 1,296 cwt. ft. If we wish to work more accurately, we find the centroid of the combined wall and buttress by moments, and take the weight as acting there, as shown dotted in Fig. 3. In the section shown in Fig. 2 the centroid will be nearly at the centre of the wall, but in Fig. 3 it is about 4.18in. from it. Therefore, working with this corrected position, the moment of stability becomes $\frac{432\times 31{\cdot}82}{12}$ = 1,150 ft., cwt. The 4·18in. is obtained as follows:—Take moments round the centre line of wall. Moment = 89 × (13·5+9) + (432—80) × 0 = 80 × 22·5.

∴If x is the distance of the centroid from this centre line 432 x = 80 × 22·5

$\therefore x=\frac{8\times 22{\cdot}5}{432}$ = 4·18 nearly.

Waterproofing a Brick Wall.

LONDON.—A. O. C. writes: Can you recommend me any materials, patent or otherwise, to paint on a brick wall and waterproof same externally; names of makers of any such materials would be useful; also is Beaumontique mentioned in Specification No. 11, page 385, clause 11, obtainable ready-made, and if so from whom?

There are several excellent waterproof preparations useful for the purpose. One of the best is called Blundell's Petrifying Liquid, and is manufactured by Messrs. Blundell, Spence, and Co., Ltd., Hull, and 9, Upper Thames Street, E.C. If it is desired to retain the appearance of the brick, the transparent variety is used; but if a coloured effect is wished for, a special paint is used on the undercoats, and the transparent liquid is used for the finish. Any colour may be employed, from rich reds to white, and the effect is very similar to that of ordinary glazed tiles. You should send for a small specimen brick coated with the material. Another speciality which may be recommended for the same purpose is Browning's Colourless Preservative, made by the Indestructible Paint Co., 31, Cannon Street, E.C. This is the solution which was used for preservative purposes on Cleopatra's Needle. The same firm make a preservative enamel paint. Still another useful material is "Stone Liquid," made by Szerelmey and Co., Rotherhithe New Road, S.E. Although specially prepared for use on stone, it is equally effective when applied to brick. There is also the Damp Preventive, made by Messrs. C. Chancellor and Co., of 13, Clerkenwell Road, E.C. We do not know whether "Beaumontique" is supplied ready-made, but we should think not, as it would harden too quickly; and if any material were added to prevent this, the virtues of the mastic—for that is what it is—would be lost. The recipe in "specification" gives "two of white lead, half of litharge, and four of boiled oil mixed round," so all you have to do is to go to the nearest oil and colour shop and tell them to mix you up white lead and litharge in the proportions of 4 to 1, and then break up in boiled oil and reduce until of the consistency of thick cream. Use the same day the mixture is made, or you will have trouble. J..

Payment for Extras.

CHAPEL-ALLERTON.—HABYBEE writes: In the case of a London contractor having a contract in a provincial town, and who has secured the contract in competition with local firms, would he be entitled to charge the London standard rate for extras and daywork?

No; unless there be an accompanying schedule of prices for extras appended to the contract, the contractor would be entitled to extra payment according to the prices current in the district in which the work is being executed. Of course, it is possible that there may be some very special work necessitating the employment of expert workmen who cannot be obtained locally, and the question must then, naturally, be dealt with on its merits!

F. S. I.

FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY.)

SIR EYRE MASSEY SHAW AND FIRE PREVENTION.

The death of Sir Eyre Massey Shaw marks the end of the career of the best-known advocate of fire protection the world has yet seen, for although the deceased fire chief retired from active work as far back as 1891, his thirty years of fire service duty stands even to-day as a most remarkable achievement in the fire protective service of the world. Fire appliances in different parts of the world may or may not to-day be equal to those of the metropolis; and in some respects such appliances may even be in advance of what we have in London; but one thing remains undisputed, and that is that Sir Eyre Massey Shaw's brigade of 1870 was simply miles in advance of anything to be found at that period in Europe or in America.

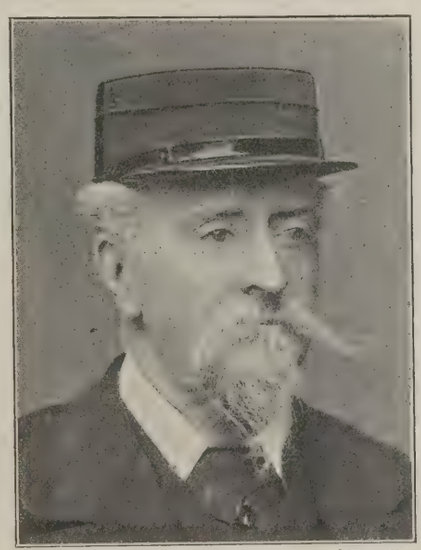
The same position of the London force may be said to have existed in 1880—perhaps even in 1885—but very approximately from that date several foreign countries learnt what was being done in London, and gradually made headway, and by the time of Sir Eyre Massey Shaw's resignation several had probably made such progress as to equal London work in certain directions.

Sir Eyre Massey Shaw's original work, of course, dates back to nearly 50 years ago, and the fire engine establishment, as he knew it first in 1861, was simply an insurance office brigade comprising some thirteen fire stations with 113 firemen. When he left it in 1891 it already had 59 fire stations and 706 men. To-day, of course, the force is a much stronger one even than that. The development of the London Brigade during the 30 years of Sir Eyre Massey Shaw's service was quite remarkable, for it was always undermanned for the amount of work that had to be done and the extraordinary area that had to be covered. It was also a single-handed brigade, inasmuch as the deceased fire chief was the only officer to direct its policy and work, while to-day there are five superior officers in the brigade, apart from the professional men connected with the electrical and engineering work of the brigade. Nevertheless, Sir Eyre Massey Shaw found time to do a considerable amount of research work, enquiry, and writing, and his views, as expressed in evidence before various Select Committees of the House of Commons, and his writings must even to-day rank as useful views often quite applicable to modern conditions.

Such writings of his as the records of the London Fire Brigade Establishment, his book on Fire Service, his summary on the estimating of the "risk" of buildings, writings such as his on "Fires in Theatres," and that standard work entitled "Fire Protection," must even to-day rank as reference books of the first order, and they cover not only matters of fire protection as generally understood at the period when they were written, but frequently matters appertaining to fire prevention in its most modern sense.

Sir Eyre Massey Shaw was a strong writer, and yet a happy one in style and absence of undue verbosity, and his arguments were always soundly put and carefully though-out, so that even if the deductions were subject to argument, all concerned realised that he never put statements to a paper without the most careful consideration.

As Sir Eyre Massey Shaw's views of the past will always remain an important feature in things appertaining to fire protection we think it may not be out of place to present some of his views on matters which will perhaps lead to a better appreciation not only of his work, but of the basis upon which the Fire Preventive Organisation of this country has been built.



Photo] [Russell.

The Late Sir Eyre Massey Shaw.

FIRE PREVENTION AND BUILDING DEFECTS.

We should like to give some of his views taken from his books, entitled "Fire and Fire Brigades" (1884), on matters of fire prevention which indicate that at an early date he fully realised the peculiarities of this country and of London in particular. As far as fire prevention was concerned, some of these paragraphs read as follows:

Building Defects in England.

"The defects which can be found in the construction of buildings in this country are well known by those whose duty it is to witness the effect produced by fires, explosions, and catastrophes of a similar kind. During recent years many of the regulations for the construction of buildings have been carefully revised, and the result of these revisions has been to produce better buildings; but very great improvements are yet required in our building laws in order to bring them up to anything like the French, German, or American standards."

Number of Staircases.

"It is impossible to enumerate here the many evils referred to, but space must be found to enter a protest against the too common practice of constructing buildings such as institutions, schools, factories, etc., with only one staircase for the accommodation of their large number of occupants. The fact of having only a single means of escape, in the case of a panic alone, would lead to a serious if not fatal accident, and if a fire should break out on the lower levels in proximity to the staircase, the result would be most disastrous, as the only mode of exit would be altogether cut off. All such places as these should most certainly be furnished at each end of the building with a staircase giving access to the various levels."

Cheap Construction.

"No matter how stringently the clauses of a Building Act may be drawn or however vigilantly its enactments may be enforced, if immoderate cheapness of constructed is permitted, there will always be found ways to infringe the provisions of the law."

Danger of Calling for Tenders for Buildings.

The system of inviting builders by means of advertisement to offer tenders for the construction of buildings is one very generally resorted to at the present time, and it has its advantages from certain points of view. When a judicious selection of the persons allowed to tender is made, the specifications and drawings, carefully prepared by professional persons whose theoretical and practical knowledge of the subject is thoroughly sound, the material used all of proper description, and the execution of the work carried on with a minute attention to all the details under the supervision of a skilful and honest clerk of works, no evil consequences could result; but this combination, so necessary for the perfect construction of a building, is not always to be found.

Tendering by unqualified persons is neither more nor less than a competition among builders as to who will work at the cheapest rate; and, unfortunately, it is too often the means of bringing forward ignorant, unscrupulous men, to the exclusion of those of honour and intelligence. Scamping is resorted to, either to increase the builders' gain or to save them from positive loss, as probably the price at which they have contracted to carry out the works is insufficient to enable them to supply good material and proper skilled labour.

Therefore, taking soundness of construction as the true basis and fundamental principle on which the reduction of losses by fire depends, the system of contracting with builders, whose only recommendation is that they will carry out the work at the lowest cost, is certainly not calculated to attain the desired end.

This branch of the subject is of paramount importance to all persons engaged in commerce, and is of the deepest interest to those whose lot it is to be practically employed in extinguishing fires.

While there are many points on which firemen may probably differ, this is one concerning which all those who have had any experience will be found to be absolutely unanimous.

Similarly we quote from other of his handbooks of 30 years back as follows:—

Fire-resisting Structures.

To construct a building in such a way that it will resist the effects of heat and flame for any considerable time—for that

is all that can be done—there are required care and forethought in the choice of the position, a sound knowledge of the several materials to be used, and a skilful design to bring these materials into combination in such a way as to meet the proposed requirements of the structure when completed, and at the same time to avoid the consequences of the extreme changes of temperature, for it should be known that some of the greatest destruction ever seen after a conflagration, has been caused, not by the primary, but by the secondary effects of fire—that is to say, not by the expansion produced by heat, but by sudden contraction after the expansion.

The necessary limits of this essay prevent a full discussion of all the numerous details involved in the choice of a position, including the consideration not only of the site proper, but also of the kindred subjects of foundation, area, configuration, and many others. We shall, therefore, pass on to the subject of choice of materials, in which there is much food for reflection in connection with safety of buildings when exposed to sudden changes of temperature.

Walls.

In walls, bricks of any kind, but more particularly fire-bricks, if properly laid in sound mortar or cement, will resist the effects of heat for a very considerable time; stone, if laid as well in the middle as on the inner and outer surfaces, lasts a long time, unless it fails in the unsupported parts over the openings, which it always does when the lintels and the tops of the windows are made of the same materials.

Brick Arches Over Doors and Windows.

Openings for doors and windows in a stone wall, to be safe, should be mounted on the top with brick arches, which would carry the load without any difficulty long after stone in such a position would have become calcined, and probably allowed the whole of the superstructure to fall down.

Danger of Stone Stairs.

For stairs stone is a very dangerous material, unless it is embedded on some substance which can carry it when it gets hot. Stone stairs are usually made by tailing in the ends of a number of blocks of stone a few inches into a wall, leaving some two or three feet protruding and hanging unsupported in mid-air. After such stairs have been completed, they present an imposing appearance of solidity and strength, and so deceive the eye; but where is the man who would willingly trust his life to one such step if fixed alone at a height of 30 or 40ft. above the ground? Even at the ordinary temperature of the atmosphere, the block would then be somewhat fragile, but there can be no doubt that any sudden rise of temperature—such, for instance, as might be produced by pouring a kettle of boiling water on it—would suffice to bring it to the ground. In this case the exposed part would expand with the heat; the supported part, being protected, would not expand, and a fracture would occur between the two, generally close to the wall.

Responsibility of Builders.

It is earnestly to be hoped that the time is approaching when the constructors and owners of buildings destined to carry large quantities of heavy goods will recognise their responsibility to warn the occupiers, and those who labour under them, of all dangers which are inseparable from the use of such materials and form of construction as are adopted, and not attempt after a disaster to screen themselves under the plea, which may sometimes be used, but never with real fairness, that the building did not yield to the effects of fire.

Danger from Expansion.

Even where walls are made of sound, well-burned bricks laid in best cement, what is their use, if some material inside, on the application of heat, fractures them or removes them altogether at the very moment when they are most required to stand firm? They are only as the findings of the supposed ship, which may or may not be very good in themselves, but get no opportunity of being fairly tested.

"Fireproof" and "Heat-proof."

It must be strongly asserted that before a building can be fireproof it must first be heat-proof, and that no building with any exposed metal forming an essential part of its construction can be truthfully so designated.

Use of Stone and Iron for Building Purposes.

And now it may be asked, Whether it is proposed that these dangerous materials, stone and iron, should never again be allowed in buildings? but the answer is distinctly in the negative. Nothing of the kind is proposed, or even ever so remotely suggested. The requirements of the time in which we live involve a necessity for the use of these materials; these requirements must be met, and no one with any pretence to being called practical can venture to ignore them.

Architect to Explain to Owner.

What is proposed is simply this: that those charged with the construction of buildings should thoroughly explain the facts of the case to their employers in words incapable of being misunderstood.

It would be no particular humiliation to an architect or builder to have to inform his client that he has been obliged, for economy, for convenience, or for whatever other satisfactory reason he may wish to assign, to use stone and iron in the construction of the building; that these materials look well, and afford many advantages for the transaction of business; that they may probably last a long time, and in the end prove very economical; but that there are inseparable from their use two dangers which should be ever present to the occupier's mind, and which should be guarded against in every possible way, the one frequent in occurrence, but generally moderate in extent, the other happily rare in occurrence, but, when it does occur, in the last degree serious, and sometimes altogether overwhelming.

Exaggeration of Advertisers and other Interested Persons.

To give an imaginary, perhaps not altogether imaginary, instance of what is commonly done in this way: let an inventor be supposed to have discovered that a good wash of alum or of tungstate of soda dissolved in water will render wood and other substance uninflammable. He at once advertises it as making the material incombustible; a trial is carried out by skilful persons; the materials are consumed by fire; and the so-called invention is turned into ridicule; whereas, if he had only claimed for it what it could really do, or perhaps, to put the case in other terms, if he had only known the meaning of the words he used, and limited his assertions to the same truth, he might have made a great success.

Chemicals so Used, Whether they Produce Decay.

There is another matter connected with the use of chemicals in this way which is worthy of attention, *i.e.*, the probability of their causing decay to the materials, and on this point different opinions prevail. Some say that chemicals bring on rot—chiefly dry rot—others say that they prevent rot. Both are equally violent in the expression of their views, and in fact, like such persons, talk a great deal of unpractical jargon and semi-scientific nonsense. It may be stated, though not very positively, that so far as present experience goes, chemicals used in this way have no effect whatever either in producing or preventing decay.

Ceilings.

In this country ceilings are made to look solid enough, and if they were only what they represent themselves to be, they would in most cases be almost impervious to the effects of either heat or flame; but let them be pierced through, and they are found to be a sham, being a mere skin of plaster adhering to some thin strips of wood, which may be termed indifferently laths or firewood, according to the taste of the observer. These strips are tacked on to the lower parts of the joists, and the spaces between them and the flooring-boards over the joists are simply so many flues, commonly containing only very foul and noxious air, but capable at any moment of being converted into most dangerous hidden passages for smoke and flame. Air passages are also found in the lath-and-plaster partitions between rooms, behind the skirting boards of rooms, and under the steps and behind the skirting boards of stairs. All this is wrong in every way; it may be called by any name people choose, as such appears to be the custom of our time; but it is at best a gross deception, and the sooner it ceases to exist the better.

Shams and Scamping in Buildings.

All sound building is more or less good building for resisting the effects of heat, as a neighbouring country shows us by examples worthy of being studied by those interested in the subject; and all scamping is dangerous, as unhappily our own country and many others are constantly showing us by examples equally striking, and still more worthy of our serious study.

Truthful Descriptions.

It is earnestly to be desired that, as far as our buildings are concerned, there may be no more shams in either things or words. Poisons no doubt are useful, but we do not commonly label them as food, and put them into the hands of persons who cannot possibly know their qualities. Whether it is a less offence to hand over a building to a person necessarily ignorant of the quality of materials and the art of construction, and not only to withhold all information concerning the acknowledged dangers, but even to go further and lull him into a false sense of security by informing him, without any reference to the all-important question of the stock which it is to contain, that the structure is safe from the effects of heat, it must be left to the reader to judge.

The Expression "Fireproof" Without Qualification.

To conclude this subject as it began, it is once more asserted that the ordinary use of the expression "fireproof," without qualification, is wrong in the extreme, and should be discouraged by all alike whether interested only in the true meaning of our words, in the dictates of common-sense and prudence, in the true economy of the commercial interest of our country, or in all these points combined.

Men may use the term heedlessly or lightly, and perhaps when so using it they

may do but little injury; but this is all that can be said, for when they come to use it seriously, they cannot deny that, as far as concerns the true meaning of the words composing it, they help to deceive or mislead those unacquainted with the subject, encouraging in their minds a sense of security which has no real foundation, by attributing the quality of being proof against the effects of fire to buildings which are not certain to be able to resist even the effects of heat without the contact of fire.

This is plain speaking, but it is necessary for some one to speak plainly, when thousands of lives and millions of money are in constant unnecessary peril through the careless, erroneous, deceitful, or false application of such a term as fireproof.

THEATRE SAFETY.

On the matter of theatre safety, Sir Eyre Massey Shaw wrote, 30 years back, as follows, and here, again, nearly every word has bearing in the provinces to-day:—

The subject of preventing the sudden destruction of theatres by fire is one which must necessarily force itself on the attention of all who inhabit crowded cities, and especially of those entrusted with the protection of helpless masses of persons on the occasion of such catastrophes; but the expediency of directing public attention to it may possibly be called into question, and on this point it may be well to say a short preliminary word.

It must be acknowledged that there are many people in the world who would rather not be made acquainted with the dangers that surround them, and whose natural nervousness is such, that a warning against danger may sometimes have as serious an effect on them as the danger itself; and, if there is one class of men which, more than any other, has a constant opportunity of observing this kind of feeling, it probably is a fireman. If, therefore, no good were likely to result from giving a warning about theatres, it might be as well, at least for me, to refrain from doing so; but, on the other hand, it is to be said that, if a fireman is silent, and no one else knows how to speak, or no one considers it his business to speak, or perhaps no one cares or dares to speak, a sense of insecurity, which may be often latent but is never altogether absent, may go on continually increasing, until, at any moment, it may take the shape of panic, and cause disastrous consequences.

This point was carefully and anxiously considered before I ventured to publish the following remarks in the "Practical Magazine," a short time since; but the spirit in which my papers were received and commented on has, I think, fully justified the course which, with great diffidence and not without a strong sense of responsibility, I felt it to be my duty to take.

The feeling of nervousness caused by a knowledge of risk is one wholly senseless and worthless; it can never by any possibility do good, and may do harm; but it exists, and has to be acknowledged, as it is here, and allowance must be made for it. This is all very well in its way; but if a serious accident were to happen, and a man professing to have special knowledge were to come forward afterwards, and say he could have pointed out means by which it would have been averted, and that he was prevented doing so by his fear of causing excitement in the minds of nervous persons, how would the world judge such a man? How would he judge himself?

I have carefully and laboriously studied the subject of protecting theatres from sudden destruction by fire; I think I know every source of danger that exists or can exist in such places, and I am strongly convinced that, with proper construction, judicious management, and sound precautions, there would be no danger for the audience, and very little for the building, and this is my reason for writing on the subject.

I am quite aware that it is not my special business to interfere in such a matter as this, but I am not aware, nor do I believe that any one else is aware whose business it is, or whether it is the business of any one; and, in this state of utter vagueness and ignorance, I think it better to say what I have to say, and to send it forth for what it is worth, than to withhold it now and have to state it afterwards, perhaps on the occasion of some great catastrophe.

I have never met a manager in this or any other country in which it has been my fate to travel, who did not impress me with a sense of his anxiety to do everything in his power for the safety of his audience, and I know of many efforts in this direction, and much expense incurred in making them; but I can call to mind very few instances in which the arrangements have been really methodical or satisfactory, and our own country presents a humiliating example of the entire absence of any system of method whatever.

At the great opening an effectual protection could be obtained by means of a metal curtain, which could be dropped at a moment's notice. The metal curtain should be supported and worked by steel or iron chains. Such curtains, it is true, have before now been tried, and have not found favour with managers of theatres, but that does not at all affect the subject under consideration. They may have been badly made, badly fitted, or badly worked; but, even so, it must be obvious that, in the event of a fire happening, they would have done *some* good.

At all events, in the present condition of mechanical skill and knowledge, it is simply monstrous to say that the thing is impossible, and it is quite certain that there are thousands of the first engineers of this and other countries who would not hesitate to accept an order for such a curtain, and, if not hampered by restrictions, would guarantee that fire would not get through or by it under any circumstances whatever in less than an hour or so, which is much more time than would be required for saving first the audience, and afterwards the auditorium and other parts of the building.

THE TERM FIREPROOF.

Concerning So-called "Fireproof" Buildings.

The fire chief's bugbear was the term "fireproof," and in some later writings he again says as follows:—

So little attention appears to have been paid to the real meaning of the term "fireproof" that it seems necessary, notwithstanding the repeated practical warnings which great calamities by fire have given during the last quarter of a century in all parts of the world, to endeavour to impress on those interested the incontrovertible fact that, in treating of fireproof structures, distinct reference should be made not only to the style, material, and capacity of the building itself, but also, and in a much greater degree, to the nature, quantity, and classification of its contents. These points are inextricably mixed up together, and no amount of legislation can separate them; on the contrary, there is abundant evidence to show that much evil has been done by the ordinary use of the expression "fireproof," which is commonly applied to the structure alone, thus utterly ignoring the obvious fact that, with regard to risk of fire, the contents of a building are of much greater importance than the building itself. Thus, a building, which would be perfectly fireproof as an office or private dwelling-house, might be most dangerous if converted into a factory or warehouse. It may be laid down as a rule that a building, to be truly fireproof, should be divided into compartments, and so constructed that the contents of any one compartment might be consumed by fire, without calcining, melting, or otherwise destroying the surrounding horizontal and upright positions, and, therefore, without communicating fire to the other rooms or floors.

SIR EYRE MASSEY SHAW'S INDIVIDUALITY.

Lastly, we must understand the individutlity of this great fire veteran, and for this purpose we quote his general views, as expressed in his book on "Fire Protection" in 1876:—

I first studied the practical details of the appliances used in extinguishing fires, and with this very small stock of special information, and such mechanical and scientific knowledge as remained to me from a University career, I entered on the duties. At first a habitude of dealing with men, and a knowledge of the principles and practice of organisation, coming after a management deficient in these particulars, brought some credit, and when, in difficult or important cases, a success occurred, there was the usual kind and quantity of commendation which a public servant doing his best is pretty sure always to receive. Many and great were the congratulations, and very highly were they prized, but after the lapse of so many years I may now frankly acknowledge that some of the most painful humiliations of my life were undergone at that very period. I could not but accept expressions of kindness as they were offered, yet I felt they were but half deserved. None knew as I did how very nearly the great successes had been great disasters. Even as I write these lines, I can recall distinctly to my recollection cases in which I had all but sacrificed the whole of my little band in the attempt to do what was almost impossible, and only corrected the error at the exact critical moment when further delay would have made it irrevocable. Then would follow the explanations in form of a lecture—for even in those early days I had adopted this mode of conveying instruction—and, during the lecture, a recapitulation of the orders given and the reasons for them, particularly those which either seemed contradictory or were actually so, for, in practical work of this kind, it is often necessary to change the orders very suddenly; and by degrees there would creep out from me some kind of acknowledgment that such and such a move had been a mistake, as it involved a great risk for a small gain.

OFFICIAL FIRE TESTS IN THE UNITED STATES.

We are pleased to observe that the fire-testing operations at the Columbia University, New York City, have been re-started under the direction of Professor Woolson, in the same thorough manner as heretofore, and that the work has lately been again in the direction of testing reinforced concrete floor systems.

One of the latest floors so tested is one that has been designed on the triangular reinforced concrete floor system of the American Steel and Wire Company, and we observe that the tests have been to the international testing standard—viz., the test occupied four hours, and the average temperature was 1,700 degrees Fahr., the load, however, being only 150-lb. per square foot, whilst in England 2½-cwt. per square foot is required. The water was applied, immediately on the conclusion of the test, from the steam fire engine, as in England.

As to the results of the test, they were conclusive as to the floor being "fully" fire-resisting. Not only did neither fire nor water pass through the floor, but the deflection was comparatively small.

We observe, by the by, that the testing chambers of the Columbia University measured 14ft. by 20ft. in the clear, whilst those of the British Fire Prevention Committee measure 15ft. by 20ft. in the clear, so that the test in England is just slightly severer. On the other hand, the United States tests end with a final load up to 600lb. per foot super. applied after the termination of the test, whilst this additional loading after test does not take place in London. There are certainly some points in favour of this additional load, but it is a requirement over and above that of the universal standards, and we think that the universal standards are sufficiently severe.

The reinforcement of the floor tested, we should add, is a triangular wire mesh, there being longtitudinal members which are laced up with metal wire arranged triangular in plan.

INTERNATIONAL CO-OPERATION AND FIRE PROTECTION.

The annual meeting of the International Fire Service Council took place at Luxemburg at the end of last month, when there was an attendance of some fifty delegates from the different countries represented on that Council, the countries so represented having an aggregate of more than 2,500 firemen.

We have to record a successful meeting, which was chiefly devoted to business, and inlcuded the election of officers. So far as England is concerned, of the fifteen available seats on the executive committee, three have been filled as follows—Mr Edwin O. Sachs (chairman of the British Fire Prevention Committee), as vice-president; Mr. Horace Folker (vice-president of the National Fire Brigades Union), as a member of the executive; and Mr. Ellis Marsland (hon. sec. of the Society of Architects) as hon. deputy secretary.

The president of the council for the year will be the chief officer of the Amerstam Fire Brigade—Mr. Meyer—a Royal Engineer officer, and of considerable technical standing, and his influence, it may be anticipated, will be in the direction of encouraging fire brigades to take an interest in fire prevention.

It was particularly noticeable at this meeting that the modern tendency is for the post of professional fire brigade officer to be filled by civil engineers, architects, or surveyors, and, to a limited extent, also by Royal Engineers. In the volunteer fire service, the appointments seem to be held more and more by borough architects, borough surveyors, or local architects in private practice. All this speaks well for the increase of fire preventive measures; nad it is interesting to note that the rank and file of the volunteer fire service is also now being mainly recruited from the building and engineering trades.

It is gratifying to observe that under the new rules of the Fire Service Council, means are made available for assisting in research work, publication of papers on technical subjects, and the like.

A CELLULOID FIRE AT VIENNA.

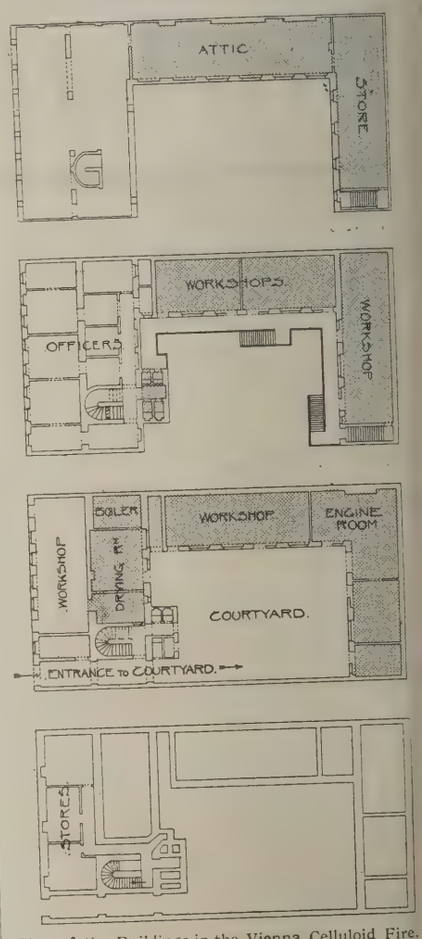
The celluloid fire that took place at Vienna at the celluloid factory of Messrs. Sailer, and resulted in seventeen deaths and a large number of injured, was a remarkable instance of the rapidity with which the fumes of celluloid suffocate human beings, and also afforded an instance of how small quantities will explode with considerable force.

The fire is also remarkable as an instance of the local regulations, which are comprehensive ones regarding the precautionary measures as to celluloid, not being acted upon.

We present five photographs of the fire, and also plan of the building, and these together give some indication of the character of the fire and the nature of the building.

When the fire brigade arrived they found that the workshops on the ground floor and the first floor of the left wing were alight. There could be no question of life-saving operations, as all in the building at the actual time of the arrival of the brigade must have been dead. It was further impossible to work close to the building, owing to the density of the fumes and the celluloid smoke which filled the court yard and prevented active work. The direct cause of the fire was not ascertained.

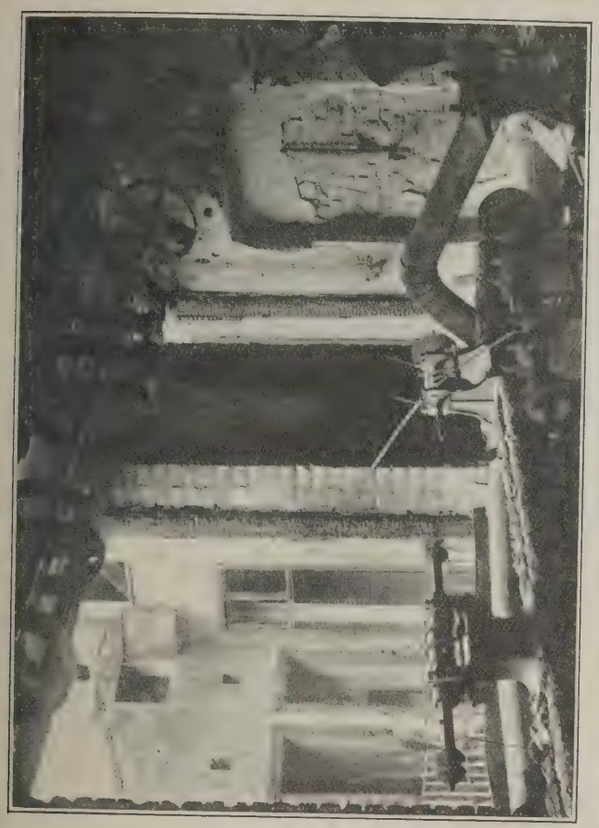
The character of the construction of the building, which was eminently unsatisfactory, can be seen from the illustrations.



Plan of the Buildings in the Vienna Celluloid Fire.

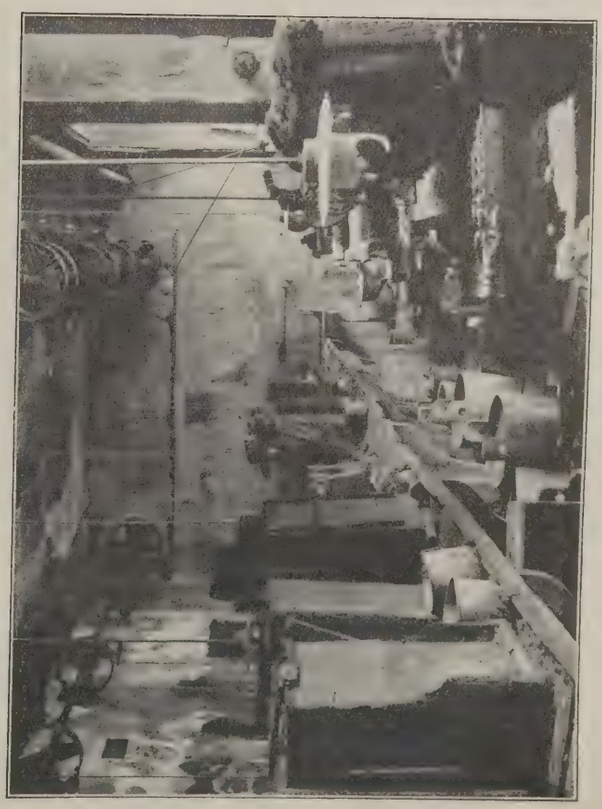


CELLULOID FIRE AT VIENNA: GENERAL VIEW OF THE BUILDING.









THE CELLULOID FIRE AT VIENNA.

THE CUBICAL CONTENTS OF BUILDINGS.

The New Amendments to the London Building Act.

The General Powers Bill of the London County Council, which has just obtained Royal Assent, contains the important amendments to the Building Acts which we anticipated some time back, and whilst fully at one with the promoters as to the necessity of changing the Building Act of 1894, we regret that so serious a measure should have found a place on the Statute Book without receiving that serious consideration it demanded—and which it would have had had it not been put forward in such a hole-and-corner fashion in a "General Powers Bill."

We give the full text of the new clauses as below, and surmise that it now lies with the officers of the County Council, and the Building Acts Committee of the County Council in particular, to either allow or disallow buildings of large cubical extent, according to their discretion.

In other words, in accordance with the policy of the party in power, and in accordance with either any feeling of security or any feeling of panic, buildings will be allowed or disallowed, as the case may be, and thus building owners, who apply for permits after a long period of absence of fires, will probably do better than those applying immediately after some great catastrophe. Whatever the decision may be, too—rightly or wrongly—there also does not appear to be any power of appeal to the tribunal of appeal.

Certain discretionary powers should, of course, be allowed to the County Council as such, but we are very pleased to observe that there is at least that safeguard—that both the Chief Officer of the Fire Brigade and the Superintending Architect will, respectively, have to advise the County Council on the cubic extent question, and that thus the personal responsibility will rest with them morally, if not legally, in case of any loss of life arising from undue leniency on their part.

The Act is most specific on this point—*i.e.*, that the Council must be satisfied, on the report of the Superintending Architect and of the Chief Officer of the Fire Brigade, that the additional *cubic extent is necessary* for any such building, *and that proper arrangements have been made, or will be made and maintained,* for lessening as far as practicable the danger from fire. We trust the two officers in question fully realise what this responsibility means, and that it is a responsibility not only as to structure, but as to the arrangements for the maintenance of the precautionary measures in the building.

On points of principle outside that of cubic extent, the new Act now recognises the horizontal division as a fire division. It is only to be hoped that in recognising the horizontal division the usual mistake will not be made of under-estimating the precautionary measures required to the supports of those horizontal divisions, such as the due protection of stancheons and columns.

The other point of principle involved in the new Act is the discretionary power given to the County Council to allow as divisional doors other doors than the recognised London County Council party wall doors, and we are glad to see that the Council now have discretionary powers as to shutters, which is a matter of importance, having regard to the great convenience of roller shutters, as compared with doors.

We can, of course, fully realise that efforts will be made to obtain the consent of the Council to all manner of possible and impossible doors, and we would here again remind those who control the matter that it will probably be the door, as the weakest feature in these buildings of large cubic extent, upon which the whole of the safety, not only of the block, but a district, may depend, and that they should be particularly warned against the wishes of the faddist, and preferably retain substantial, solid door-work (as against made-up-doors) as a *sine qua non* in these large buildings, and, further, not only to attach importance to the actual door, but to give very great care to the question of its fastenings.

As we have indicated before, we fully realise that the amendment of the Act was necessary, but we think that the form it has taken, and the vast discretionary powers left in the hands of the London County Council without any limit whatever as to cubic extent, are dangerous to a degree, both from a fire point of view, politically and economically.

We realise that a large number of premises will immediately be altered in such a manner as to benefit from the new Act; and we realise that a large number of huge buildings, particularly of the Draper type, must spring up. All this, of course, will only begin to make itself felt in a few years' time; but then there will also come a material increase in the insurance rates and block rates in districts where such premises exist; and we further believe that the fire service of the metropolis will have to be materially strengthened in those districts where buildings of this type exist, and even a new type of heavier fire-appliance introduced than has been necessary heretofore. In other words, American conditions of fire hazard will soon prevail in certain districts of the Metropolis if due care is not taken, and that leniency in matters of building regulation permitted which certain politicians practically hold out as a bait to their electors in the shopkeeping and manufacturing classes.

As we have indicated before, we think that a two million cubic feet limit would have been most advisable, and that such matters as doors should have been more clearly defined by statute. But on the other hand it is perhaps well that an experimental period should exist, for there can be no doubt that a general amendment of the Building Act can only be a matter of a few years now, when modifications will probably again find their way into the statute book.

A peculiar feature, as we have indicated, of the new clauses was the way they were brought before Parliament under a General Powers Bill. Both the professions concerned and other parties interested really only had knowledge of the clauses when it was too late to lodge petitions, or to obtain a *locus standi* in Parliament on the subject. Again, in order to obtain the enactment, the Parliamentary Committee of the L.C.C. practically had to give an *ex parte* view of the matter without calling, for instance, for the report of the chief officer of the fire brigade on the subject or allowing any of the members of the Fire Brigade Committee interested in the subject to act as witnesses, and indicate the views of the Fire Brigade Committee, for these in the main were adverse ones.

Political convenience throughout had to make way for the technical aspect of the question, and the matter being really everybody's business, and thus nobody's business, the Act was duly embodied in the statute book, and in due course the ratepayer will pay the piper in contributing towards a higher expenditure on the fire brigade, and the policy-holder in the form of higher insurance rates.

The clauses of the General Powers Act referring to the Building Act are given below.

Interpretation and effect of this part of Act.

15. Words and expressions used in this Part of this Act shall, unless the context otherwise requires, bear the meanings assigned to them in "The London Building Act, 1894" (In this Part of this Act referred to as "the principal Act") and any references in the principal Act or any existing Act amending the same to Part VI. of the principal Act or any of the provisions of that Part shall be construed as referring to such Part or Provisions as amended by this Part of this Act and the principal Act the London Building Act, 1894 (Amendment) Act, 1905, the London Building Acts (Amendment) Act, 1905, and this Part of this Act may be cited together as "the London Building Acts, 1894 to 1908.

Repeal of Sections 75, 76 and 77 of principal Act.

16. Sections 75 (Cubical extent of buildings) 76 (Consent to larger dimensions) and 77 (Rules as to uniting buildings) of the principal Act are hereby repealed, and from and after the passing of this Act the principal Act shall be read and have effect as if the following provisions of this part of this Act had been inserted in the principal Act instead of the said Sections 75, 76 and 77.

Cubical extent of buildings.

17. (1) Except as in this section provided no building of the warehouse class, and no building or part of a building used for any trade or manufacture shall extend to more than two hundred and fifty thousand cubic feet unless divided by division walls in such manner that each division of such building or part of a building as the case may be shall extend to more than two hundred and fifty thousand cubic feet and no addition shall be made to any such building, part of a building, or division so that the cubical extent of such building, part of a building, or division shall exceed two hundred and fifty thousand cubic feet.

(2) Where the Council are satisfied by the report of the Superintending Architect and of the Chief Officer of the Fire Brigade that additional cubical extent is necessary for any such building part of a building or division as aforesaid and are satisfied that proper arrangements have been or will be made and maintained for lessening so far as reasonably practicable danger from fire the Council may consent to such building part of a building, or division containing additional cubical extent but such consent shall continue in force only while such building part of a building or division is actually used for the purposes of the trade or manufacture (if any) in respect of which the consent was granted.

(3) The Council may in any case in which they think fit so to do consent that any such building or part of a building as aforesaid being divided wholly or in part horizontally by floors to be constructed in such manner and of such materials and in all other respects as the Council may require or approve and in such case such floors shall for the purposes of this section be deemed to be division walls.

(4) The provisions of this section shall not apply to any building which being at a greater distance than two miles from Saint Paul's Cathedral is used wholly for the purpose of the machinery and boilers of steam vessels or for a retort house for the manufacture of gas or for generating electricity provided that such building consist of one floor only and be constructed of brick stone iron or other incombustible material throughout and is not used for any purpose other than such as are specified in this subsection but every such building shall for the purposes of the provisions of the principal Act with respect to special buildings be deemed a building to which the general provisions of Part VI. of the principal Act are applicable.



FIRE AT A MARSEILLES WAREHOUSE.
Interesting as showing the effect of fire on a building with steel roof-trusses.

Rules as to uniting buildings.

18. (1) Buildings shall not without the consent of the Council be united unless (a) they are wholly in one occupation and (b) when so united and considered as one building they would be in conformity with the principal Act as amended by this Part of this Act and with this Part of this Act.

(2) An opening shall not be made in any division wall separating divisions of a building of the warehouse class or used for any trade or manufacture or in any party wall or in two external walls separating buildings in any case in which such divisions or buildings as the case may be if taken together would extend to more than two hundred and fifty thousand cubic feet except under the following conditions :—

(a) such opening shall have the floor jambs and head formed of brick stone iron or other incombustible materials and be closed by two wrought iron doors sliding doors or shutters each not less than one-fourth of an inch thick in the panel at a distance from each other of the full thickness of the wall fitted to grooved or rebated frames without woodwork of any kind all such doors sliding doors and shutters shall be fitted with sufficient and proper bolts or other fastenings and be capable of being opened from either side and shall have on each face thereof styles and rails at least four inches wide and one-fourth of an inch thick and shall be constructed fitted and maintained in an efficient condition. Provided that in lieu of being constructed and fitted as aforesaid such doors sliding doors and shutters may be constructed of any such fire-resisting materials and be fitted in any such manner as may be approved by the Council.

(b) Such opening shall not exceed in width seven feet or in height eight feet and the width of such opening in any wall of a storey or (or if there be more than one such opening in any such wall the width of all such openings taken together) shall not exceed one-half of the length of such wall. Provided that any such opening may be nine feet six inches in height in a wall of which the thickness is not less than twenty-four inches or if the doors sliding doors or shutters closing such opening are placed at a distance of not less than twenty-four inches from each other. Provided also that the Council may consent to any such opening being of such greater height or width as they may think fit.

(3) Whenever any buildings which have been united cease to be in one occupation the owner thereof or if the buildings are the property of different owners then each of such owners shall forthwith give notice of such change of occupation to the District Surveyor and shall cause all openings uniting the same in any party wall or in any external wall to be stopped up (unless the Council consent to such openings or any of them being retained) with brick or stone work not less than thirteen inches in thickness (except in the case of a wall eight and a half inches in thickness in which case eight and a half inches shall be sufficient) and properly bonded with such wall and any timber placed in the wall and not in conformity with the principal Act shall be removed and if notice be not given to the District Surveyor pursuant to this section such owner or each of such owners shall upon conviction in a summary manner be liable to a penalty not exceeding five pounds.

(4) Buildings shall be deemed to be united when any opening is made in the party wall or the external walls separating such buildings or when such buildings are so connected that there is access from one building to the other without passing into the open air.

(5) The provision of this section shall extend and apply

(a) to all openings at any time after the passing of this Act made or proposed to be made in any party wall or two external walls or in any division wall notwithstanding the existence in any such wall of an opening uniting buildings or affording communication between divisions of a building (as the case may be) and (b) to such buildings as if they had not previously been united.

Division walls to be subject to Provisions of principal Act relating to party walls.

19. The provisions of the principal Act with respect to party walls shall extend and apply to such division walls as are referred to in this Part of this Act. Provided that in the case of any such division wall the Council may if they think fit consent to such departure as they may consider expedient from such of the said provisions as are contained in Part VI. of and the First Schedule to the principal Act.

Copy of Plans & particulars approved by Council to be furnished to District Surveyor.

20. A copy of any plans and particulars approved by the Council under this Part of this Act shall be furnished by the Council to the District Surveyor within whose district the building to which such plans and particulars relate is situate.

Penalty for failure to comply with conditions.

21. Any person failing to comply with any term or condition imposed by the Council in giving any consent under this Part of this Act or failing to maintain in an efficient condition any doors, sliding doors, shutters, styles or rails or bolts or other fastenings as required under this Part of this Act shall be liable to a penalty not exceeding twenty pounds and to a daily penalty not exceeding the like amount.

Extending Exemption of Government Buildings.

22. Section 202 (Exemption of Government Buildings) of the principal Act shall be read and construed as if the exemption thereby conferred extended also to the provisions of the London Building Acts (Amendment) Act, 1905.

The Paris Central Telephone Exchange was burnt out on Sunday last; and on the same evening the Magasins de la Ville Saint Denis was also gutted by fire

FIRE INSURANCE AND FIRE PROTECTION.

We have before us the report of the sixth annual meeting of the Association of Professional Fire Brigade Officers, from which we observe that a paper was read by C.O. Eddington on the question of whether insurance companies should be compelled by law to contribute towards the cost of the local fire service. This is a matter that concerns a large number of borough surveyors and architects in private practice who have charge of provincial fire brigades.

At the conclusion of the paper, a resolution was unanimously passed that insurance companies should be compelled to contribute to the cost of the fire service. The resolution was framed in approximately the following words :—"That, in the opinion of this Association, insurance companies should be compelled to contribute towards the cost of the expenses incurred by municipalities in providing and maintaining efficient fire brigades, ether by way of an annual payment or on the basis of a standard scale charge when brigades render service in extinguishing fires which have occurred on properties insured by such companies; and in view of the fact that a Select Committee of the House of Commons has already reported recommending such compulsory payments, all interested local governing bodies throughout the country be requested to take united action, and urge the Government to promote legislation to give effect to the report of the committee as early as practicable.

"That a copy of this resolution be forwarded to all such local governing bodies, and that they be asked to adopt a resolution on the lines therein referred to, and to forward a copy thereof to the Home Secretary and to the Members of Parliament for their respective divisions."

We certainly hold no brief for the insurance companies, and only too well realise that in many directions they could materially improve their position by encouraging better fire prevention measures and fire service organisations, by giving substantial insurance rebates where improved conditions prevail. But, for all that, we consider the paper, the discussion, and the resolution were most extremely out-of-date, for they are the same suggestions and arguments that were put forward some thirty or forty years ago, were thrashed out at that time, and have been condemned by all economists and thinkers on matters of national and municipal finance.

We, of course, know that the arguments are popular; because the insurance companies, and their methods generally, as a rule meet with little favour from the public, and they are certainly not popular with the fire service. Nevertheless, it should be realised that any tax upon the insurance companies will simply come out of the pockets of the insured party, in the form of an increased rate; and, what is more, that the mere fact of such taxation being required will not only give the insurance companies an excuse for raising the rate to the extent of that tax, but for raising it to a greater extent, so that they may make a profit on the tax.

If the insured are to pay towards the maintenance of the fire service through the medium of their insurance premiums payable to the insurance companies, by all means let this be plainly argued out; but to maintain that the

insured party will benefit in any direction, or that the tax-payer and householder will in any way benefit by having the fire service paid indirectly through the insurance companies to which he contributes through his policy payments, is ridiculous. The ratepayer pays but a minimum amount for his fire service in the rate; he will certainly pay more for it in an enhanced insurance premium if the insurance companies have to contribute. The only reasonable argument that we have ever heard that the ratepayer should pay for his fire service through the insurance premium is—that the value of property in a small building is frequently greater than the value of the property in a large building, and that although a small rate only has to be paid on the small building, the amount of protection from fire that that small building requires is really greater than that which the large building requires, and that thus a higher payment should be made by the owner or occupier for his fire service.

We believe this is the argument that found favour in New Zealand, and resulted in a contribution from the insurance companies to the fire service; but we doubt whether the reasoning is sound, and we should prefer matters as they stand at present. Nevertheless, however, we would warn the insurance companies that their growing unpopularity in matters of rates where good fire service exists, or where good fire preventive measures have been adopted, must invariably lead to some defensive measures on the part of the general public, and to increased competition from newly formed companies, who are more generously inclined. They would, we are sure, do well to study the temper of the public at the present moment, if they do not wish eventually to be subjected to State interference and control, and to such taxation as may be deemed advisable.

We have gone to some length in this matter, for as indicated above, so many architects in private practice in the country, as well as many borough surveyors, now hold appointments as local fire chiefs.

Tests by The British Fire Prevention Committee.—We understand that two reports will shortly be issued, one dealing with the impregnation of textiles, and the other with the use of ordinary buckets and not pumps for fire-extinguishing purposes. Both reports should be of more popular interest than is possible to the technical reports dealing with constructional matter, and may therefore appeal to the ordinary man of business, to whom it will supply much valuable information. Fire-extinguishers from the United States will be shortly under test, and these will be followed by certain floor tests, and probably by another series of door tests.

* * *

The Vienna Fire Brigade publishes an extremely interesting annual report, with an appendix of nearly 60 pages dealing with the structural lessons at notable fires. This appendix is profusely illustrated, and is altogether of a most useful character. We dealt earlier in the year with a Vienna fire that was of technical interest in this country. The only additional fire in that city that we desire to mention on this occasion is one that took place in works in which celluloid was used, and where the same experience was obtained as in England as to the extreme celerity with which a celluloid fire will spread.

AMERICAN FIRE DOORS.

The question of the construction of armoured doors was before the National Fire Protection Association at their meeting in May last, and their official report, now issued, of the meeting is interesting reading.

It should be remembered that the armoured door, which is made by a large number of door-makers throughout the United States was originally an American idea—at least, we believe so—and that the insurance people were for many years strong advocates of this type of door.

Gradually however—probably in consequence of the widespread interest that the subject is commanding in Europe, and especially, perhaps, as a result of certain data that have been put before the technical professions in Great Britain—the true value of the armoured door is being investigated by American insurance companies, and it is now probable that the American Fire Office rules on the matter of armoured doors will be immediately modified, and there is every anticipation that there will be a further material amendment of the rules next year.

In the present case, the question of the forming of gases inside armoured doors was before the National Fire Protection Association, and we cannot do better than give the words of the chairman of the committee on fire protection coverings for windows and door openings, as presented in general meeting. The chairman in question is Mr. W. C. Robinson (chief engineer of the Underwriters' Laboratories, Chicago), and the Committee in question comprises about sixteen members, most of whom are insurance surveyors of leading companies, including British companies.

We give his words verbatim, as also those of the members of the Association, who made remarks on the subject.

Mr. W. C. Robinson said: Mr. President and gentlemen—The Committee on Fire Protection Coverings for window and door openings has only a verbal report to make. Owing to the fact that a special endeavour was made last year to place the rules in a condition satisfactory to all, and realising the undesirability of frequent changes, your committee has decided to recommend very few amendments this year. In fact, no criticisms of the present code have been received during the year, and we are pleased to report the adoption of the code by several of our members who had not previously given their formal approval.

There is only one proposition which we would like to lay before the Association, and that is relative to the question of providing an opening in the tin covering on the exposed side of the tin-clad fire doors. It is desired to have a definite wording of the rule inasmuch as it will come in conflict with the present Rule 7, a part of which I will read. (Reading Rule 7): "The fire-resisting value of a wood door encased in tin depends upon the exclusion of oxygen from the wood, thereby retarding or preventing combustion. To obtain this result, the covering must be so applied that during exposure to fire it will present the greatest possible resistance to bulging or opening up at the seams."

That is true in a measure (referring to resistance at the seams under exposure to fire), but any standard fire door, as now made under these rules, if severely exposed will open at the seams, this being due to bulging caused by pressure of the gas generated from the wood. About six months ago the Committee on Devices and Materials instructed the Laboratories to make tests to determine whether or not it would be of benefit to install a reasonably large opening on the exposed side of the door. A report of the result of these tests was rendered at a meeting of the Committee on Devices and Materials and referred to this committee. We are not prepared to recommend the exact wording, but I may state we are in favour of this change, and would suggest that it be opened to discussion here so that the matter may be thoroughly understood. In the minds of very many it is a radical departure actually to cut an opening in the door covering to release the gas. It is contrary to the specification in the present rules. We recommend that a 3-in. opening be placed in the tin covering on the exposed side of the fire door, built in accordance with the standard, for a reasonable sized door, say forty or fifty square feet. Over this hole a tin plate should be soldered to keep out the moisture, using ordinary tinner's solder. The solder will melt in case of fire, and the tin plate will fall off. In order to make the proposition clearer, I will read the conclusions in the report to the Committee on Devices and Materials. (Reading.) (a) A single vent hole of proper size at the middle of the tin covering on the exposed side of a standard fire door is advisable for the following reasons: (1) The larger proportion of the gas generated from the wood core is allowed to escape and burn at the least objectionable point, and the rupture of the joints between the plates and the formation of objectionable openings is prevented. (2) The bulging of the plates is practically eliminated, as no material gas pressure can accumulate on the inside of the door. The joints remain close to the door, and do not tend to unfold. (3) The tendency of the door to warp and curl away from the wall when exposed to severe fire is greatly reduced by the elimination of the bulging in the covering. Note.—The bulging introduces strains at the edges of the door, which tend to cause the door to curl. (4) The absence of bulging permits the door to remain in closer contact with the wall or frame at the edges. (5) The charcoal, when the wood core is reduced, is held more securely in position when no material bulging occurs in the covering. Note.—The 2-in. nails used in applying the covering extend into the core from each side of the door, and act to hold the charcoal in position. Chafing strips bolted through fire doors also aid materially in holding the covering in position when the doors are exposed to severe fire.

(b) A 3-in. hole through the tin covering at the middle of the exposed side of a standard fire door of moderate size affords sufficient vent for the gases generated from the wood core when the door is exposed to severe fire. Note.—The diameter of 3-ins. for the vent hole was selected arbitrarily. The observations during the test would seem to indicate that a vent of this size will serve for doors somewhat larger than forty square feet and also that larger vents can be used without detracting from the fire-retarding qualities of the door.

Mr. Hexamer: I will ask Mr. Robinson whether the hole was made in the wood or in the tin covering?

Mr. Robinson: In the tin covering.

Mr. Hexamer: Were any tests made with reference to several smaller holes rather than one large one?

Mr. Robinson: Two holes might provide circulation, which would cause the rapid combustion of the wood core.

Mr. Hexamer: I mean, numerous small holes?

Mr. Robinson: We made no tests as to that. I might call attention to the fact that the rush of gas through the opening prevents air or fire from entering. You can readily see the cooling influence of the escaping gas.

Mr. Hughes: Have you taken any notice of the effect of the fire going through this hole into the adjoining apartment?

Mr. Robinson: There is no hole in the wood core. There is simply a small disc of tin cut out. There was less damage to the wood back of the opening than on any other part of the door.

Mr. Hughes: Was any test made with a smaller sized opening?

Mr. Robinson: Openings from two to three inches in diameter were tried. I have no hesitancy in saying that a 4-in. hole in the tin covering would have no detrimental effect on the fire-retardant qualities of a fire door.

Mr. Hughes: My idea was, whether a smaller hole would accomplish the same purpose.

Mr. Robinson: We had hoped to connect a gauge to each side of the door, and make observations of gas pressures at different stages of the fire, with a view to ascertaining the size of hole necessary, but were unable to do so. I feel perfectly safe in recommending this action. If you do not provide a hole, you are going to get a hole anyway; so why not provide the kind and location of the hole you want? The committee has found that the covering on every fire door of the tin-clad variety has ruptured when severely exposed. In these cases the rupture has sometimes extended about the length of one tin plate, tearing the joints apart.

Mr. Hughes: Is provision made for the fusing point of the solder?

Mr. Robinson: Ordinary tinners' solder, which will melt at about 460 degrees, will take care of it in ample time in an ordinary fire. The rupture is always outward.

Mr. Phillips: As a matter of information I will enquire the extent of the bulging of the door of this type with the hole.

Mr. Robinson: The bulging of a 2½in. door, tin clad, 5ft. 8in. wide by 8ft. high, was not over one inch in any plate. The covering did not bulge as a whole.

Mr. Phillips: I will also enquire as to the extent of the bulging of a door of that kind without the hole.

Mr. Robinson: Under similar fire conditions the covering on a similar door exposed to approximately 2,000 degrees, would bulge about 15ins. The bulging of the covering would be about 18ins. if the chafing strips were not bolted through the door. It upsets our ideas a little: but with the hole as recommended, and the chafing strips bolted through, a properly made fire door is about as good as this type can be made.

Mr. Frederick: Mr. President, Mr. Robinson speaks of putting the hole on the exposed side of the door; suppose it is exposed equally on both sides?

Mr. Robinson: I do not know of a condition where it would be exposed equally on both sides if you adhere to the standard. Naturally, with double doors the hole would be on the side toward the room. It would perhaps not be detrimental to put it on the other side, except that it would not take care of the gas so readily.

Mr. Frederick: I can imagine conditions under which a single door might be accepted, where it would be exposed severely on one side and mildly on the other.

Mr. Robinson: Put it on the side most exposed, and it would undoubtedly take care of the other side better than with the present form of door.

Mr. Manlove: I will enquire whether, after the door has been exposed to the fire for some time, the amount of gas generated is sufficient to prevent the burning or charring of the wood back of the opening.

Mr. Robinson: Of course, we did not continue the tests to total destruction of the door. There was still a generation of gas as far as our experiments went.

The Chair: Is there any further discussion desired on this question? If not, the chairman of the committee will proceed with his report.

LONDON FIRE BRIGADE HEADQUARTERS.

The headquarters at Southwark Bridge Road are being extended and altered. The ground floor engine house is being placed on the first floor. There is a general supposition that the Fire Brigade Headquarters stands on what was one of the burying pits in the time of the Great Plague, but this is not the case, for whilst many human remains were discovered here in 1884, when the buildings were erected, and they, of course, received reverent treatment, the site was once known as the new Grotto Burial Ground—the "grotto" being the name of an adjoining pleasaunce, much frequented by the quick in its heyday. The land was bought by the authorities of St. Saviour's Parish, under Act 15, George III., a part being apportioned for a workhouse—since incorporated in the present buildings—whilst the ground appropriated for burials was consecrated by the then Bishop of Rochester, on behalf of the Bishop of Winchester, in 1788—a long time this after the awful calamity of 1665. The chief place of interment for the victims of this scourge in Southwark was in Deadman's Place, the Bunhill Fields of South London (adjoining the site of the old Globe Theatre), since incorporated in Messrs. Barclay and Perkins's Brewery.

Obituary.

Mr. George Drew, whose death at Cirencester, at the age of fifty-eight, is announced, was for many years a partner in the firm of Drew Brothers, builders, of Chalford. Among the important contracts on which he was engaged was the erection of the Bingham Free Library at Cirencester a few years ago.

Mr. Leonard Judge, who died suddenly at Hampstead on August 26th, aged twenty-six, from the after-effects of an attack of scarlet fever, was a son of Mr. Mark Judge, architect, and was himself a member of the same profession.

Mr. Leslie William Green, F.R.I.B.A., who died at Mundesley-on-Sea on August 31st, had only reached the thirty-fourth year of his age.

Mr. John William Lotherington Whitfield, architect, of Hull, died suddenly on August 22nd. He began practice on his own account on the expiry of his articles with Messrs. Brodrick, Lowther, and Clarke, of Hull. He was fifty-three years old.

Mr. Edward Hodkinson, architect, of 9, Abbey Street, Chester, died on September 14th. He was one of the best-known architects in Cheshire and North Wales, and designed many notable buildings, and was responsible for the modern portion of Saighton Grange, the residence of Mr. George Wyndham. He was a well-known member of the Chester and North Wales Archæological Society, and was for some years hon. curator and librarian of the Society.

Federation News.

In the section relating to the National Federation of Building Trades Employers of Great Britain and Ireland, on p. 213 of last week's issue the name of Mr. James Denver should have been given as secretary of the Northern Centre; and on that page and on p. 217, the heading "Tyne and Blyth District Federation" should have been omitted. Mr. John Tomlison is secretary to the Northern Centre Conciliation Board, whose proceedings were reported.

The Stockton and District Master Builders' Association made, on September 17th, a presentation to Alderman T. E. Atterby, J.P., and Mrs. Atterby, on the occasion of their recent marriage. Alderman Atterby is one of the best-known builders in the district, having been connected with the trade for about thirty years, and is one of the largest individual builders of cottage property in the town. The district of Newtown practically owes its existence to his enterprise, and by many people it is known as Atterby Town.

Master Painters' Convention at Birmingham.—The fifteenth annual convention of the National Association of Master House Painters and Decorators of England and Wales will be held in Birmingham from September 29th to October 3rd. On Monday evening, September 28th, a reception will be given by the President and Mrs. Teall at the Grand Hotel, and on the Tuesday Viscount Morpeth, M.P., will open an exhibition of decorative art and manufactures at the Bingley Hall. On this occasion the Lord Mayor will welcome the visitors to the city, and subsequently Mr. A. J. Teall will deliver his presidential address. The afternoon is to be devoted to the transaction of business, and at night the Lord Mayor and Lady Mayoress are to receive the delegates at the Council House. A breakfast and conference of presidents and secretaries of associations will take place at the Grand Hotel on the Wednesday, followed by sessional meeting and, in the evening, the annual dinner. On the Thursday evening—after the visitors have spent the day in Shakespeare's country—the annual business meeting will be held at the Grand Hotel, and Friday will be devoted to paying visits to the homes of different industries in Birmingham and to a tour of Bournville.

Trade and Craft.

"ETERNIT" ASBESTOS SHEETING.

The popularity of "Eternit" roofing tiles, to which reference has been already made in these pages, is being repeated, we are informed, in the case of "Eternit" asbestos sheeting for the lining of walls and ceilings, "Eternit" sheets, it is claimed, constituting an extremely handy form of fire-resisting material. They have been largely used at the Franco-British Exhibition, in the construction, for instance, of the New South Wales building and of the class-rooms of the British Education Department, as well as of various sections of the Scenic Railway. What is perhaps even more significant is the fact that the London County Council schools are being lined throughout with "Eternit" sheets, with the object of rendering them fireproof. We note a corridor of one of the London County Council schools that has been constructed by Mr. Wm. Harbrow at his "Eternit" Building Works, South Bermondsey, S.E. The studding is spaced at 16in. centres to dado height, and at 24in. above the dado height. The joints are covered with wood fillets, giving the building a solid finish, while the "Eternit" sheets render it impervious to flames.

The "Eternit" sheets are not only fire-resisting, but are also heat-resisting, and are adopted by H.M. Board of Works and by other public authorities for protecting steel joists and beams against fire and heat. "Eternit" sheets, it is stated, are being largely used in tropical climates, and in all parts of the United Kingdom, by Government departments, such as the Admiralty, the War Office, the Board of Education, the Prison Commissioners, the Crown Agents for the Colonies, etc., as well as by the London County Council, and other public authorities, and on the electric railways. A very great number of iron buildings that have been erected within the London area are protected against fire by lining the walls and ceiling with "Eternit" sheets, and buildings so protected receive permanent licences from the London County Council.

"Eternit" sheets secure satisfactory alignment, and, being of great strength, increase the structural stability of the buildings in which they are employed. After fixing, the sheets neither sag nor break with the vibration common to engine-rooms. They do not rot, crack, oxidise, shrink, nor crumble, and are indestructible by white ants, weavil, or other vermin, or by fire, acids, or acid fumes. The price of the sheets is moderate, and the work of fixing to studding is cheap, and can be done very rapidly. A further advantage is that premises lined with the sheets are ready for papering and occupation as soon as the sheets have been nailed to the studding. If desired, the sheets are supplied in terra-cotta or blue colour, thus dispensing with painting and papering. The manufacturers are Messrs. G. R. Speaker and Co., 29, Mincing Lane, E.C.

MESSRS. WILLIAM COOPER'S SALE.

Messrs. William Cooper, Ltd., the well-known horticultural providers, show, in an interesting catalogue of their twenty-first autumn clearance sale, a large number of attractively designed greenhouses and conservatories of various types and sizes—lean-to, span, and lantern-roofed—besides vineries, forcing-houses, and every conceivable kind of shed and shelter, large and small, from a chicken-coop to a mission church. The catalogue shows, also, every appliance and implement that the most complete and up-to-date horticulturist can require. It has an obvious interest and value for builders, and can be obtained from the firm, Old Kent Road, S.E.

Bankruptcies.

ANDERSON, R., architect, 39, Victoria Street, Westminster. R.O., Sept. 7. First meeting Bankruptcy Court, Sept. 21. P.E., same, Oct. 28 at 11.30.

ARMSTRONG, WM., granite merchant, Honey Street, Bodmin, late Wenford Street, Breward. R.O., Sept. 9. Adj., same day.

BARKER, JOSEPH WM. LANCELOT, house furnisher and artistic decorator, 214, Western Road, Crookes, and 12, Haymarket, Sheffield. First meeting O.R.'s, Sheffield, Sept. 23, at 12. P.E., C.C., Sheffield, Oct. 8, at 2.

CHAMBERS, HARRY, joiner and builder, 44, Revidge Road, and Back Granville Road, Blackburn. R.O., Sept. 10. Adj., same day.

DARVILL, EDWARD, builder, late 2, Engadine Street, Southfields. Adj., Sept. 11.

GALE, THOS. GEO., builder, 165, Montague Street, Worthing, late Rye House, Findon, and Rye House, Tarring Road, Worthing. R.O., Sept. 8. First meeting O.R.'s, Brighton, Sept. 24, at 12. P.E., C.C., Brighton, Oct. 1 at 11. Adj. Sept. 8.

GRANT, JOHN MACTAGGART, 63, Cornhill, E.C., merchant and company director. Liabilities £37,896; deficiency, £32,512.

GRIFFITHS, WILLIAM LEWIS, architect and surveyor, Lincoln Chambers, Lincoln's Inn, W.C. Liabilities returned at £11,695; no available assets.

HARPER, JAS., late joiner, 42, Valley Mount, late 19, Valley Road, Harrogate. R.O., Sept. 7. First meeting O.R.'s, York, Sept. 23, at 3. P.E., Courts of Justice, York, Oct. 2, at 11. Adj., Sept. 7.

HART, CHAS., builder, Laurel Cottage, Hemyock. First meeting 10, Hammet Street, Taunton, Sept. 28 at 12.30. P.E., Guildhall, Taunton, same day at 2.

HIGBY, CHAS., builder and contractor, Hare Lane, Claygate. R.O., Sept. 10. First meeting 132, York Road, S.E., Sept. 25 at 11.30. P.E., C.C., Kingston, Oct. 13 at 2.30.

JONES, JNO. CLARKE, joiner and builder, Woodville Cottage, Church Street, and Kingsway, Frodsham. First meeting, O.R.'s, Manchester, Sept. 23 at 2.30. P.E., C.C., Warrington, Oct. 2 at 11.

LACEY, JOSEPH CHAS., builder and contractor, 1, Ashburnham Road, Eastbourne. R.O., Sept. 8. Adj., Sept. 11.

LENEY, J. AND SON, builders, 63, St. John's Road, Tunbridge Wells. R.O., Sept. 10.

MOODY, GEO. AND WALTER LUCAS (trading as Moody and Lucas), builders, 5, Ravensbury Terrace, Earlsfield. Adj., Sept. 7.

SHEPPARD, JNO. THOS. (trading as J. T. Sheppard and Co.), builder, Hill Street, Evesham, and Cornwall Villa, Honeybourne. First meeting O.R.'s., Worcester, Sept. 21. P.E., Guildhall same, Sept. 29 at 2.

SHORT, JNO. THOS., road contractor, Holt Street and Stranton Green, West Hartlepool, First meeting O.R.'s., Sunderland, Sept. 23 at 3. P.E., C.C., Sunderland, Oct. 8 at 11.15.

New Companies.

TINSON BROTHERS AND COMPANY, LTD.—Capital, £1,000, to carry on the business of builders, contractors, decorators, metal workers, quarrymen, dealers in stone, sand, lime, bricks, tiles, slate and building requisites, etc. The first directors are L. A. Tinson, G. Tinson, A. Tinson, and E. J. Wilkins. Registered August 31, by G. F. Wilkins, Markham House, King's Road, Chelsea, S.W.

JONES BROS. AND CO. (BANGOR), LTD.—Capital, £4,000, to acquire the business of a slate, marble and stone goods manufacturer, sculptor, slate enameller, and coal dealer, carried on by W. Jones, at Garth Slate and Marble Works, Garth, Bangor. Registered office, Garth Slate Works, Garth, Bangor. Registered August 31, by Jordan and Son, Limited, 116-17, Chancery Lane, W.C.

F. J. BAILEY AND CO. LTD., capital £2,000, to acquire the business of a builder, contractor, farmer, lime-burner and merchant, sand, cement, gravel and timber merchant, etc., carried on by F. J. Bailey. The first directors are F. J. Bailey, J. W. Bailey, and F. E. Bailey. Registered office, Delve House, Ashwell, near Baldock, Herts. Registered August 31, by Curtis, Gardner and Co., Ltd.,

WEIBKING AND CO., LTD., capital £1,500, to acquire the business of builders and decorators carried on by A. J. Weibking and S. L. Grist, as Weibking and Co. The first directors are: A. J. Weibking and S. L. Grist. Registered office, 60-62, Southgate Road, Hackney, N.E. Registered September 10th, by J. Barrington and Co., 45, Chancery Lane, W.C.

W. J. AND A. R. SUTCLIFFE, LTD., capi £5,000, to acquire from W. J. Sutcliffe and A. Sutcliffe certain land and buildings in Fl Flintshire, and Wallasey, Cheshire, and to ca on the business of builders, contractors, decc tors, etc. W. J. Sutcliffe and A. R. Sutcliffe permanent governing directors. Registe September 9th, by T. T. Hull and Son, 22, Ch cery Lane, W.C.

WARDS, LTD., capital £1,000, to carry on the b ness of building contractors, etc. C. W. Ward managing director. Registered office, 1, Ma Hill West, W. Registered September 9th, by R. Butcher, 88-9, Chancery Lane, W.C.

Partnerships Dissolved.

STEPHEN ISAAC HUBBLE, ALBERT GRAY, SAMUEL MASON, carrying on business as build at Blackpool and elsewhere, under the style "Gray, Mason and Co.," has been dissol Sept. 9.

HAMMOND ISHERWOOD and FRED PEARSON LE carrying on business as builders and contract at Girlington, in the city of Bradford, under style of Isherwood and Leach, has been dissol Sept. 12.

Insurance.

Subscribers to "The Builders' Journal" entitled to a Free Insurance for £500. E subscriber should apply for this, sending postcard with the name of the newsa with whom the order has been placed. scribers can also obtain a General Acci and Sickness Insurance (the "Lighthou policy) at a reduced premium, which cludes the Annual Subscription to Journal. A pamphlet giving full particu can be obtained free on application.

Free £500 Accident Insurance Coup have this week been sent to the follo ing:—

W. F. H. (Lamberhurst), F. C. (Worthing), F (Birkhenhead), G. M. S. (Lincoln), B. D. (Talbot), C. K. (Handsworth), S. T. (Stan Hill), A. S. S. (Kirkcaldy), F. F. (Adelphi, W H. W. (Southport), W. R. (Girvan), H. V. P. mouth), J. C. (Frome), J. B. (Northampton W. A. (Cambridge), A. E. S. K. (Dover), J (Oldham), J. R. S. (Arnold), A. T. F. (Y W. R. P. (London, W.C.), W. P. (Normanton A. C. (Windermere), J. C. W. (Argyll), C. ((Clapham Common), J. P. H. (Kensington) A. P. (Edinburgh), F. C. C. (Dublin), J. (Exeter), J. G. C. (Cheltenham), F. P. Rus ton).

Coming Events.

Wednesday, Sept. 23.
ROYAL SANITARY INSTITUTE.—J. Priestley, etc., on Sanitary Law, 7 p.m.

Friday, Sept. 25.
ROYAL SANITARY INSTITUTE.—J. Priestley, etc., on Sanitary Law, 7 p.m.

Saturday, Sept. 26.
BUILDERS BENEVOLENT ISTITUTION (London Day for returning forms of application for Ele of Pensioners.

Monday, Sept. 28.
ARCHITECTURAL ASSOCIATION.—School of Arc ture Evening Schools open.

Monday, Sept. 28, to Friday, Oct. 2.
IRON AND STEEL INSTITUTE.—Autumn Meetin Middlesbrough.

Saturday, October 3.
ROYAL INSTITUTE OF BRITISH ARCHITEC Last day for applications for the Preliminary Intermediate Examinations.

Saturday, October 10.
ROYAL INSTITUTE OF BRITISH ARCHITEC Last day for applications for the Final and S Examinations.

Monday, October 12, to Wednesday, October
MIDLAND COUNTIES BUILDING TRADES EXHIB Bingley Hall, Birmingham.

Wednesday, October 14.
INSTITUTE OF BUILDERS.—Annual Dinner, hall Rooms, 7 p.m.

Tuesday, October 20.
NATIONAL FEDERATION OF BUILDING TRADE PLOYERS.—Annual Conference of Secretaries, don.

Thursday, November 5.
BUILDERS' BENEVOLENT INSTITUTION.—A Dinner, Whitehall Rooms, 7 p.m.

Monday, November 9, and Tuesday, Novemb
ROYAL INSTITUTE OF BRITISH ARCHITEC Preliminary Examination. (Applications to be not later than October 3.)

Monday, November 9, to Thursday, Novemb
ROYAL INSTITUTE OF BRITISH ARCHITEC Intermediate Examination. (Applications to b not later than October 3.)

Monday, November 16, to Thursday, Novemb
INTERNATIONAL CONGRESS OF BUILDERS, P

Thursday, November 19, to Friday, Novemb
ROYAL INSTITUTE OF BRITISH ARCHITEC Final and Special Examinations. (Applicatio be sent not later than October 10.)

PRACTICAL NOTES

FOR

ARCHITECTURAL DRAUGHTSMEN

BY

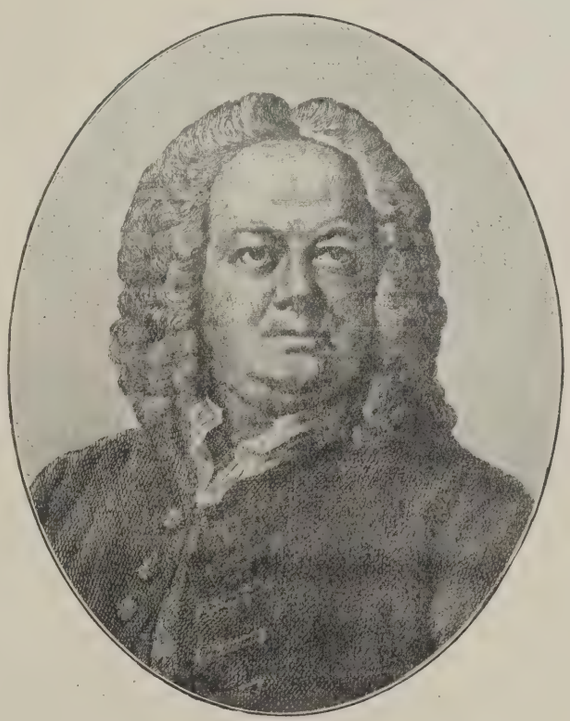
A. W. S. CROSS, M.A., F.R.I.B.A. and A. E. MUNBY, M.A., A.R.I.B.A.

Part 1. The Orders and their Application.

Plate 1. Introduction.
„ 2. The Four Orders.
„ 3. The Tuscan and Doric Orders in detail.
„ 4. The Ionic and Corinthian Orders in detail.
„ 5. Details of Imposts and Arch Moulds.
„ 6. Order upon Order and Intercolumniation.
„ 7. Doorways and Pediments.
„ 8. Windows and Entablatures.
„ 9. Windows, rusticated treatment.
„ 10. Venetian and other Windows.
„ 11. Niches and their Treatment.
„ 12. Block Cornices, Balusters, Entablatures and Entasis.

Part II. Details of the Orders.

Plate 13. Rules for Setting out the Volutes of the Ionic Capital by (1) Gibbs. and (2) Vignola and Palladio.



JAMES GIBBS.

Plate 14. Details of Ionic and Corinthian Capitals.
„ 15. Examples of Arcading (Ionic and Doric).
„ 16. Examples of Arcading (Tuscan and Corinthian).

Part III. Constructional Details.

Plate 17. Domes.
„ 18. Pendentives, Circular Staircases and Wreathed Columns.
„ 19. Gothic Tracery and Vaulting.

Part IV. Perspective.

Plate 20. Notes on Architectural Perspective.
„ 21. Setting up a Perspective.

Part V. Shadows.

Plate 22. Explanatory matter regarding the projection ofShado ws.
„ 23 to 27. Examples illustrating Shadows on various architectural details.

"PRACTICAL NOTES" contains a mass of valuable information which it is essential that the Architect should know to enable him to give that harmony, grace and proportion which exemplified the works of Ancient Greek and Roman Artists, many of which are still the admiration of the whole world. It is invaluable to students preparing for the examinations of the R.I.B.A., showing how to draw The Orders correctly with the smallest possible amount of work and study.

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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Barnstaple.—For extensions to Gasworks, Barnstaple, for the company. Mr. Spencer Edwards, P.A.S.I., architect and quantity surveyor, Barnstaple:—

A. Darch, Yarnscombe	£572
E. Karslake, Barnstaple	543
J. Bryant and Son,* Barnstaple ...	534

*Accepted.

Boxmoor.—For erection of a house at Boxmoor for H. Smith, Esq., M.A., from drawings by Albert S. Bullock, A.R.I.B.A.:—

Willmott and Sons, Hitchin	£2,944
Darvell and Sons, Chorley Wood ...	2,790
H. Brown, London	2,426
Robertson, London	2,283
Wright, Purley	2,197
Clark Bros.,* Watford	2,136

*Accepted provisionally.

Kirkwall (Scotland).—For the enlargement of the head post office at Kirkwall, for the Commissioners of H.M. Works and Public Buildings:—

		Credit
A. and R. Dunbar	£1,989 18 0	£91 7 1
Scott, Morton and Co.	1,981 0 0	40 0 0
Melrose and Thomson ...	1,748 5 3	76 5 9
S. Baikie and Son	1,748 2 0	73 2 0
W. B. Peace and Son* ..	1,646 3 3	97 5 4

*Accepted.

London, W.—For proposed rebuilding of 439 to 451, Edgware Road. Mr. F. W. Foster, architect, 41, Bedford Row, W.C. Quantities by Mr. Ernest T. Verity:—

J. Simpson and Sons	£8,193
F. G. Minter	8,177
J. Carmichael	8,157
J. Allen and Sons	7,995
Allen and Co.	7,963
Rice and Sons	7,777
C. Gray*	7,700

*Accepted.

London, W.—For proposed rebuilding of 9 and 10, Marble Arch. Mr. F. W. Foster, architect, 41, Bedfod Row, W.C. Quantities by Mr. Ernest T. Verity:—

Rice and Sons	£12,889
Simpson and Sons	12,293
J. Carmichael	11,759
C. Gray	11,679
F. G. Minter	11,420
J. Allen and Sons	11,400
Allen and Co.*	11,250

*Accepted.

London, W.—Accepted for additions to 45, Baker Street. Mr. F. W. Foster, architect, 41, Bedford Row, W.C.:—

Foxley and Co.	£1,036

Lydbrook.—For the erection of a school for the Gloucestershire County Council. Messrs. Medland and Pryer, 15, Clarence Street, Gloucester. Quantities by Mr. E. A. Pryer, Clarence Street:—

Mackie and Co., Monmouth ...	£4,654 10 0
Beech and Co., Ross	4,531 10 0
A. J. Colbourne, Swindon ...	4,059 0 0
J. Long and Son, Bath ...	3,993 0 0
Estcourt and Sons, Gloucester	3,989 0 0
Bowers and Co., Hereford ...	3,856 0 0
W. T. Nicholls, Glucester ...	3,737 0 0
Wm. Jones, Gloucester ...	3,735 0 0
E. J. Flewelling, Lydbrook ...	3,735 0 0
H. Ash, Devizes	3,710 0 0
A. S. Cooke, Stroud	3,691 12 3
Dimery and Sons, Berkeley ...	3,656 3 3
E. W. Wilks and Sons, Hereford	3,648 0 0
Wm. Crane, Ltd., Nottingham	3,430 19 5

Melton Mowbray.—For the erection of new secondary school:—

F. Evans, Nottingham	£7,350
I and A. Brazier, Bromsgrove ...	7,300
W. Corah and Son, Loughborough	7,150
J. T. Ball, Barrow-on-Soar	6,900
W. F. Harding, Loughborough ...	6,880
E. Clarke, Melton	6,788
T. and H. Denman,* Melton ...	6,690
E. Fox, Leicester	6,600

*Accepted.

Middleton. — Accepted for construction and erection of mechanical filter house, near Clay Lane Reservoir, for Heywood and Middleton Water Board. James Diggle and Son, Civil Engineers, Heywood, Lancashire.

R. Partington and Son, Middleton, £1,510.

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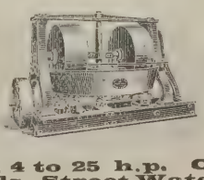
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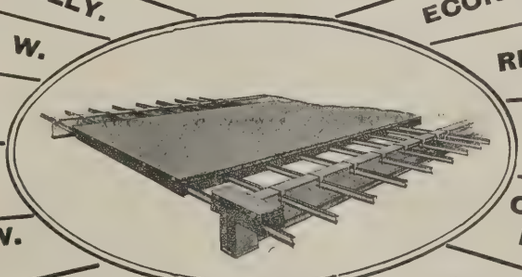
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(*Tenders continued from page vi.*)

Middleton.—For alterations to butcher's shop at the Middleton Junction Store, for Middleton Co-operative Society. F. W. Dixon, architect, Trevelyan Buildings, Manchester:—

R. Partington and Son	£298
Wright and Richards	292
G. W. Haslam	280
S. Pollitt and Sons	280
J. Simpson and Son	278
J. H. Heywood and Sons	275
C. S. Sexey	269
C. Alderson*	250

*Accepted.

New Herrington (co. Durham).—For the erection of two cottages for the New Herrington Workmen's Club. Mr. Jas. Palliser, architect, Philadelphia, Fencehouses. Quantities by architect:—

Thornby Bros.	£910 0 0
J. Liddle	653 0 0
G. Wardroper	597 10 0
W. Rutherford	580 0 0
C. H. Place	580 0 0
J. Harrison	569 0 0
H. Wilson	510 0 0
M. Brown	495 0 0
J. W. Downing, Sunderland	495 0 0

Sheerness.—For the erection of hall upon site at corner of High Street and St. George's Road, Sheerness, for the Trustees. Mr. E. J. Hammond, C.E., M.S.A., architect, 21, Balmoral Road, Gillingham, Kent:—

S. Wiles and Sons, Erith	£2,331 17 6
S. Curd, Queenborough	2,250 14 10
Thomas and Edge, Woolwich	2,193 0 0
Chas. Wilson, Sheerness	2,117 0 0
A. G. Webb, Rochester	2,099 0 0
Johnson and Co., London	2,040 0 0
Sturry Building Co., Sturry, nr. Canterbury	2,025 0 0
Barden and Head, Maidstone	1,997 10 0
A. E. Tong, Gravesend	1,997 0 0
C. E. Skinner, Chatham	1,955 0 0
H. E. Phillips, Gillingham	1,940 0 0
Amos and Foad, Whitstable	1,880 0 0
L. Seager, Sittingbourne	1,866 0 0
G. Gates and Sons, Lindsbury	1,850 0 0
West Bros.,* High Street, Rochester, Kent	1,789 0 0
J. Bligh, Sheerness	1,773 0 0

*Accepted.

Southall.—For the supply and fixing of wrought-iron ornamental gates, etc., for the Southall-Norwood Urban District Council. Mr. R. Brown, engineer and surveyor:—

Fittings, Limited, London	£1,027
Caslake and Co., Willesden Junction	996
A. W. Elwood, London	983
C. Hall, South Hampstead	939
W. Brown and Son, Southall	938
Lockerbie and Wilkinson, Tipton, Staffs.	919
Bayliss, Jones, and Bayliss, London	906
J. Priest and Son, Bristol	866
W. Hayward and Sons, Wolverhampton	780
W. Gratix and Sons, Manchester	773
Wheeler Bros., London	747
Hill and Smith, Brierley Hill, Staffs.	742
W. Miller and Sons, Wolverhampton	738
J. Elwell, Birmingham	705
W. J. Mullings,* Bristol	633

Surveyor's estimate, £700.
*Accepted.

Southend.—For the Southchurch beach esplanade extension, for the Corporation:—

Seymour and Hansen, Bush Hill Park, N.	£9,422
C. Wall, Limited, Grays	8,332
R. Blackwell and Co., Westminster, S.W.	7,886
Shelbourne and Co., 70, Fenchurch Street, E.C.	7,620
Rawkins and Jackson, City Road, N.	7,525
J. Mowlem and Co., Westminster	7,303
R. C. Brebner and Co., Edinburgh	6,865
Whur and Campkin, Southend	6,700
A. E. Nunn, Bloomfield Street, E.C.	6,684
Parsons and Parsons, Ilford	6,674
J. C. Flaxman, Southchurch Road, Southend	6,600
G. Bell and Co., Tottenham, N.	6,144
Fry Bros., Gravesend	6,093
T. W. Pedrette, Bush Hill Park, N.	6,037
Pedrette and Co., Queen Victoria Street, E.C.	5,974
O. T. Gibbons, Leytonstone	5,956
A. Fasey and Sons, Leytonstone, N.E.	5,956
W. Ball and Co., Leyton, N.E.	5,805
W. Iles,* Southend	5,700

Borough engineer's estimate, £6,000.
*Accepted.

Tamworth. — Accepted for the outfall sewer, rising main tanks, etc., in connection with the joint outfall works for the borough and district sewage schemes. Mr H. J. Clarson, surveyor.
Manders, Leyton, £11,800 17s. 11d.

Thames Ditton.—For erection of a new boys' Council School, for the Surrey Education Committee. Messrs. Jarvis and Richards, architects, 10, Queen Anne's Gate, S.W.:—

J. Wheatley and Sons, Ltd.	£4,900
E. Potterton	4,661
E. Stokes and Sons	4,538
S. N. Soole and Son	4,469
Martin, Wells and Co., Ltd.	4,435
R. T. Hughes and Co., Ltd.	4,394
D. Waller	4,325
J. Burges and Sons	4,272
W. Lawrence and Son	4,229
T. J. Hawkins and Co.*	4,139

*Accepted.

Twynyrodyn (Wales).—Accepted for erecting seven class-rooms and cookery-room, cloakrooms, etc., at the Council Schools, for the Merthyr Tydfil Education Committee. Mr. J. Llewellin Smith, architect, Town Hall, Merthyr Tydfil:—
A. J. Colborne, Swindon £8,683 16 0

Walsall. — Accepted for supplying and laying about 7,400 yards of granite setts in Pleck Road, for the Walsall Town Council. Mr. John Taylor, borough surveyor.
George Percy Trentham, £4,050.

Wells (Somerset).—Accepted for new laundry buildings and alterations to boiler-house at the asylum at Wells, for the Sub-Committee of the Somerset and Bath Asylum. Messrs. G. T. Hine and Co., 35, Parliament Street, Westminster, architects.
Pollard and Son, Bridgwater, Somerset, £5,450.

Whetstone (Leicestershire).—For erection of a new Baptist church. Messrs. Tait and Herbert, architects, Leicester and Coventry:—

P. Rourke	£2,200
Halford and Sons	2,197
Hutchinson and Son	2,180
Kellett and Son	2,140
A. and W. Chambers	2,139
Clarke and Garratt	2,100
Rudkin and Son	2,045
F. Elliott,* Leicester	2,031

*Accepted.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Sept. 25. MARAZION.—Erection of a villa at the picnic grounds, Marazion. Plans and specifications can be seen at J. A. Treglown's auction and valuation offices, Marazion. Sealed tenders must be sent to the above on or before Sept. 25.

Sept. 28. SANQUHAR.—Mason, Joiner, Slater, Plumber and Plaster works in connection with the restoration of the public Hall in Sanquhar, recently destroyed by fire, for the Sanquhar Public Halls Co., Ltd. Plans, etc., may be seen and schedules of quantities obtained from the subscriber, or from Ingram and Brown, architects and C.E., Kilmarnock. Sealed offers marked "Tender for Works of Public Hall, Sanquhar," to be lodged on or before Sept. 28, with James R. Wilson, secretary,

Sept. 28. NEW MALDEN (Surrey).—Internal alterations to ironwork shed and building new stokehole, etc., at Norbiton Common Farm, New Malden Surrey, for the Kingston union. Plans and specification may be seen, and bills of quantities and form of tender obtained, on application to William H. Hope, C.E., architect and surveyor, 12, Clarence Street, Kingston-on-Thames. Tenders to be delivered,endorsed "Tenders for Alterations," on or before Sept. 28 to Jas. Edgell, solicitor. clerk to the guardians, union offices, Coombe-road, Kingston-on-Thames. Fair wages clause.

Sept. 28. KINGSTON-ON-THAMES.—Internal alterations, and erection of small additions to the workshops at the workhouse, Kingston-on-Thames, for the guardians of the union. Plans and specifications may be seen, and bills of quantities and forms of tender obtained, on application to William H. Hope, C.E., architect and surveyor, 12, Clarence Street, Kingston-on-Thames. Tenders to be delivered endorsed "Tender for alterations," on or before Sept. 28 to Jas. Edgell, solicitor, clerk to the guardians union offices, Coombe-road, Kingston-on-Thames. Fair wages clause.

Sept. 28. TEIGNMOUTH.—Construction of sea-defence works, comprising about 470 lineal yds. of masonry and concrete walls, and 680 lineal yds. of reinforced concrete sheet piling, with incidental works, adjacent to the promenade, Teignmouth, for the U.D.C. Plans may be seen, and copies of the general conditions, specification, bills of quantities, and form of tender obtained, on application to Charles F. Gettings, engineer, town hall, Teignmouth, and payment of a deposit of five guineas. Sealed tenders, upon the forms supplied, and priced bills of quantities, must be returned in the envelopes supplied, and addressed to A. Percival Dell, clerk to the council, town hall, Teignmouth, endorsed "Tender and Schedule for Sea-Defence Works," by 9 a.m. on September 28. Fair wages clause.

Sept. 28. WREXHAM.—Pulling down and rebuilding a boundary wall, erecting a porch, and other works in Egerton Street, for the Corporation. Plans and specifications may be seen, and form of tender obtained, on application to John England, borough engineer, Willow Road. Tenders, endorsed "Egerton Street Improvement," to be delivered on or before Sept. 28, to Lawson Taylor, town clerk, Guildhall, Wrexham.

Sept. 28. NEWCASTLE-UPON-TYNE.—Construction and erection of about 180 tons of steelwork for the bridge over the Ouseburn, in connection with the quay extension, for the Corporation. On and after September 10, and on payment of £2 2s. to the city treasurer, town hall, Newcastle-upon-Tyne, general conditions, specification, bill of quantities, and form of tender can be obtained, and drawings inspected at the city engineer's office, town hall. Blue prints of any of the eight plans can be obtained on payment of 2s. 6d. each to the city treasurer, which sum will not be returned. Tenders, addressed to the city engineer, town hall, Newcastle-upon-Tyne, and endorsed "Bridge over Ouseburn," to be received not later than 10 a.m. on September 28.

Sept. 29. GALEMIRE (Hensingham).—Erection of a new hospital ward and coke store at Galemire, Hensingham, for the joint hospital committee. Drawings, specifications, and conditions of contract may be inspected at the office of George Boyd, C.E., 33, Queen Street, Whitehaven, from whom form of tender and schedule of quantities may be obtained on deposit of 5s. Tenders for the whole of the works, or separately, as set forth in the schedule of quantities. Sealed tenders, endorsed "Tender for New Ward and Coke Store," will be received up to noon on Sept. 29, by Wm. Henry Atkinson, clerk, Union Hall, Whitehaven.

Sept. 29. BROMLEY.—Erection of a new secondary school, at Bromley, to accommodate 220 girls, for the Kent Education Committee. Plans and specincation, prepared by the committee's architect, W. H. Robinson, M.S.A., and conditions of contract, may be inspected at the offices of the committee, on and after September 14, between the hours of 10 a.m. and 4 p.m. (Saturdays and Sundays excepted). Persons desiring to tender and receive a copy of the bills of quantities must send their names, accompanied by a deposit of £3 3s., to the secretary, not later than noon, September 14. Tenders, on the form supplied with bills of quantities, must be enclosed in a sealed envelope, endorsed "Bromley Tender," addressed and delivered not later than 10 a.m. on September 29, to Fras. W. Crook, secretary, Kent Education Committee, Caxton House, Westminster, S.W.

Sept. 30. SWAFFHAM.—Erection of a shop front to the co-operative stores, Swaffham. Persons desirous of tendering can inspect plans and specifications, and obtain copies of the quantities on application to A. F. Scott, architect and surveyor, 24, Castle Meadow, Norwich. Tenders to be delivered not later than 10 a.m. on Sept. 30, addressed to the secretary, Co-operative Stores, Swaffham, and endorsed "Tender for Shop Front."

Sept. 30. CAMBERWELL.—Erection of seven working-class cottages in Pitman Street, Camberwell, for the corporation. No quantities will be supplied. Specifications and particulars can be obtained on application to W. Oxtoby, borough engineer, town hall, Camberwell, on deposit of one guinea. Tenders to be delivered on or before 6 p.m., on Sept. 30, to C. William Tagg, town clerk.

Sept. 30. RUSTINGTON (Sussex).—Erection of an Entrance Lodge at Millfield, Rustington, Sussex, in accordance with drawings, conditions of contract, and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, for the Metropolitan Asylums Board. Drawings, conditions of contract, bills of quantities, specification, and form of tender, may be inspected at the office of the board, Embankment, E.C., and obtained upon a deposit of £1. Tenders, addressed as noted on the form, must be delivered not later than 10 a.m. on Sept. 30, to T. Duncombe Mann, clerk to the board, Embankment, E.C.

Oct. 1. KENSINGTON.—Providing and laying pitch-pine floor, plastering walls, and sundry decorative works to ward No. 1 of the infirmary, Marloes Road, Kensington, for the guardians. Specification and form of tender can be obtained between 10 and 4 (Saturdays, 10 and 1). Tenders are to be made on the forms provided, and are to be delivered not later than 3 p.m., on Oct. 1, to W. R. Stephen, clerk to the guardians, guardians' offices, Marloes Road, Kensington, W.

Oct. 5. LLANELLY.—Erection of a new Calvinistic Methodist chapel, at Glenalla Road, Llanelly. Plans and specifications may be inspected at the office of Wm. Griffiths, F.S.I., architect. Sealed tenders to be delivered on or before Oct. 5, to T. Davies, 59, Marble Hall Road, Llanelly.

Oct. 5. LAMPETER.—Erection of premises at Lampeter, for the London and Provincial Bank, Ltd. Plans and specifications may be seen at the office of the architect. Tenders, sealed and endorsed, to be delivered not later than noon, on Oct. 5, to Ll. Bankes Price, architect, Doldrement, Lampeter.

Oct. 5.—ST. IVES (Cornwall).—Erection of a caretaker's cottage, for the Corporation. Plans may be inspected at the office of the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, where specification, form of tender, and bill of quantities may also be obtained on deposit of 3 guineas. Tenders on the form provided must be delivered under seal, and endorsed, "Tender for St. Ives Waterworks," before 10 a.m. on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Engineering.")

Oct. 5. WESTPORT (Co. Mayo).—Excavations pipe laying, erecting pumping station, and concrete reservoir, etc., at the Westport water-works, for the Urban Council. Copies of the specification and quantities may be had on application to C. Mulvany, M.I.C.E., Athlone, on deposit of £1. Sealed tenders, properly endorsed, must be lodged, not later than noon on Oct. 5, with Francis Egan, town clerk, urban council office, Westport (co. Mayo). (See also "Engineering" and "Iron and Steel.")

Oct. 5. SEVENOAKS.—Erection of a chapel at the new cemetery, Greatness Park, Sevenoaks, for the Urban District Council. Plans, sections, detail drawings, and specifications may be inspected, forms of tender and further information obtained at the offices of S. Towlson, A.M.I.C.E., surveyor to the Council, upon payment of a cash deposit of £5. Tenders must be on the forms supplied and sent enclosed in an envelope, endorsed "Tender for Cemetery Chapel," on or before Oct. 5, to Herbert J. Thompson, clerk to the council, Urban Council offices, Argyle road, Sevenoaks.

Oct. 5. NEWPORT.—Erection of a technical institute in Clarence Place, for the Education Authority, in accordance with drawings and specification, which may be seen at the office of the borough engineer, town-hall, where the bills of quantities, specification, and form of tender may also be obtained upon production of the borough treasurer's receipt for £5 5s., Sealed tenders, endorsed "Technical Institute." are to be sent not later than 5 p.m. on Oct. 5, to Albert A. Newman, town clerk and clerk to the local education authority, town hall, Newport. Fair wages clause.

Oct. 6. LLANELLY.—Additions, alterations, and improvements to Capel Newydd C.M. chapel, Llanelly. Plans and specifications, by Owen Morris, Roberts and Son, Mm.S.A., architects and surveyors, Portmadoc, can be inspected at the house of I. Davies, Ardwyn, Bryncaerau Villas, Llanelly, to whom tenders are to be sent (sealed and endorsed "Capel Newydd"), not later than Oct. 6.

Oct. 6. ELTHAM PARK, S.E.—Erection of a shelter and conveniences at Eltham Park, S.E., for the L.C.C. (No quantities have been prepared.) Persons desiring to tender may obtain drawings and specifications, form of tender, and other particulars at the architect's department, 19, Charing Cross Road, W.C., upon previous payment to the cashier of the council, at the county hall, Spring Gardens, S.W., of 10s. Tenders must be upon the official forms. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W., and marked "Tender for Eltham Park." No tender will be received after 11 a.m. on October 6. Fair wages clause.

Oct. 7. WALLS (Shetland).—Construction of a steamboat pier at Walls, Shetland. Plans and specification may be inspected at, and schedules of quantities obtained from Sievwright and MacGregor, solicitors, Lerwick; Scottish office, engineering dept., 122, George Street, Edinburgh; and from G. Woulfe Brenan, M.I.C.E., Albany Street, Oban, with whom sealed offers are to be

Oct. 7. BURTON-UPON-TRENT.—Erection of a new Police Station, Superintendent's House and Court House, in the borough, for the Corporation. Drawings, specifications, and conditions of contract may be seen, and bill of quantities and form of tender obtained at the office of Henry Beck, architect, 10, High Street, Burton-upon-Trent, on and after Sept. 23, upon the deposit of a cheque or post-office order for £3 3s. Tenders, endorsed "New Police Station, etc.," must be delivered, not later than 10 a.m. on October 7, to T. N. Whitehead, town clerk, town hall, Burton-upon-Trent. Fair wages clause.

Oct. 7. BRIDGEND.—Erection of block of conveniences in Airing Court and additions, etc., to laundry at Angleton Asylum, Bridgend. Repairs to attendants' messroom, etc., at Parc Gwvllt Asylum for the committee of visitors of the Glamorgan county asylum. Specifications, bills of quantities, and forms of tender may be obtained from the clerk, and the drawings may be seen either at the office of the architect, R. S. Griffiths, Tonypandy, Rhondda Valley, or at Angelton asylum, Bridgend. Separate sealed tenders, marked outside "Tender for Laundry and Conveniences, Angelton," or "Repairs to Floors, Parc Gwvlt," must be received not later than noon on October 7th, to W. E. Allen, clerk to the committee of visitors, Glamorgan county council offices, Westgate Street, Cardiff.

Oct. 10. GALWAY.—Erection of a new fever hospital at Galway, for the Board of Guardians, in accordance with drawings prepared by the architect, Alfred Cowlishaw, Brentwood, Galway. Plans and other particulars may be seen at the office of the clerk between 10 a.m. and 4 p.m. Quantities will be supplied on deposit of two pounds. The accepted contractor will be required to provide two approved sureties, who will be bound with him in a bond to the amount of the contract. Tenders (forms of which will be supplied), endorsed "New Fever Hospital," must be delivered not later than 4 p.m. on Oct. 10, to Robert F. Mullery, clerk of union, union offices, workhouse, Galway.

Oct. 10-19. MANCHESTER.—Erection of an infants' school, and alterations and additions to Southall Street municipal school, Cheetham; also alterations and additions at Bank Meadow municipal school, Ardwick, and erection of an infants' school and alterations and additions to Ardwick municipal school, Hyde Road, Manchester, for the education committee. Plans may be seen and a copy of the bills of quantities (including specification) may now be obtained for the Southall Street school, after Sept. 25, for Bank Meadow school, and after Oct. 2 for Ardwick school, on a deposit of £2 2s., in each case. Tenders, on the official forms and enclosed in the envelopes provided, must be delivered not later than 9 a.m. on October 10 for the Southall Street and Bank Meadow schools, and not later than 9 a.m. on Oct. 19 for the Ardwick municipal school to William Henry Talbot, town clerk. Cheques to be made payable to the accountant, education offices, Deansgate, Manchester.

Oct. 12. CROYDON.—Additions to the infirm block No. 2 (called Contract A), at the rear of the workhouse, Queen's Road, Croydon. Erection of a new children's home (called contract B), at rear of the workhouse, Queen's Road, Croydon. Erection of additions to the workhouse (called Contract C), in Queen's Road, Croydon, for the Guardians of the Union. The separate specifications, drawings, and conditions of contract may be seen, and separate bills of quantities and forms of tender obtained, at the office of Henry Berney, architect, 104, George Street, Croydon, surveyor to the guardians, upon depositing the sum of ten guineas. Any accepted contractor will be required to enter into a contract and bond for the work, and give two sureties to be approved by the guardians for the due performance thereof. Tenders, sealed and marked "Tender for Additions to Workhouse, etc.," to be delivered in the special envelope not later than 5 p.m. on Oct 12 to Harry List, clerk to the guardians, union offices, Mayday Road, Thornton Heath, Surrey

Oct. 17. CWMFELINFACH (Mon.).—Erection of a new council school at Cwmfelinfach, near Ynsyddu, Mon., to accommodate 400 children, for the Monmouthshire education committee. Builders desirous of tendering are requested to send their names and addresses to R. L. Roberts, architect, Abercarn, on or before Sept. 23, together with a deposit of £3 3s. for bills of quantities. Plans and specification may be seen at the offices of the secretary, C. Dauncey, county council offices, Newport, Mon., to whom tenders, endorsed "Tender, Cwmfelinfach School," must be sent by Oct. 17.

No date. BURNHAM-ON-CROUCH.—Erection of house and shop at Station Road, Burnham-on-Crouch. Plans and specifications can be seen at King and Hines, engineers, Burnham-on-Crouch.

No date. BRODSWORTH (Yorks.).—Erection of a Primitive Methodist school. Copies of quantities may be obtained on deposit of £1 1s., by application to H. Beck, architect, Dolphin Chambers, Doncaster.

No date. WOODLESFORD (near Leeds).—Alalterations, and erection of small additions to Specification and bills of quantities on application to Robert J. Smith, education offices, Garforth, near Leeds.

No date. BEDWAS (Mon.).—Erection of two houses at Bedwas, Mon. Plans and specifications and all particulars may be had of J. Gibbon, Church Farm, Bedwas; or T. Howell, Rhiwderin, Mon.

No date. MOLD.—Erection of a new house on the Gwernymynydd Road, within one mile of Mold, for Mrs. Cliff, of Chester. Plans and specifications can be seen at the offices of Sam Evans, architect, Bank Buildings, High Street, Mold.

No date. CARFORTH (near Leeds).—Alterations at the Woodlesford Provided School. Specification and bills of quantities on application to Robert J. Smith, education offices, Garforth, near Leeds.

No date. FINDOCHTY.—Mason, Carpenter, Plumber, Slater, Plasterer and Painter works in the erection of new Schools at Findochty. Persons desirous of tendering should communicate with R. B. Pratt, A.R.I.B.A., architect, Elgin.

No date. BRISTOL.—Rebuilding at 75 to 79, Victoria Street. Plans and specifications may be seen, and quantities obtained, on payment of a deposit of one guinea, to La Trobe and Weston, F.R.I.B.A., architects, 44, Cora Street.

No date. LAPFORD (NORTH DEVON).—Reconstruction and conversion into three residences of premises at Lapford, North Devon. Persons desirous of tendering are requested to send their names to J. Archibald Lucas, F.S.I., A.R.I.B.A., architect and surveyor, Guildhall Chambers, Exeter.

No date. BELFAST.—Erection of small Villas in St. James Park, Falls Road. Plans and specifications may be obtained upon application to R. J. M'Connell and Co., 37, Royal Avenue.

No date. CARDIGAN.—Work to be carried out at the undermentioned schools for the County education committee:—Borth, Devil's Bridge, Llangeitho, New Quay, Pelinfach, Penlon. Plans, specification, and full particulars can be obtained from the respective headmasters, or from the office of Geo. Dickens-Lewis, County architect, Aberystwyth.

ENGINEERING.

Sept. 28. LAMINGTON.—Construction of steel work in the renewal of the superstructures of the underbridges at 60 miles 60 chains and 63 miles 5 chains on the main line, near Lamington Station, for the Caledonian Railway Company. Drawings may be seen at the office of the company's district engineer, Princes Street station, Edinburgh, where copies of the specification and schedule may be obtained on deposit of two guineas. Sealed tenders, endorsed "Tender for Steel Work required in the Renewal of the Superstructure of Underbridges at 60 miles 60 chains and 63 miles 5 chains on the main line, near Lamington Station," to be lodged on or before Sept. 28, with J. Blackburn, secretary, Caledonian Railway Company's Offices, 302, Buchanan Street, Glasgow.

Sept. 30. GOLBORNE.—Supplying two new boilers for the pumping station at Golborne, for the Ince urban district council. For particulars apply to R. Winstanley, consulting engineer, 62, Deansgate, Manchester. Tenders to be sent, endorsed "Tender for Boilers," not later than Sept. 30, to B. Howgate, clerk to the council, council offices, Ince.

Oct. 5. WESTPORT (Co. Mayo).—Supplying and erecting a turbine water wheel, two triplex pumps, one engine, and suction gas plant about 14 B.H.P., at the Westport waterworks, for the urban council. Copies of the specification and quantities may be had on application to C. Mulvany, M.I.C.E., Athlone, on deposit of £1. Sealed tenders, properly endorsed, must be lodged not later than noon on Oct 5. with Francis Egan, town clerk, urban council office, Westport (Co. Mayo). (See also "Iron and Steel" and "Building.")

Oct. 5. ST. IVES (Cornwall).—Construction of an impounding reservoir at Bussow Moor, providing and erecting filters and filter-house at Hellesveor, and providing and laying about two miles of cast-iron mains varying from 6 in. to 9 in. in diameter, together with valves, etc., for the corporation, in accordance with plans submitted to the L.G.B. Plans prepared by the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, may be seen at his office. Specification, form of tender and bill of quantities may be obtained from the engineer, on deposit of 3 guineas. Tenders, on the forms provided, must be delivered under seal, and endorsed "Tender for St. Ives Waterworks," before 10 a.m., on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Building.")

Oct. 7. LONDON.—Supply and erection of a steel-wire rope suspension bridge to span the boating lake at Victoria Park, for the L.C.C. Persons desiring to tender may obtain sketch, plan, specification, form of tender and other particulars at the Parks Department, 11, Regent Street, S.W. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London county council, county hall, Spring Gardens, S.W., and marked "Tender for Bridge, Victoria Park." No tender received after 11 a.m., on October 7, will be considered. Tenders must be upon the official forms, and the instructions contained therein must be strictly complied with. Fair wages clause. (See also "Plumbing and Sanitary.")

Oct. 13. FULHAM.—Reconstructing and widening Stanley Bridge, carrying King's Road, Fulham, over the West London Extension Railway, for the L.C.C. Persons desiring to tender may inspect the drawings and obtain the specifications, bills of quantities, form of tender, and other particulars on application to the chief engineer of the council, Maurice Fitzmaurice, C.M.G., at the county hall, Spring Gardens, S.W., upon payment to the cashier of the council of £3. Tenders are to be delivered, sealed, and marked "Tender for Reconstruction of Stanley Bridge," King's Road, Fulham, by 11 a.m. on Oct. 13, to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W. Fair wages clause.

IRON AND STEEL.

Sept. 29. WHITEHALL, S.W.—Supplying axleboxes, buffers, sockets, etc., bearing springs, wheels and axles, for the Secretary of State for India. Conditions of contract may be obtained on application to E. Grant Burls, Director-General of Stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by 2 p.m. on Sept. 29.

Sept. 30. CLYDEBANK.—Making and delivering about 4,100 tons of 18 inches diameter cast iron pipes and special castings, for the trustees. Copies of the specification and schedule of quantities may be obtained from the engineers, Warren and Stuart, 94, Hope Street, Glasgow, on deposit of two guineas. Sealed offers, endorsed "Tender for Pipes," to be lodged not later than Sept. 30 with John Hepburn, clerk to the trustees, Clydebank.

Oct. 3. PADDINGTON.—Supplying and fixing iron shelves and fittings to the strong rooms at the town hall, for the Corporation. Further particulars and printed forms of tender may be obtained on application at the Town Hall. Sealed tenders endorsed "Strong-room Fittings," must be delivered on or before Oct. 3, to A. W. J. Russell, town clerk, town hall, Paddington, W.

Oct. 5. WESTPORT (Co. Mayo).—Supplying about 583 tons of cast iron pipes, 3in. to 7in., also street fountains, valves, hydrants, and town water fittings for the urban council. Copies of the specification and quantities may be had on application to C. Mulvany, M.I.C.E., Athlone, on deposit of £1. Sealed tenders, properly endorsed, must be lodged not later than noon on Oct. 5 with Francis Egan, town clerk, Urban Council office, Westport. (See also "Engineering and Building.")

Oct. 6. WHITEHALL.—Supplying carriages, metre gauge, carriages, broad gauge, wheels and axles, metre gauge, wheels and axles, broad gauge, for the Secretary of State for India. Conditions of contract may be obtained on application to E. Grant Burls, Director-General of Stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by two p.m. on Oct. 6.

PAINTING.

Sept. 28. PENZANCE.—Painting work at the Morrab Gardens and Promenade, etc., for the Corporation. Specification may be seen with Frank Latham, M.Inst.C.E.I., borough engineer and surveyor, public buildings, to whom tenders are to be sent not later than 10 a.m. on Sept. 28.

Sept. 29. RATHMINES.—Painting lamp-posts in the district, for the U.D.C. Specification can be had on application to the electric engineer's office, electricity works, Rathmines. Tenders to be addressed to the chairman of the lighting committee, town hall, Rathmines, and delivered not later than 10 a.m. on Sept. 29, to F. P. Fawcett, clerk to the Council.

Sept. 30. DARTFORD (Kent), BLACKWALL, E., ROTHERHITHE, S.E.—Cleaning and painting work for the Metropolitan Asylums Board, at the small-pox hospitals, Dartford, Kent; the north wharf small-pox shelters, Managers Street, Blackwall, E.; the south wharf small-pox shelters, Trinity Street, Rotherhithe, S.E., in accordance with conditions of contract and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief. Conditions of contract, specifications, and forms of tender may be inspected at the office of the Board, Embankment, E.C., and obtained upon a deposit of £1, in respect of each institution. Separate tenders, addressed as noted on the forms, must be delivered at the office of the Board, not later than 10 a.m. on Sept. 30.

PLUMBING & SANITARY

Sept. 24. TONYPANDY.—Laying about 170 lineal yds. of 12 in. surface water drain at Thomas Street, Tonypandy, for the Rhondda urban district council. Plans may be seen, and form of tender obtained of W. J. Jones, engineer and surveyor, public offices, Pentre, Rhondda, on deposit of one guinea. Tenders must be delivered under seal, and endorsed with the name of the contract, and addressed to the chairman of the council, public offices, Pentre, Rhondda, and delivered on or before Sept. 24. Fair wages clause. (See also "Roads and Cartage.")

Sept. 26. BARGOED.—Laying down about 150 yds. of 6 in. surface water drains, building manholes, fixing gullies, etc., at Bargoed; also erecting retaining walls and railings at Bargoed, for the Gelligar and Rhigos Rural District Council. Plans and specifications may be seen and bills of quantities obtained upon application to the council's surveyor, James P. Jones, council offices, Hengoed, via Cardiff. Sealed tenders, endorsed "Bargoed Improvements," to be sent on or before Sept. 26, to Frank T. James, 134, High Street, Merthyr Tydfil.

Sept. 29. LEYTON.—Construction of underground conveniences in Lea Bridge Road, Leyton, for the Urban District Council. Plans may be seen, and specification, bill of quantities, form of tender and other particulars obtained of William Dawson, M.Inst.C.E., at his offices, town hall, Leyton, between the hours of ten and four (Saturdays ten and twelve). Sealed tenders (in special envelopes supplied) must be delivered at the meeting of the council, to be held on Sept. 29, at the town hall, Leyton, at 7 p.m. Sureties will be required for the due performance of the contract.

Sept. 29. EALING.—Construction of new surface-water sewers in Windmill Lane, etc., and manholes, etc., in connection therewith, for the town council, as under:—about 1,330 ft. of 9 in. stoneware pipe. Drawings and specification may be seen, and forms of tender, together with schedule of quantities and other particulars, obtained from Charles Jones, M.Inst.C.E., borough engineer, town hall, Ealing, W., any day during office hours, upon a deposit of £2 2s. Sealed tenders, in the envelopes provided, endorsed "Tender for New Surface-Water Sewer," must be delivered not later than 9.30 a.m. on Sept. 29, to Geo. E. Brydges, town clerk, town clerk's offices, town hall, Ealing, W.

Oct. 5. URMSTON.—Supplying and delivering 21 in. stoneware pipes (300 lineal yds.), also stoneware drain tiles (35,000), for the Corporation of Manchester. Delivery will be required at the Davyhulme sewage works, Urmston. Forms of tender may be obtained on application to the secretary of the Rivers Department, town hall, Manchester. Tenders must be enclosed in the official envelope provided, and delivered at the above office not later than 10 a.m. on Oct. 5.

Oct. 12. DUNMURRY (Ireland).—Providing and laying about 4,800 lin. yds. 12 in., 9 in., and 6 in. stoneware and cast iron pipes, together with the construction of manholes, lampholes, ventilating shafts, flushing tanks, and other incidental works, for the Lisburn Rural District Council. Constructing purification works, irrigation area, and approach road to works, with bridges over river, and all works pertaining thereto. Drawings and specification may be seen, and bill of quantities, with form of tender, obtained, on payment of three guineas, from the engineer, James Hunter, B.E., Antrim Road, Lisburn; or Samuel C. Hunter, quantity surveyor, Scottish Provident Buildings, Belfast; or from the clerk to the council. Sealed tenders, endorsed "Dunmurry Sewerage," must be delivered not later than 10 a.m. Oct. 12, to William Sinclair, clerk of the council, Lisburn Workhouse.

Oct. 13. LONDON.—Construction, in the Metropolitan boroughs of Deptford and Greenwich, of 1,026 ft. of cast-iron sewer, for the L.C.C., of which part is 10 ft. internal diameter, and part in two pipes each 6 ft. 9 in. internal diameter. About 777 ft. of the sewer is to be formed in tunnel and the remainder in open cut. Persons desiring to tender may obtain drawings, specifications, bills of quantities, form of tender and other particulars on application to the chief engineer, Maurice Fitzmaurice, C.M.G., at the county hall, Spring Gardens, S.W., upon depositing with the cashier £10. Full particulars of the work may be obtained on application at the county hall, before payment of the fee. Each tender is to be delivered at the county hall, in a sealed cover, addressed to the clerk of the London county council, Spring Gardens, S.W., and marked "Tender for Greenwich Road Sewer Extension." No tender received after 11 a.m., on October 13, will be considered. (See also "Engineering.")

ROADS AND CARTAGE.

Sept. 24. TREALAW.—Making up Trealaw Road, Trealaw, under the private street works act, 1892, for the Rhondda Urban District Council. Plans may be seen, and form of tender obtained, of W. Jones, engineer and surveyor, public offices, Pentre, Rhondda, on deposit of one guinea. Tenders must be delivered under seal, and endorsed with the name of the contract, and addressed to the chairman of the council, public offices, Pentre, Rhondda, and delivered on or before Sept. 24. Fair wages clause. (See also "Plumbing and Sanitary.")

Sept. 24. ROMFORD. — Supplying about 1,250 tons of best blue Guernsey granite, for the U.D.C., broken as to part to 1½ in., and as to other part to 2 in. cube. Forms of tender can be obtained, on application to either J. Turvey, surveyor, or the clerk. Tenders, marked "Tender for granite," with samples, to be sent not later than Sept. 24, to Charles T. King, clerk, council offices, Romford. A contract with bond, with sureties, shall be entered into by the person whose tender may be accepted.

Sept. 24. DEAL.—Supplying field surface picked flints, clean and broken to an even gauge, to pass through a 2 in. gauge, for the Corporation. The material can be supplied in quantities varying from 50 to 700 cubic yds. Conditions and tender forms to be had from the surveyor. Sealed tenders, endorsed "Flint Tender," to be sent not later than Sept. 24, to Thomas C. Golder, borough surveyor, borough surveyor's office, 23, Queen Street, Deal.

Sept. 24. BLANDFORD.—Work of steam rolling the district roads during the half year ending March 31, 1909, for the R.D.C. For forms of tender and other particulars apply to Edward Phelps, district surveyor, Blandford. Tenders must be enclosed in sealed envelopes, endorsed "Steam Rolling Tender," and delivered on or before Sept. 24, to Sinclair Traill, clerk to the Blandford rural district council, Blandford, Dorset.

Sept. 25. HOPTON (Mirfield). — Draining, forming, macadamising, flagging, etc., Chadwick Road and Wood End Road, Hopton, Mirfield. Drawings and specification may be seen, and quantities and form of tender obtained at the office of the engineers, on payment of one guinea. Tenders, sealed and endorsed "Tender for New Roads," must be delivered before 10 a.m. on Sept. 25, to C. H. Marriott, Son and Shaw, civil engineers, Church Street Chambers, Dewsbury.

Sept. 26. EARLSHEATON.—Paving portions of footpaths at the fever hospital, Earlsheaton, for Dewsbury Joint Hospital Board. Specifications and forms of tender may be obtained on application at the office of the clerk. Sealed tenders, endorsed "Tender for Paving," to be delivered not later than Sept. 26, to H. Ellis, clerk, town hall, Dewsbury.

Sept. 26. LETCHWORTH—Construction of about 2,000 yards of metalled roads in the parish of Letchworth, for the Hitchin R.D.C. Plans and specifications may be seen at the council's offices, old town hall, Hitchin. Tenders marked "Tender for roads etc.," to be delivered not later than Sept. 26 to E. A. Passingham, clerk to the council, old town hall, Hitchin.

Sept. 28. CAERPHILLY. — Paving, curbing, channelling, flagging, sewering, forming, metalling, etc., part of Eglwysilan Road, Abertridwr, Morgan Street, and Church Street, Llanbradach, for the U.D.C. Plans and specifications may be seen and forms of tender obtained at the surveyor's office, Cardiff Road, Caerphilly, upon depositing the sum of £1 1s. Sealed tenders, endorsed "Street Works," must be addressed to the chairman of the council, and delivered at the council offices, Caerphilly, not later than Sept. 28.

Sept. 28. ARUNDEL.—Supply and delivery of 450 cubic yards of clean, hand-picked surface flints, for the town council. Form of tender and particulars may be obtained of the borough surveyor, E. F. Farrington, town hall, Arundel. Sealed tenders, on the form provided, marked "Tender for Flints," to be delivered at the borough surveyor's office, town hall, Arundel, not later than noon on Sept. 28.

Sept. 28. HANDSWORTH.—Asphalting playgrounds and forming a paved cartway at the Handsworth new provided schools, for the W.R.C.C. Education Department. Persons desirous of tendering can obtain specifications from S. Absom, divisional clerk, education offices, Woodhouse, to whom tenders are to be sent by first post on Sept. 28.

Sept. 28. LITHERLAND.—Reconstruction of Violet Road, Litherland, for the U.D.C. Drawings and specification may be seen and quantities, form of tender, and all other particulars obtained, on application to A. H. Carter, surveyor to the council, public offices, Sefton Road, Litherland, on payment of 10s. 6d. Sealed tenders, endorsed "Tender for Violet Road," to be sent before noon on Sept. 28, to William Kirk, or J. W. Allen North, clerks to the council, 15, Lord Street, Liverpool.

Sept. 28. PECKHAM RYE.—Curbing, channelling, foundations for asphalt paving, and roadwork, for the Corporation of Camberwell, in the following new streets, viz.: The road in front of 2 to 10, Forest Hill Road, from the junction of St. Aidans Road, Peckham Rye. Forms of tender can be obtained from William Oxtoby, borough engineer, town hall, Camberwell. Tenders must be delivered not later than 6.30 p.m., Sept. 28, to C William Tagg, town clerk.

Sept. 28. SOUTHOWRAM.—Carting dross and granite for the U.D.C. as follows:—100 tons from Brighouse station to near Wharfe Bridge, 100 tons from Brighouse station to Grove cottages, 100 tons from Elland station to near Rawson's Arms Inn, 100 tons from Elland station to near Ashgrove, 100 tons from Brighouse station to Delvers Arms, 200 tons from North Bridge station to Law Lane, Southowram, 100 tons from North Bridge station to bank top dross, Staith, Southowram, 100 tons from North Bridge station to bottom of Marsh Lane, Southowram. Each tender must state the price "per ton." Tenders, marked "Carting Dross, etc.," to be sent not later than noon on Sept. 28, to R. W. Evans, solicitor and clerk to the council, Commercial Bank Chambers, Halifax.

Sept. 29. LEYTON.—Making-up, kerbing and paving private streets within the district, for the U.D.C. The paths are to be paved with patent Victoria indurated patent croft adamant, and patent Aberdeen adamant stone. Specifiction, quantities, and form of tender may be obtained on application to William Dawson, M.Inst.C.E., council's surveyor, at his office, town hall, Leyton, between the hours of 10 a.m. and 4 p.m. (Saturdays 10 a.m. and noon). Sealed tenders (in special endorsed envelopes) must be delivered at the meeting of the council, town hall, Leyton, on Sept. 29, at 7 p.m. Sureties will be required for the due performance of the contract.

Sept. 29. WILLESDEN. — Road-making and paving works in Furness Road and Cholmondeley Avenue, Harlesden; Okehampton Road, Kensal Rise; and Wotton Road, Cricklewood, for the district council. Plans and specifications may be seen, and all particulars obtained upon application to O. Claude Robson, M.Inst.C.E., engineer to the council, public offices, Dyne Road, Kilburn, N.W. Tenders, upon printed forms, endorsed "Private Streets," to be delivered not later than 4 p.m. on Sept. 29, to Stanley W. Ball, clerk to the council, public offices, Dyne Road, Kilburn, N.W. A £10 note to be deposited with each tender.

Sept. 30. WOKING.—Supplying 2,000 tons of granite, to be delivered at Woking station in such quantities as may be required, for the Urban District Council of Woking. Tenders are to be delivered, together with sample of material, by September 30, to G. J. Wooldridge, surveyor, council offices, Woking.

Sept. 30. KESTEVEN.—Supplying granite, slag-dust, and gravel, for footpaths, required for the main roads for the year ending March 31, 1910, for the county council. Specifications and form of tender may be obtained on application to the surveyor. Tenders, marked "Tender for Materials," with small samples, to be sent not later than Sept. 30, to W. B. Purser, Assoc.M.Inst.C.E., county surveyor's office, Grantham.

Sept. 30. LITTLEHAMPTON.—Scarifying and steam rolling of highways, about the district, in the months of November, and December, for the U.D.C. Tenders are to include a ten-ton steam roller, proper scarifier, fuel, oil, driver, driver's house, water barrel, and everything necessary for efficiently carrying on the work. Tenders, under cover, and marked "Steam Rolling," to be forwarded to the chairman of the Urban District Council, town office, Littlehampton, not later than Sept. 30, on forms to be obtained of the surveyor, H. Howard, F.S.I.

Sept. 30. TOOTING, S.W.—Repairing and remaking roads at the Grove fever hospital, Tooting Grove, Tooting Graveney, S.W., for the Metropolitan Asylums Board, in accordance with drawing, conditions, and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief. Drawing, conditions, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and obtained upon payment of a deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board not later than 10 a.m. on Sept. 30.

Oct. 3. BOLSOVER.—Materials and work required in metalling, paving, curbing, channelling and draining Spencer Street, within the district, in accordance with plans and specifications prepared by the surveyor to the council. Persons desirous of tendering may inspect the plans and specifications at the office of W. G. H. Browne, Ivan House, Bolsover. Bills of quantities may be obtained on payment of one guinea. Sealed tenders to be sent, marked "Tenders for Streets," on or before Oct. 3, to G. E. Carline, clerk to the Bolsover urban district council, 2, New Square, Chesterfield.

MISCELLANEOUS.

Sept. 24. THORNTON-IN-CRAVEN—Asphalting at Elslack new schools Thornton-in-Craven, for the West Riding Education Committee. Plans may be seen and bills of quantities obtained on application to the architect. Sealed tenders, properly endorsed, to be forwarded not later than 10.30 on September 24, to J. Vickers-Edwards, county architect, County Hall, Wakefield. (See also "Building.")

Oct. 5. MANCHESTER.—Supplying and fixing tiled dados at the Cavendish municipal school, Devonshire Street, Chorlton-on Medlock; the City Road municipal school, Hulme; and the Oswald Road municipal school, Chorlton-cum-Hardy, Manchester, for the Education Committee, in accordance with the specification, which may be obtained at the offices in Deansgate, Manchester, on a deposit of £1 1s. Tenders and samples of dados must be delivered at the education offices, not later than 9 a.m. on Oct. 5. Cheques to be made payable to the accountant, education offices, Deansgate, Manchester.

No date. LONDON, E.C.—Pulling-down and clearing away to cellar level the premises 33, 34, and 35, Gutter Lane, and 6, Carey Lane, E.C. Applications for specifications, keys, etc., to James W. Jerram, builder, Crown Works, Boundary Road, East Ham, E.

No date. BETTWS-GWERFIL-GOETS.—Ventilation and drainage work at Bettws-gwerfil-goch council school, for the Merioneth education committee. Plans, specification, and further particulars may be obtained on application to Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxvi.

ARCHITECT'S assistant (7 years), thoroughly qualified in ferro-concrete work, London and Paris experience, requires permanency at home or abroad.—Apply Box No. 4562, BUILDERS' JOURNAL Office.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22½) desires engagement; six years' experience; good knowledge of domestic and city warehouse work; 1st class honours construction. Student R.I.B.A.—A. T., 2, Avenue Road, Forest Gate, E. 4568

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT (age 29), desires post as traveller calling on architects, builders, etc. (north preferred).—Address Box 4497, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4592

ARCHITET'S and Surveyor's Assistant (21) requires engagement with good architect, 3½ years' student in architect, construction and kindred subjects, land surveying and levelling. Board of Education qualifications; prelim. R.I.B.A., refs.—Apply Box 4572, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ARCHITECT and Surveyor's Assistant (21), good draughtsman, details, perspectives, surveying, levelling, etc. Prize-winner, first class advanced building construction, and architecture certificates —S. K., Prob.R.I.B.A., first-class refs.; moderate salary.—Box 4578, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant, experienced in working drawings, details, surveys, etc.; first-class references; specimens of work; orders taken for water colours, perspectives, deed plans for conveyancing, drawings, designs, etc.—Aubrey Pritchard, Bryndenden, Rhyl, N.W. 4549

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade. —Apply Box 4585, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

CARPENTER and joiner, 32, wide experience, all branches of building, take charge; good references; very energetic; good manager and timekeeper.—Pearson, 53, Hartham Road, Isleworth, W. 4552

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CONTRACTS.—Estimator, measurer, etc. (London and country experience), requires position. Successful in tendering. Can guarantee brisk business. Make most of measured accounts, and practically and efficiently help with management. Country preferred. Small salary. — Estimator, Durston House, The Grove, Deal. 4564

ENGINEER wants post, London or Provinces; 12 years' experience, calculations, quantities, designs, detail drawings, bridges, structural steelwork, prepared, reinforced concrete.—Box 4579, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

ESTATE Clerk of Works, all-round town and country experience; surveying, plans, quantities, etc.; considered good manager of men; character will bear strictest investigation.—Apply Box 4566, BUILDERS' JOURNAL Office.

FOREMAN seeks engagement; shop or building; carpenter, joiner, practical, machinery, quick setter out; last refs. 7 years; age 38.—C. M., Cedars, Spring Road, Kempston, Bedford. 4483

IMPROVER, surveyor's or builder's office (21), technical student, four years' practical knowledge, supervise, neat draughtsman; abstainer; good references.—Marfleet, Totland Bay, I.W. 4581

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

IMPROVER or junior assistant (23), varied experience, neat draughtsman, surveying, assist with quantities; excellent references; small salary return for first-class experience. — Apply Box 4559, BUILDERS' JOURNAL Office.

LATE Pupil (22), four years' experience, requires berth as surveyor's or architect's assistant, drawing, surveying, levelling, qualified Stage III., Building Construction and Architecture.—J. W. D., Laurelwood, Hare Lane, Godalming. 4582

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good references.—H. Cruse, Boxford, Newbury, Berks. 4537

PAPERHANGER, practical, wants piecework; builders' flats, hotels, and clubs.—S. Jamer, 48, Carlisle Street, N.W. 4539

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

Appointments Vacant.

BUILDER'S Assistant desires situation. Sixte years' experience in office routine, estimati measuring, accounts, etc. Also experienced in o door management. Moderate salary.—W. P., Leicester Road, East Finchley. 4

ARTICLED pupil, boy just leaving school, quired by architect and craftsman for spec work. Must have good aptitude for draughtsm ship. Premium required. — Geo. P. Banka Baldwin's Gardens, Gray's Inn Road, E.C. 4

Miscellaneous.

BUILDERS' Books at tremendous reductions Books on every subject and for all examinatio supplied; sent on approval. Catalogues free; st wants. Books purchased.—W. and G. Foyle, Charing Cross Road. W.C.

SECOND-HAND Optical Mart. for the Purchase and Sale of LEVELS, THEODOLITES, DRAWING INST —Clarkson's, 338, High Holborn, London, W (Opposite Gray's Inn Road).

POLING Boards, selected lengths, and thi nesses (best quality and full measure). Also scaffold boards, putlogs, scantlings, dea battens and boards. Lowest wharf prices. C. H. GLOVER and CO., Ltd., Importe Hatcham Saw Mills, Old Kent Road, S.E.

Contracts Open.

HOLSWORTHY URBAN DISTRICT COUNC TO CONTRACTORS.

The above Council invite tenders for the C struction of an Impounding Reservoir, Serv Reservoir, and Filter-Beds, and the Laying Cast-iron Mains and other work at Holsworth

Plans may be seen at the office of the En neer, Mr. J. Chadwick, Bletchley, Bucks, or the office of the undersigned.

Copies of specification, quantities, and fo of tender, may be obtained from the Engineer, payment of £3 3s., which will be returned u receipt of a bona fide tender.

Sealed tenders, endorsed "Holsworthy Wa works," to be delivered to the undersigned on before October 1st, 1908.

The Council do not bind themselves to acc the lowest or any tender.

W. C. R. Peterson, Solicitor, Cle Holsworthy, Devon.

August 24, 1908.

Drawings, Tracings, &c

QUANTITIES prepared by London Surveyor experience in shortest possible time. Rea able terms. Provincial work undertaken. measured up and settled in town or countr Surveyor, Box 3031, BUILDERS' JOURNAL Office

SPECIFICATIONS made, amplified, or comple Drawings copied or completed. Work drawings, details, internal woodwork, Working drawings, details, internal woodwork, furniture, perspectives, quantities, tracings. Girton Road, Sydenham, S.E.

Partnership.

PARTNERSHIP. — Surveyor would like to m contractor with a view to partnership; 6 ye experience, War Department; some capital.— 4567, BUILDERS' JOURNAL Office.

Patent.

TO POTTERS, SANITARY ENGINEERS, A OTHERS.

The Proprietors of British Patent No. 2032 1904, for "Sewer Traps or Valves," are desi of entering into negotiations for the Sale of Patent, or for the Grant of Licenses, to manu ture under Royalty.

Full particulars can be obtained from GEORGE BARKER, Chartered Patent Ag 77, Colmore Row, Birmingham.

Educational Announcements—contin from page xxvii.

KING'S COLLEGE, LONDON.

Course of Training for Sanitary Inspector Building Construction, Chemistry, and Phy of Hygiene, and general duties of Sanitary spectors, will commence September 28th.—A Secretary, King's College, London.

CORRESPONDENCE Courses given for S Kensington Exams., Building Construction, A tectural History, and Society of Archit Exams., by member of Society of Architects. strictly moderate.—Apply Box 4584, BUILD JOURNAL Office.

September 30, 1908. Volume 28, No. 712.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Building Operations Bill. The Building Operations and Engineering Works Bill, a review and criticism of which recently appeared in our columns, will again come before Parliament on October 12th, the first day on which the House commences the autumn Session. Early in the year, when first speaking of this Bill, Mr. Gladstone said he hoped that it would pass as a non-contentious measure; and as, on its introduction, it received a blessing in the Press from a prominent Labour leader, his hope seemed likely to be fulfilled. If rumour is correct, however, this early view has been somewhat modified by second thoughts. The Labour party have, of course, no objection to the principle of the Bill. The contrary, in fact, is the case, it being legislation for which they have pressed for some considerable time. Their objection may be said to be confined to the question of administration. The Bill proposes that the building regulations which will follow it into law shall be carried out by the District Councils, and this is the foundation of the trades unionists' objection, they thinking that the Home Office is the best authority for dealing with the matter, as being free from all suspicion of local influence. If consistency, however, is one of the virtues of the Labour party, they must find themselves in a somewhat difficult position. It has been one of the planks in their platform to press for a reform of the Factory Department of the Home Office, on the grounds that the inspectorate were not chosen from amongst the most suitable men, University men having considerable favour; and, as the examinations were set to suit the University standard, practical men had not a fair field. Be that as it may, it follows that to ask that the present factory inspectors shall continue to do this work in spite of past criticisms seems unconformable with past and even recent utterances. Perhaps, however, it will be asked that a special staff should be appointed for this purpose. This will resolve itself into a question of expense to which the Home Office may not agree. A considerable number of men would be needed, and to this must be added the cost of travelling—no unimportant item. A compromise may meet the case. It will be remembered that Mr. Macfarlane, in the Building Accident Committee's report, referred to this question, and he suggested that while it would be a good thing to allow the local authorities to do the actual inspection, a number of Home Office inspectors could also be appointed, each having a large area. Their duties would be to supervise the District Council's work, and in this way set up a standard of efficiency to which exception could not well be taken. We commend this view to the notice of those concerned, as offering a ready means of fulfilling their desires.

Back to First Principles. Architecture as the mother of the arts is the real text of an article that is, however, headed "The Right Use of Art Museums," and that appeared in last Wednesday's "Times." The writer of the article insists that the problem of architecture, "to express use in terms of beauty," remains to some extent the problem of all the arts while they still keep their connection with architecture. "Even painting and sculpture are either controlled by the conditions of decoration imposed upon them by the great, useful art of architecture, or else share the purpose of the buildings which they adorn; and so long as arts share in the purpose of architecture, they have some of the grandeur and simplicity of that purpose. For Architecture, while it remains great, is an art, not of individuals, but of a whole society, and expresses the religion or patriotism of that society, not the ideas or passions of individuals. No doubt some of the greatest painting and sculpture of the Renaissance were produced when these arts were beginning to be divorced from architecture; but their greatness was built upon a long tradition, that had been established while architecture was still the predominant art and imposed its own purposes upon the other arts. Since architecture has lost its predominance, the other arts have slowly but surely been losing the grandeur and simplicity of purpose which they got from it. The first great collections of works of art began when the Renaissance was reaching its height, and when architecture was rapidly losing its predominance." Architects who feel themselves to be in some danger of forgetting the rudiments of their early reading may be glad to meet with this terse summary of first principles. The rehearsal of the articles of their belief may enable them to form some idea of the distance (if any) to which they have erred and strayed from fundamental truth or faith.

The Taxation of Land Values. An editorial note upon the letter of "Another Architect," in our last week's issue, has drawn upon us a spirited reply from that correspondent, who laments the "very invidious position" in which we have placed ourselves by the attitude we are adopting on this question. He thinks we "cannot be aware of the feeling amongst all classes—up north at any rate—on this question of rating." He also queries whether we ever see two of the London daily papers supporting the present Government, and beseeches us not to confess that our political opinions are derived from another widely known London daily, which evidently does not meet with his approval. "Another Architect" may be quite happy; we do not form our political opinions from any of the newspapers, which are too saturated with party rancour and venom to be safe guides on political questions. On the feeling in the North concerning the taxation of land values we are quite willing to take his word, though we question whether that feeling is stronger in the North than in the South; but, from the newspaper cuttings he is good enough to send, we judge that these strong views are not unconnected with the doings or misdoings of a certain ducal landlord in the particular district of Yorkshire from which our correspondent writes. All this, however, is beside the point. The taxation of land values is a political question upon which we express no opinion; it is a matter for the electorate. We, at least, are not concerned to excuse or save anyone from paying any dues which the nation may decide to be just and equitable. But our articles dealt with the present condition of distress among architects, and our correspondent affects to believe that this is due to land values going untaxed, and that if taxation is imposed, all will eventually be well. We ventured to express a doubt as to this view, about which we are not at all sanguine. We pointed out that London is greatly overbuilt, and we have the same report from Leeds and Sheffield, while it is notorious that the Glasgow Corporation has large areas of land on its hands which builders will not look at. We believe in this case—and on very good grounds—that "a man's enemies are they of his own household," and until architects, as a body, can sink silly differences, petty jealousies, and personal egotism, banding themselves together to secure their proper share of the nation's building activities, they will continue to suffer. The taxation of land

values may bring down the value of land, afford better sites for houses, and render possible the building of garden cities, but it will not ensure that architects have the designing of those houses or cities. On any renewed activity in the building trade resulting from this or any other measure, we shall greatly rejoice, but that is not quite the point.

Material Interests.

To the architects' already formidable incubus of worries must now be added, it seems, those arising from the local material mania. The contractor is becoming accustomed to the formulary, "Local labour must be as far as possible employed," and the architect may expect to meet with some such condition with respect to local materials. Apparently it is coming to that. We had long noted with awe the noble rage of the Scots against the importation of granite, and of the Irish against anything foreign whatsoever; while in England, just now, the exquisite amateur of landscape effects contends that buildings must spring from the soil on which they stand, otherwise the exceeding bitter cry against "the disfigurement of the country" must continue to grow in volume and intensity. Scotland, Ireland, and England, then, being each in the enjoyment of a well-established, if not well-founded, building grievance, it was only to be expected that gallant little Wales should make similar manifestations. She is doing it, but she wears her rue with a difference. She has adopted a subtle refinement on mere chauvinism. Hers is not a question of "Wales against the world," but of North against South; and it is not a question of race, but a question of colour. The case is thus compendiously stated in a local newspaper: "The fact that it is intended to utilise slate from a South Wales quarry to roof the new buildings of the University College of North Wales has raised a storm of protest in the press and at meetings of public bodies." The architect is not blamed. He is simply worried. It is magnanimously recognised that his choice was made "on æsthetic grounds." But it is insinuated that the college authorities have fallen short of their duty in failing to correct his little mistake of supposing that æsthetic amenity was of the least consequence as compared with local labour interests. "Considering the generous suport extended to the college by the North Wales quarrymen, whose efforts on behalf of the cause of education are so frequently emphasised as an example worthy of emulation by the artisan class generally, it is not altogether surprising that there should be a feeling of resentment against the exclusion of the product of our local quarries in the construction of the new college buildings." The feeling, indeed, is neither "altogether" nor at all surprising, *"Do ut des"* being a deep-rooted and perhaps ineradicable principle of human conduct; but the particular "emphasis" it lays on the quarrymen's efforts in a noble cause seems somehow to discount the "generosity" of their support, and slightly to tarnish its lustre as a shining example to "the working class generally." At all events, the architect has our sympathy, since, in the circumstances, the roof he has specified can hardly be expected to afford him adequate shelter from this "storm of protest." Evidently, architects, if they would avoid local storms, must henceforth vie with novelists in the study of local colour.



THE QUADRIGA TO COMPLETE THE WELLINGTON ARCH, CONSTITUTION HILL. CAPT. ADRIAN JONES, SCULPTOR.

This view, showing the group in position, will give an indication of the effect when finished.

Copyright in Buildings.

The question of copyright in buildings is to be pressed to some sort of an issue at a Diplomatic Conference that is to be held in Berlin on October 18th. Continental architects have long felt it to be an injustice that their original designs have not been accorded the same protection as the works of painters and sculptors; but in this country the subject does not excite very keen interest. Yet it certainly appears that in this matter the architect occupies an anomalous position, and is placed at some disadvantage, when it is considered that while every fitting on, in, or about a building may be copyright, the fabric itself can be pirated without restriction, except as regards any protected details of construction, in which the architect usually has no proprietary interest whatever. But the essential feature of copyright—that it secures to the designer or the holder the enjoyment of such pecuniary recompense as the design is capable of attracting—is less appropriate to a building than to a picture, a statue, or even a chimney-pot. Doubtless a good deal depends on mere facility of reproduction. Copyright, by preventing unauthorised multiplication, secures to the author the rights, opportunities, and profits of multiplication. But who wants to multiply copies of Liverpool Cathedral, or the new London County Hall? In the case of large and important buildings, close and deliberate copying is almost ruled out. The clients usually want something original, and the assessors see that they get it. With regard to smaller buildings, the case is different. One has heard a good deal of pirated designs of churches; and a clever architect may produce a peculiarly attractive design for, say, a middle-class villa, which is immediately reproduced wholesale by men of no originality, who are left to the iniquitous enjoyment of the fruits of another man's genius. Or, to come still lower down, some enterprising speculative builder may obtain, for a first and final payment of a few paltry pounds, a small number of more or less original designs, from which he builds hundreds of houses, whose face is their fortune, and his, but not the architect's. To this common practice of extensive multiplication of designs, the cardinal principle of copyright would seem to apply. On the other hand, there can be no doubt that copyright in buildings would introduce many complications that, operating vexatiously, and in restraint of trade, would probably far outweigh any advantages that might accrue to anybody but the lawyers.

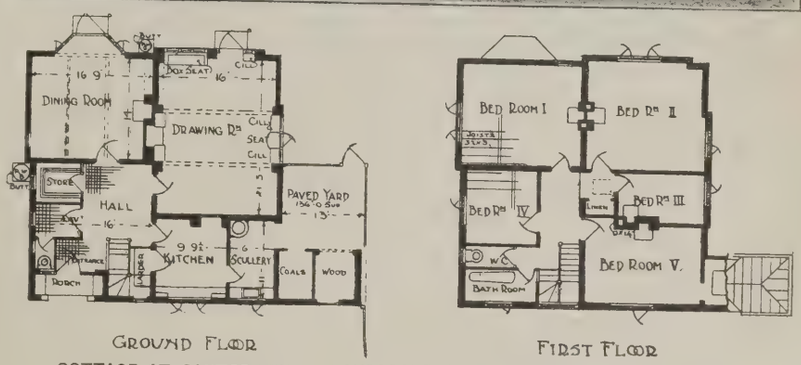
THE ARCHITECTURAL PROFESSION OF TO-DAY.—III.

Whilst in the event of the adoption of registration it would still, in all probability, be impossible to prevent the architectural charlatan from supplying designs for buildings, yet it would be quite possible to prevent him from continuing to pose as a responsible architect, and the public would soon learn to discriminate between the trained artist and the unqualified man when the line of demarcation has once been made clear. Of course, there is no doubt that before any protective measure could become law, many persons who are to-day improperly describing themselves as architects, and thus obtaining money from the public under false pretences, would have to be officially recognised as competent men. This result is inevitable, and must always be expected when the existing principle of the "open-door" is suddenly abandoned by any professional body of men. Time, however, invariably provides the remedy for the evil, which is usually one of a very ephemeral nature. But whatever may be the effect on the community at large of any effort to make the profession of the architect one that would naturally appeal to the mind of any liberally educated young man possessing appreciation of the real significance of art, the practitioners of to-day would do well to set their own house in order before they attempt—to use a now familiar phrase—"to educate the public." Surely the education of the man in the street is best assured by the production of *good* work from architects themselves rather than by the issue of any amount of popular literature upon the subject of an art concerning which its very professors are unable to agree! It has often been stated that the predilections of the public with regard to questions of architecture may be rightly and justly ignored, but do architects exhibit much more discernment and enlightenment? On both sides there is a tendency to over-rate professional success. In the case of the public such a feeling is perfectly excusable, as it generally arises from sheer inability to discriminate between good, bad, and indifferent work. But with regard to the attitude of the profession, the case is much more serious, because some architects appear to gauge their respect for the opinions of their successful brethren proportionately to the worldly prosperity of the latter rather than proportionately to the artistic value of their work. And in this connection it is not pleasant to remark that often the eulogistic—nay, sometimes almost fulsome—praise publicly bestowed upon the works of the successful architect of the day by a *confrère* who may happen to occupy a high official position, is unhappily much discounted by the nature of the remarks made by the public eulogist in course of private conversation. Now, what useful purpose is served by discussing the question of the architectural edution of the public when architects themselves thus assist in misleading the community on matters of art by publicly beluding the architecture of buildings which they privately condemn?

There are occasions upon which silence is indeed golden; and when a successful architect becomes the recipient of the party congratulations of his professional brethren, surely it ought not to be obligatory on the speaker, who, for the time being, acts as the mouthpiece of the profession, to express, on behalf of that body, very much more than he personally can honestly admit? How can it be expected that men, whose professional services are eagerly sought by the public, and whose architectural achievements, be they good or bad, thus ostensibly receive the weight of professional approval, will ever be brought to understand that, certainly through no want of ability, through no fault of their own, but simply owing to the lack of opportunities of obtaining a course of systematic architectural training, their reputations, in many cases, will not outlast their lives, and consequently they possess no right, either inherent or acquired, to oppose—to the great detriment of the profession at large—many measures of reform embracing proposals not only affecting the welfare of a large majority of their fellow-architects, but necessary to the advancement of the art of architecture itself? Then, too, it must not be forgotten that to the man who has succeeded, perhaps in some case beyond his deserts, mundane affairs assume a particularly roseate hue. He quickly forgets his early struggles and the extreme pathos of the seamy side of an ill-paid calling. As a rule, immediately he has secured a remunerative practice, his work commences to show a decided falling-off in quality; he even, occasionally, becomes not altogether free from the taint of egotism. But it is to men of this calibre, who do not and cannot appreciate the necessity for reforms and innovations, to whom alone architects are accustomed to look for guidance on questions vitally affecting the immediate future of their profession, and by whose often selfish and purely personal views they are content to be led. All the architects of to-day are suffering more or less from the effects of the lack of an early systematic course of architectural training, and the leaders of the profession in this respect may generally be regarded as being in the same category with the rank and file.

It is perhaps scarcely an exaggeration to say that, solely owing to the general appreciation of their work, some of the most indifferent and unscholarly architects of our time have become the recipients of honours and distinctions which the quality of their architecture in nowise merits. But these are the very men who are bitterly opposed to the introduction of a system of compulsory education, and their influence and example have had, hitherto, a most injurious effect upon the welfare of a certain wise and far-seeing proposal, under which future members of the architects' profession would have been drawn from the ranks of the well-educated and cultured classes. In every profession the measure of the status of the average member is the measure of the status of the whole, and it is therefore the duty of all practitioners of to-day to do their best to see that the succeeding generation of architects does not suffer from any lack of





GROUND FLOOR FIRST FLOOR

COTTAGE AT CANTERBURY. LOVEGROVE AND PAPWORTH, ARCHITECTS.

This cottage is built of local red bricks and tiles, and the roughcast finished a light cream colour. The walls are hollow, of two half-brick walls connected together with galvanized iron wall ties. It was erected from the designs of Messrs. Lovegrove & Papworth, of Town Hall Chambers, 374-8, Old Street, E.C., at a cost of 5½d. per foot cube.

those educational advantages which alone will enable the architectural student to assist in the advancement of his art. In addition, let the younger men of to-day be frankly told that architecture in this country is—for the time being—at a very low ebb, and be warned that to indiscriminately copy modern work is not only futile, but positively injurious to their artistic success. Briefly, let present practitioners show an unselfish devotion to their art by bestowing upon their successors facilities for the acquisition of architectural scholarship that can only be obtained through a systematic course of compulsory education. Thus, and thus only, will the architects of the future be enabled to become not only greater artists than those of to-day, but also fully equipped to raise the whole tone of the profession whether it be viewed from its intellectual, its moral, or its artistic aspect. Genius cannot be created but mediocrity can be dragooned into respectability, as the Ecole des Beaux Arts has taught us.

We would earnestly impress upon all architects that it is their duty not to allow themselves to be turned from this, the only straight path, by any arguments, however specious and plausible, that may be put forward by a small would-be autocratic clique, to which we think a more than sufficient amount of deference and obsequiousness has already been shown. On the contrary we advise them to combat any tendency they may possess to blindly follow the lead of any man, however successful his career, unless—and "by his works ye shall judge him"—he shows an exceptionally great amount of architectural ability. In a word let every architect think out the great problem of the present and future welfare of his profession for himself and act, after careful study and deep reflection, according to his own convictions. We doubt not that he will soon see the fallacy of the oft-quoted remarks that "an architect is born not made," that he should "remain unfettered by scholarship or tradition" and, we presume, consequently be free to waste his life and abilities upon the production of hideous travesties of the architectural refinements of the art-loving ages of long ago?

Architects should make themselves familiar with the details of the self-sacrificing lives of the great masters of their art; they should regard the splendid monuments—many of which happily are still in existence—of old-time study and genius, and then glance at the architectural achievements of their degenerate successors, the "eminent" architects of to-day. The critically minded observer will be in a position to appraise modern work at its real value, and be ready to turn a deaf ear to vague twaddle on "art and inspiration" and above all to the affected nonsense uttered with regard to that—probably mythical and certainly undesirable—alien architectural obstructionist, the egregious, untutored genius.

Until architects themselves are in agreement as to what constitute the first principles of design it does not appear to be very reasonable to blame the public for being unable to discriminate between the essential factors that make for what is good or for what is bad in architecture. Just as only a literary expert can be expected to differentiate between a great and a minor poet, so only the judgment of the educated architect should be accepted on any question concerning the art we are discussing. But here, as we have already pointed out, is another difficulty inasmuch as, with very few exceptions, modern architects have been trained with no very clear or definite ideas of any special period or phase of art. Let us briefly review the changes in style which have occurred in England since many of the leading architects of the day commenced their professional careers. Some thirty-five years ago that most untoward architectural movement known as the Gothic Revival was nearing its close, although at the time its early dissolution was probably unsuspected. The young architects of that day were therefore fired with enthusiasm for Pugin's "True Principles" which they were trained to apply indiscriminately to designs for ecclesiastical, civic and domestic buildings. A few years later and the tide of architectural taste had turned in favour of the so-called "Free Classic" or "Queen Anne" style which in its turn was supplemented for a short time by the often picturesque, but generally anomalous and debased, architectural medley typical of "Jacobean" or early Renaissance art.

(To be continued.)

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.		COMPETITION.
Oct.	7	INVERNESS. BOAT SHELTER. Engineers invited to submit plans for a scheme, not exceeding, in cost, the sum of £10,000. Conditions from Kenneth Macdonald, Clerk to the Harbour Trustees, Town House, Inverness.
Oct.	31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct.	31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov.	1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
Nov.	14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec.	14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
No Date.		CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50 £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.

** This competition has been unfavourably reported upon by a Correspondent.*

Ryde, I.W.—In the open competition for a parish hall and institute at Oakfield, Ryde, to cost about £1,000, the selected plans were prepared by Mr. George Boughton, M.S.A., Ryde, who has been appointed to carry out the work.

Bakewell Public Baths and Pump Room.—It is stated that several architects are preparing plans for the above buildings, for the best of which a premium of £25 has been offered.

Dolgelly Free Library and Institute.—The result of the recent competition has been announced as follows:—First, Mr. E. A. Fermaud, Denbigh Street, Wilton Road, Victoria, London, S.W.; second, Mr. Ellis, Aberdovey, North Wales; third, Messrs. Lavender and Edwards, Wrexham.

Concerning the Cornwall County Council offices competition, "A Cornish rate-paying certificated Architect" writes to the "Western Morning News as follows: An advertisement in your paper concerning the above appears to me to be almost an insult to members of the architectural profession. By it the Cornwall County Council calmly invite architects to deposit a guinea with their clerk in order that they may be allowed to give the Cornwall County Council the benefit of their knowledge and experience and have a chance of winning a paltry premium which is to be merged into a questionable commission for the successful designer, provided, I suppose, he be employed to carry out the work! Why, this is a worse lottery than a "Limerick," and the Cornwall County Council must really be careful or the law will be down on them. How would lawyers, and doctors, and other professional men like it if possible employers were to advertise for their services in such terms as those printed by you? And what kind of men is it supposed that such advertisements will be answered by? This competition is on a par with others promoted of late years by our expensive Cornwall County Council, and it indicates penny-wise and pound-foolish methods of business which new blood in their ranks might rectify. The Cornwall County Council would stand a better chance of obtaining good and honest designs from Cornishmen for their office if they were to state in their preliminary advertisement that (1) a professional assessor would be appointed to advise them on the relative merits of designs submitted; (2) that the competition would be confined to certificated Cornish architects; (3) that none of the officials of the Cornwall County Council would be allowed to compete for, or carry out, the selected design; and (4) that the amount of the successful competitor's be named and the guinea deposit fee omitted, or say, lowered to five shillings, to insure the receipt of designs representing a month's labour and expenses, from each of those architects who may be persuaded to join in the gamble!

Notes and News.

A welcome all-round improvement in trade, reported from Leeds, naturally improves the outlook for builders. It is claimed in the local press that Leeds is "the pulse of trade." In bad times Leeds is among the last centres to feel the depression, and in improving times it is among the first to feel the spring.

* * *

The lectures in practical sanitary science and civil engineering, arranged by the Institute of Sanitary Engineers for the session 1908-9 are divided into two courses, of which the preliminary begins on Tuesday, October 5th, 1908, and ends on Thursday, November 19th, 1908, and the Advanced begins on Tuesday, January 5th, 1909, and ends on Thursday, April 1st, 1909. Ten lecturers are named in the prospectus, which can be obtained from the hon. sec., Mr. N. W. Hoskin, 120 and 122, Victoria Street, S.W.

Messrs. J. Weeks and Co., specialists in horticultural buildings and heating apparatus, whose business was established in Chelsea exactly a century ago, have opened new offices at 72, Victoria Street, S.W. Weeks' duplex upright tubular boilers have been used, it is stated, not only for heating glass houses throughout the kingdom, but also in a large number of churches, schools, and public buildings at home and abroad, and they have been installed in the South Kensington Museum, Canterbury Cathedral, and Netley Hospital.

* * *

Among the houses of historic or personal interest which are to be indicated in the near future by the fixing of County Council tablets are: No. 28, Herne-hill, associated with John Ruskin; No. 11, Carlton House Terrace, where Mr. Gladstone lived; and No. 4, Beaumont Street, W., once the residence of John Richard Green, the historian. Another house to be indicated is of special interest—namely, No. 14, Buckingham Street, Strand. Here dwelt not only the painters Etty and Clarkson Stanfield, but at a much earlier date the famous diarist, Mr. Samuel Pepys, who was succeeded in later years as a resident by Robert Harley, Earl of Oxford.

* * *

One of the oldest landmarks of Paris, the ancient Hotel-Dieu (hospital), which overlooked the Place de Notre Dame, is being demolished. It was founded by St. Landry about the year 660 in the episcopacy of the 28th Bishop of Paris. In the 12th century it was enlarged, and later its name was changed repeatedly—Hospital of St. Christopher, House of God, House of Our Lady, Hotel of Humanity (during the rebellion), and finally once more Hotel-Dieu. Its occupation was gone 30 years ago, when the fine present Hotel-Dieu was built. The question was long agitated whether the old building ought not to be burnt down on account of the danger to Paris of the germs of disease which must be lurking in every nook and cranny of its hoary walls, but the risk from fire to the surrounding houses was considered too great, and it was finally decided to disinfect very carefully with liquid solution each portion of the building as it was being demolished.

* * *

The Lord Mayor of Birmingham has consented to open the Midland Counties Building Trades Exhibition on Monday, October 12th. The organisers of the exhibition have arranged that in addition to the cash prizes and certificates which they are awarding to the successful competitors in the competitions for students and apprentices, to give 5 per cent. of the gross takings at the gate to such local charities as the committee may decide.

* * *

The demonstration of the uses of the Williams "Gripall" floor cramp, which was announced in the columns of our issue of the 9th inst., was successfully held at our offices last Thursday. Mr. Williams, who attended personally, brought with him a small model floor, which was divided up into a floor on floor, a concrete floor and the ordinary open joists. With this model he clearly showed how easily his cramp could be used. The builders, concrete specialists and surveyors who attended unanimously agreed that this was the best cramp that they had seen.



ST. PETER'S CHURCH, BROWN STREET, GLASGOW.
REMODELLED BY SALMON AND SON AND GILLESPIE, ARCHITECTS.

This was originally a square church with heavy looking galleries round three sides supported on light iron pillars. These galleries were taken out and the church remodelled in the form of a Greek Cross. The contractors were:—Mason work, R. Gilchrist & Son; joiner work, Anderson & Henderson, Ltd.; plumber work, R. Munro & Son; plaster work, W. Tonner & Son; slater work, A. D. & MacKay; heating, J. Combe & Son; electric wiring and fittings, Andrew Hutcheson; painter work, Thomas Lawrie & Co. The cost was under £3,000.

Swansea Cottage Exhibition, which is to be held on the Town Hill Estate of the Swansea Corporation from June to October, 1909, will comprise the following classes:—(A) Houses to contain two bedrooms, large living-room, and scullery, maximum cost £175; (B) Three bedrooms, large living-room, and scullery, maximum cost £200; (C) Three bedrooms, parlour, large living-room, and scullery, maximum cost £225. The site consists of 50 acres. Ninety-two entries in the town-planning competition have been received. The awards have been made, but the names of the competitors are sealed, and will not be made known until October 3rd.

* * *

Attention is called by the secretary of the Liberty and Property Defence League to a Bill for the amendment of the law of distress for rent, which has passed through the House of Commons and the final stages of which will be passed in the House of Lords during the autumn sitting. This Bill, the secretary contends, would not only injure landlords, but would react most unfavourably on the position of tenants generally. In 1871 the goods of lodgers were protected from distress by a superior landlord for the arrears of rent owing by his immediate tenant, and it is proposed now to extend this protection to the goods of "any under tenant, lodger, or other person not being the immediate tenant of such superior landlord." These words, it is contended, are so vague as to be dangerous, and if they are adopted for legislative purposes they will necessarily result in litigation before their legal meaning can be settled. It is further assumed that if this Bill were allowed to pass, tenants, as a class, would, in the long run, lose far more than landlords.

The session of the School of Architecture at University College, London, will begin on October 5th, on which day students should attend to arrange their courses with Professor F. M. Simpson. In addition to the regular three-years' courses for degree and diploma students, there will be a special course on French Mediæval Architecture by Prof. F. M. Simpson, on Tuesdays, at 7.30, beginning on October 13th. There will also be two design classes conducted by Mr. Cyril E. Power, A.R.I.B.A., under the supervision of the special visitors, Mr. Leonard Stokes, F.R.I.B.A., and Mr. Ernest Newton, F.R.I.B.A. The senior design class meets on Mondays and Wednesdays at 6.45, beginning on October 7th, and the junior design class on Mondays and Thursdays at 6.45, beginning on October 8th.

* * *

Scarborough.—The Town Council of Scarborough recently recommended that application should be made to the Local Government Board to sanction the borrowing of a further sum of £12,000 for the Scarborough Marine Drive. It was proposed to construct caissons or an apron at the foot of the wall. The main object in view is to preserve the drive, on which £100,000 has been spent. Mr. P. W. Meik has reported that the wall had moved forward more or less under the combined influence of too heavy back pressure and too little resistance at the foot. An additional weight, or else a greater hold on the gravel, is required, and he therefore recommends the construction of 23 caissons at a cost of £400 each, having between and in front of them an apron or boulders, the total cost being about £9,200, in addition to putting down the apron. After considerable discussion, the proposal to promote a provisional order and to effect the loan was rejected.

C

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS.

The following description of the new Central School of Arts and Crafts, which has just been completed, has been supplied by Mr. W. E. Riley, F.R.I.B.A., the superintending architect, from whose designs and under whose direction the work has been carried out.

The site, which is irregular in shape, has a frontage to Southampton Row of 106ft. 9ins., and to Theobald's Road and Paxton Street of 106ft. 6ins., and it has been necessary to cover practically the whole ground in order to give the required accommodation. The building contains a basement and six other storeys, which together give a floor-space of about 74,000 square feet; it contains in all seventy rooms, viz., forty-two class-rooms or workshops, a large central hall, common room, administrative offices, and staff rooms.

In the basement are the rooms for the heavy work, comprising leadwork, stonework, ironwork, metal-casting, etc. Here also are the principal lavatory for the students, and the boilers for the heating system, which is common to this building and to the adjoining training college for teachers.

On the ground-floor are the administrative offices, staff-rooms, common rooms for the students, class-rooms for architecture and wood-carving, and the central hall, which is lighted by a dome. A lecture theatre to accommodate 300 is situated on the corresponding floor in the training college; it is directly accessible from the school, and is intended to be used jointly by both departments. On the first floor are the class-rooms and workshops for goldsmiths' and silversmiths' work and allied crafts, including chasing and repoussé, modelling, engraving and die-sinking. On the second floor are the class-rooms for the arts and crafts in connection with book production, namely, illuminating, typography, lithography, wood engraving, and bookbinding. On the third floor are the rooms devoted to the arts and crafts connected with cabinetwork and furniture, namely, drawing and design, cabinet-making, polish, and upholstery. On the fourth and fifth floors are the studios, class-rooms, and workshops, which require special consideration in their lighting, viz., those for life-drawing, painting, modelling, stained glass, decorative plaster, embroidery, and weaving.

Accommodation is provided for about 900 students at one time. Special arrangements have been made for adequate means of escape in case of fire, and the general construction of the building is fire-resisting throughout.

The general height of the class-rooms from floor to ceiling is 13ft., that of the central hall is 23ft. to the underside of the dome. The height of the building from the street to the top of the cornice is 75ft. 6ins., and 87 ft. 6ins. to the ridge of the roof.

The façades to the streets are of Cornish granite from the Colcerrow quarries, and Portland stone. The entrance and central hall are paved with Hopton Wood stone.

The building has been designed, conjointly with the adjoining training college, in a plain and substantial manner, with the intention of giving expression to the purposes for which it is used.

The work of erecting the building has been carried out by the Works Committee of the Council, under the immediate direction of Mr. G. W. Humphreys, the Council's Manager of Works.

The work in connection with the heating and electrical equipment has been carried out under the supervision of Mr. Maurice Fitzmaurice, C.M.G., the Council's chief engineer. The following is a short description of this portion of the work:—The electrical energy for both lighting and power purposes in this building is supplied by means of two distinct services, and in the event of the failure of either of these, an automatic switch will bring the other into use. Inverted arc lamps have been largely installed and incandescent lamps, where used, are of the metallic filament type. Electrical energy also drives the two large exhaust fans which deal with the ventilation of the building and a goods lift for serving each floor. Fire alarms have been fitted throughout the building, and a system of electric clocks on the Magneta system is provided for the principal rooms. Provision is also made in some of the class-rooms for the use of electrical power for the purpose of driving mechanical tools, heating small furnaces, etc. Special consideration has been given to heating and ventilation, the heating apparatus consisting of radiators heated by low-pressure steam on the vacuum system, fresh air being taken in through the outer walls, and warmed before entering the rooms. Each radiator is separately controlled. The steam is raised by two large multitubular boilers of the Cornish type placed in the basement. The school is under the direction of Professor W. R. Lethaby. The annual exhibition of students' work executed during the preceding session was on view on Thursday, Friday and Saturday, September 17th to 19th.

A brief visit to the exhibition on a rather gloomy day impressed us with the idea that some of the class-rooms in which it was held were insufficiently lighted, but it must be admitted that the light was bad outside as well as inside; only it struck us that more window-space was wanted. The architectural drawings exhibited were not particularly interesting. That the designs for town houses, small churches, country cottages, and village halls, were somewhat lacking in originality of treatment, is perhaps rather a merit in the work of young students, who should rather be encouraged to imitate good models than to indulge an untrained fancy. The drawings were uncommonly clean and workmanlike, with a characteristic tendency to over-elaboration. This, again, is "a good fault" in students, with whom the time for pruning, as well as for the full expression of individuality, is not yet. The stained glass was remarkable for the general vigour of design and the general dulness of the colouring. The statuary was, if due allowance be made for the apprentice hand, strikingly bold and firm in the modelling, with a notable absence of mere prettiness. Altogether, the exhibition inspired hopefulness for the career of the students, and confidence in the ability of the teachers.

Falmouth.—An important scheme is on foot to construct a large dock at St. Just Creek, in Falmouth Harbour. The depth of water would permit the berthing of ocean liners, and it would be of great value to China clay exporters.

THE ARCHITECTURE OF DUBLIN.

The Handbook to Dublin prepared for this year's meeting of the British Association has an interesting chapter in the Architecture of the City by Count Plunkett, M.R.I.A., in the course of which the writer says:—"The natural conditions which affect its foundation continue to exercise a strong influence on the preservation, expansion, and sanitation of Dublin. The site of the city was an irregular slope towards the river and the sea, diversified with small hills. Among the drawbacks of its position were the low-lying stretches of land within the city, and the expanse of sand through which the river meandered. Towards the river ran several water courses, and even on the hillocks were many springs and some undrained bogs. Several rivulets still run under the city. Like many of the English cathedrals, Christ Church and St. Patrick's were built on morasses, which continue to menace these ancient buildings. The Dublin mountains, on the south, with their wooded slopes, reflect some beauty in the city, but the low-lying sea-shore that touches it has been of necessity a neglected foil to the city's architecture. Indeed, the old plan of the city remains practically unaltered, the principal thoroughfares, though more or less direct, are not so straight in line as to sacrifice variety. There are few streets of any length that are absolutely straight. Westmoreland Street and D'Olier Street diverge from the line of Sackville Street. Thoroughfares like Grafton Street, though short, and altered in recent times, and South Great George's Street, congested with business, are as winding as neglected back streets. The building of a city market, and the running of tram lines, make little change in the width and general plan of a Dublin street, owing to the penal cost of promoting improvements Bills in the Imperial Parliament. One of the greatest thoroughfares, Capel Street, though it has lost all its old-time quaintness, is as narrow as it was a hundred years ago, and Parliament Street, which continues it on the south side of the river, cramps the view of the city hall. The Wide Streets Commissioners in the eighteenth century made some bold changes, and planned reforms that are still called for.

"Many of the modern buildings suffer greatly from the want of 'distance' caused mainly by the narrowness of the streets. The most extended roadway in the residential quarter is that beginning at the east side of Merrion Square, and running in a straight line to Leeson Street. Owing to the irregular rise of the ground, the varying heights of the red-brick buildings, of the pleasant breaks made in the course by green squares and cross streets, this affords one of the prettiest and most reposeful views of the city."

There are illustrations, from old prints, of the Parliament House (Bank of Ireland), Trinity College, the Royal Exchange (City Hall), Custom House, and Leinster House, with some account of each building. Of the Parliament House Count Plunkett writes: "The general effect, with its 'confusion' of styles, is singularly beautiful and noble. It took genius to devise those great sweeping curves of the wings, to lighten the expanse of the screens with Ionic columns, to make the wide exposed portico solemn with massive Corinthian. The Parl



THE CUSTOMS HOUSE, DUBLIN. JAMES GANDON, ARCHITECT. [*Photo: Arch. Review.*

ment House covers an acre and a half with its semi-circle. One of the purposes suggesting the employment of Corinthian columns on the Lord's entrance was the harmonizing of the House with Trinity College." Of Trinity College itself the writer characterises Sir William Chambers' front as "fortress-like and impressive, and in great contrast to its beautiful neighbour."

Only two of the original old stone bridges, whose curves give such charm to Dublin streets, now remain. The old bridges rose too steeply for the convenience of traffic. The lattice iron bridge of the Loop Line Railway now quite spoils the view of the Custom House from the city. Of the Custom House it is said that it "was planned on a scale that seems quite out of proportion to the business of the city."

Some account is given of other notable buildings, and reference is made to the "private dwelling houses, whose merits have stood the test of time." Of these Powerscourt House is described as a "lovely building, now a warehouse."

"A distant view of Dublin in the eighteenth century," concludes Count Plunkett, "showed the city apparently spireless; and the first church of modern times with a spire of considerable elevation was St. George's, built by Johnston at the beginning of the nineteenth century. To-day the city's prospect is punctuated by spires of no little beauty, for its churches are many and mostly Gothic. Those who planned the city—while it was still in the making—had to consider the general perspective, and to calculate on the peculiar aerial effects of a climate almost moist. Their success in building according to their environment is strikingly illustrated by Malton who has recorded the impressionism of Dublin streets with absolute fidelity. In certain streets, such as Upper Fitz-William Street, the sky-line leads the eye directly to the Dublin Mountains, which, far from being dwarfed by their distance, loom up in the magnifying Irish atmosphere. Chromatic colouring was a thing not dreamt of by our old architects, but they had mellow-tinted bricks, and they frequently used cut-stone up to the first floor. Though a flatness of facade was the rule in private houses, many of the shops were saved from monotony of appearance by rounded fronts and the most elaborate 'leading'; and entablatures decorated with tenuous festoons were until lately to be seen in some of the back streets. "Irish architecture is generally reposeful, and its Queen Anne work seldom ran into the eccentricities common to the style. An ancient city, Dublin has no corbelled or timbered houses, and few gables. Most of its landmarks have disappeared. It has no gates; part of the old Dame's Gate was turned to use for the pedestal of the statue of William III., in College Green; and the castellated gate built by Johnston in 1812 was removed in 1846 from Barrack Bridge to the hospital at Kilmainham. Some thirty years ago there was in the Coombe and neighbouring quarters many quaint structures of the close of the seventeenth century. Now, the type of house with Dutch gable and sashes flush with the wall is only a memory. Little of Queen Anne work remains. About 1776 extensive changes began in the city—streets were opened in all directions, and the building mania lasted for nigh fifteen years. The style of architecture then common tried the gifts of the designer rather severely. The houses of this period stretch monotonously in a straight line through many of the most fashionable districts. They have suffered greatly from modernization, and the consequent sacrifice of effects relied on by the architects. The cross-line of small-panel sashes and the graceful scrolls of fan-lights are gone, leaving vacant spaces; of the striking link and lamp-holders, and other fine ironwork, there is hardly a trace. Many of the balconies have been removed, to be sometimes replaced by the pretentious castings of the fifties. It is only in architectural detail that we discover the finer qualities of the earlier time—in the beautiful proportions of doors, windows, and porticoes. The sense of beauty, however, found free play in the interiors—in their noble spaciousness, working balanced by the quality of the workmanship in stucco and joinery, and carving and inlaying, which made the seventeenth century Dublin house one of the most artistic of European dwellings."

LONDON SUBURBS.

I.—West Hampstead.

While central London is being rebuilt, it would be strange if the suburbs did not follow the example; and the vast increase of the metropolis during the last few years means not only the expansion of older suburbs, but the creation of new ones. The methods of their development, the styles, if styles they be, used in building, the accommodation provided for the tenants, the planning, such as it is, of the roads and the facilities of communication with the business centre of London, are all very much changed, and are still changing, since the north side of Regent's Park and St. John's Wood became north-western "suburbs," and Bulwer-Lytton could describe a "villa at Brompton" by the same word. It was entered, he tells us, by "a Gothic hall, six feet by four"; but although the remark was satirical, it was not ill-natured. All over the older suburbs, varieties of Gothic and Elizabethan continually cropped up, especially in detached dwellings; nor were they absent from that special variety of house-building known as "semi-detached." The growth of suburbs was slow, and the pressure upon land moderate; gardens consequently were liberal and well-planted; roads were wide, and there was a general sense of spaciousness. Now all is changing—changing incessantly; but it would be impossible to say that the changes point in one particular direction. All that is certain is the enormous and rapid growth, and when we hear of the Willesden district containing a hundred thousand inhabitants, we are driven to ask if the word suburb be any longer applicable; is it not rather a city, and would it not be better to treat it as a city?

Among the new districts, West Hampstead is one of the most convenient and rapidly-growing; its roads of villas are typical; its general appearance exhibits both the good and the bad points of a modern suburb. It was, not many years ago, the village of West End, and was a hamlet or offshoot of Hampstead: the name has been unwisely abandoned for the neighbourhood, though retained in West End Lane, virtually its main thoroughfare. Its older building designs exhibit the red brick with stone dressings of the red-brick revival of a quarter of a century ago; its gables are often Jacobean and not unpleasing, of the sort ridiculously misnamed "Queen Anne": one notable feature being the nearly universal use of dormers. Rising from the red roofs of the older villas, they are effective; in the new designs, they resemble zinc cisterns, and are intolerably ugly; in both cases they give only a very moderate amount of light to rooms full of awkward angles. This is a detail which calls for reform at the hands of new designers and builders of villas. The suburb stretches up the hill to the north-west towards Golder's Hill, and ends only at the western edge of Hampstead Heath. Here the houses are larger, the designs more elaborate, and the styles what are now collectively known as Renaissance, with a good deal of Georgian.

The curving roads are a pleasant feature of West Hampstead, mitigating the sense of monotony, and avoiding the mistake, so frequent on the Continent, of a *boulevarde à vue infinie*. In one sense, however, the boulevarde exists, and that is in its trees; the Finchley Road is well planted with them, and they have been introduced in other roads. Here, as in most of our outlying districts, the word "street" is almost unknown. Almost every variety of villa is to be seen. Twenty years have been found sufficient to tone their red bricks to a pleasant hue, and weather the stone dressings to a mellow tint, to say nothing of a plentiful growth of ivy. In some cases, indeed, too plentiful, for the creeper has been allowed to cover the entire surface of the house up to the eaves, converting it into a sort of "Jack-in-the-Green." These, however, are rare.

Of course, the neighbourhood is not without that singular anachronism, the balcony, so placed that no one can enter it or use it—a feature dear to the suburban designer, and wholly inexplicable. The house door now very generally contains more glass than woodwork, but the "blocked column" is happily rare.

One very modern change is much to be regretted; this is the too lavish use of white paint; if allowable for woodwork, it is a complete mistake to apply it to stone, and especially to stone which time has begun to mellow. The very latest fashion seems to be without rhyme or reason: most of the houses are approached by a small space, almost too small to be called a garden, but wide enough for a few shrubs. It is remarkable how very carefully these are cared for and kept in order. Perhaps the American word "parking" best applies to them, and they invariably soften and improve the vista. It is amazing, therefore, to find that the gate piers, usually of red brick with stone caps, are being coated with coarse rubble, and in such a way as to conceal all their mouldings and details.

But the villa is no longer universal: large blocks of flats appear in parts, and the inevitable cupola, with the usual awkward addition of a flagstaff. Municipalism is represented by the immense electrical works with giant chimneys, and a yard stretching from West End Lane to Finchley Road. This is bounded by a red-brick wall and shrubs, the latter protected towards the street by a dwarf wall, in the same material. The other side of the road is occupied by the well-known cricket ground, a beautiful oasis which refreshes and enlivens the whole neighbourhood.

Views and Reviews.

House Painting: and a Purple Patch.

The well-marked tendency of wielders of the brush to indulge in more or less highly coloured rhetoric is fully sustained in the letterpress in this handbook on "House Painting." In the preface, for example, the author lays about him in language like this: "Paint is a necessity; it is an economy; it is a means of sanitation; it helps us to keep clean; it keeps us warm in winter and dry in summer; it brings light into dark corners; it beautifies our homes; it increases our credit; it raises our assessments; the most ignorant enjoy its benefits; and the most highly developed minds, whose culture is so profound that they have forgotten all they ever learned at college, retain its appreciation. A subject so various in its uses, so universal in its appreciation, deserves attention—indeed, merits intelligent study." One misses the natural sequel, "Loud cheers." It is only fair to the author to state that it is only in the preface that he waxes so floridly eloquent. Elsewhere we have observed no purple patches. In the text he settles down to steady practicality. It will be noted that this manual is expressly stated on the title-page to be "a book for the householder." It nevertheless includes a good deal of information that the architect and the craftsman will not despise, though they will hardly relish this somewhat unprofessional appeal to the layman.

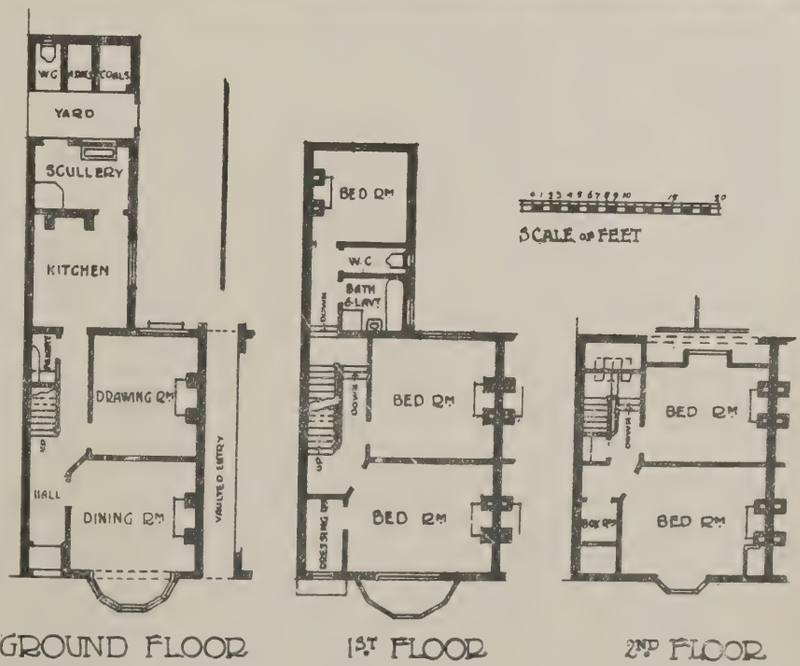
House Painting, Glazing, Paper Hanging, and Whitewashing. A Book for the Householder. By Alvah Horton Sabin, M.S. New York: John Wiley and Sons. London: Chapman and Hall, Ltd. 12mo, v. + 121 pages. Cloth, $1.00 (4s. 6d. net).

The Complete Plumber.

The fifth volume of this encyclopædic work comprises a section in electrical lighting and heating, by H. D. Wilkinson and Frank Broadbent, and a section on hot-water and steam warming apparatus, by Francis William Raynes. The sixth volume, which apparently brings the work to a conclusion, contains four sections, dealing respectively with gasfitting, by J. D. Somerville; glazing, by J. Eustace Salisbury; specifications, quantities, and estimates for plumbers' work, external and internal, by W. E. Davis; and shop management and bookkeeping, by Alfred C. Beal. There are also four appendices, dealing severally with water supply; trade lists of metal sheets, tubes, etc.; tables and mensuration; and temperature. A fairly copious index to the entire series of volumes completes a work that, from first to last, reflects great credit on the editor, and on the sixteen specialist contributors who have enabled him to bring a rather ambitious project to a successful issue. This is perhaps the first really adequate representation of the multifarious and complicated details that, in the aggregate, make up the whole duty of the plumber and sanitary engineer, and it is also the most substantial manifestation of the practical side of sanitary science. Its value can hardly be exaggerated.

The Modern Plumber and Sanitary Engineer. Treating of Plumbing, Sanitary Work, Ventilation, Heating (Electric and Other), Hot-water Supplies, Gas-fitting, Electric Lighting, Bell-work, Painting, etc. By sixteen Specialist Contributors, under the editorship of G. Lister Sutcliffe, A.R.I.B.A., M.R.S.I. With Appendices of Tables, Memoranda, Mensuration, etc. Illustrated with about eleven hundred figures in the text, and about fifty plates, many of them in colour. Divisional Vols. V. and VI. London: The Gresham Publishing Company, 34, Southampton Street, Strand, W.C.





PAIR OF HOUSES, ERDINGTON. BERNARD A. PORTER, ARCHITECT.

In this pair of houses, erected on a cramped site in Arthur Road, Erdington, the entire front is covered with roughcast and coloured with the exception of the plinth, chimney, quoins and arches, which are of two-inch Staffordshire brindle bricks, with white mortar joints. The roofs are covered with red-brown tiles. Messrs. J. & E. Baker, of Aston Manor, are the builders, and the architect is Mr. Bernard A. Porter, of Colmore Row, Birmingham.

Correspondence.

The Architectural Profession To-day.

To the Editor of THE BUILDERS' JOURNAL

SIR,—You invite comments on your article, "The Architectural Profession of To-day," and suggestions for remedying the lack of employment which I understand exists in the profession. As to the position of assistants, it appears to me that one of the chief causes is that the architect of to-day has found the elaborate drawings which used to be prepared for the bedazzlement of his client are, if not unnecessary, at least a source of expense which he will do his best to eliminate, and that a drawing made in the beginning on tracing paper, from which innumerable prints can be made, serves all practical purposes. Hence in an office where five assistants had to be employed, painfully and laboriously elaborating and tracing, one assistant and an office boy can perform more work, and work, moreover, which is reasonably to be relied upon. That tracing and inking in is a thing of the past, few of us who served an apprenticeship will regret; at best it was a harassing and unhealthy occupation. You complain of the architect with more or less independent means, who you allege is likely to accept work for less than the standard rate of pay. I think the instances of this are very rare. Surely the man in this position is rather less likely to do this than the man, perhaps with wife and children to depend on him, who finds that the sole chance of his having the wherewithal to provide for them is to get another job, and that a little lowering of his fees would get it him.

I remember that the first question I was asked by my principal was: "Have you sufficient means to support yourself without it, because if not, you had better let architecture alone."

You speak of the students from the architectural schools displacing older assistants. I cannot from my own experience believe that there is much in this. Excellent as the training of some of these schools is as a preliminary to acquiring some proficiency in the art of architecture, it can be but a beginning. Having recently an opportunity of employing an assistant, I interviewed some of these young gentlemen; perhaps the remuneration I could afford to offer did not attract the best, but in those I saw the pertness with which they gave me to understand that they, with three years' paper experience, could improve on my humble efforts, did not encourage me to suppose that they would be any improvement on the more old-fashioned, if less "trained," "assistant."

It seems to me that the profession is itself somewhat to blame for its depressed state; our employment depends very largely on the confidence of men who have made their money in business. Whether simply as employers or jointly as committees, they require, in the first place, men who know their business to their finger tips; who understand what they call practical details— how to get value for their money is what it really amounts to.

What can such men think of a profession which allows its students, after a four years' course and an examination in theory, to call themselves proficient, and would, if it could, allow them to register themselves, to the exclusion of men who were building twenty years ago.

Then, look what a business man must think of architectural competitions; 20 to 100 men are willing to do half the work necessary for carrying out a building, wasting a fortnight to six weeks, for the bare 20th or 100th part of a chance of perhaps carrying out the job, or securing paltry premiums amounting to perhaps 1-10th per cent. of the proposed contract. What should we think of a doctor or lawyer who spent six weeks on a Limerick competition, with a good deal more chance of getting something out of it, than there is for the whole of the competitors in four out of five architectural competitions?

You ask for remedies; frankly, I have none. Building is only required in times of increasing prosperity, and Architecture only by the educated building owners. The country has had its good time; and though there may be another increase in prosperity, it must be of a milder nature compared to the rise between 1887 and 1900. What chance there is of the general public becoming more educated in matters architectural; you know better than I; but my experience of education is that it is becoming more commercial and scientific rather than more artistic.

Two hopeful signs I believe I see in that the employer is beginning to realise that it is a good thing to have his architect somewhere near his building, and that instead of being left to the clerk of the works and the quantity surveyor, it is desirable, if the artistic side of a building is of any value, that the architect should personally be in pretty close touch with it, and this should mean the employment of a larger number of architects, though it may mean a sacrifice of the incomes of a few for the advantage of the many. The second is that the London County Council Hall Competition put a good-sized nail in the coffin of architectural competitions, and this should be an all round saving.—Yours faithfully,

A STRUGGLER.

Farnham.

[Our correspondent is entitled to his gospel of pessimism, but not to do us an injustice. It has been no part of our case that the architect with private means does, or is likely to, accept less than the standard rate of fees; on the contrary, he is in a position to pick and choose his clients. Our complaint is that the increasing number of moneyed men taking up the profession of architecture is making things very difficult for those men who look to their work to provide them with a living. Moreover, many of these men are little more than travellers, whose golfing week-ends commence on Thursday and end on Tuesday; and the major part of the work appearing in their names is done by their assistants. If registration was in force, it would be necessary for such men to undergo a systematic course of training, followed by examinations, and the number of dilletante architects would, probably, be very largely reduced. We think our correspondent unduly hard upon the modern schools; the curricula of most of them provides or insists on practical office experience as a part of the set course. The evil is the want of thorough general education; education that makes for the strengthening and developing of character rather than the evolution of merely material instincts. Unfortunately, the world, at present, inclines to the egotist and the mountebank, and as long as it couples high ideals with an empty pocket, our correspondent may expect pertness and "cocksureness" in the budding architect.—ED. B.J.]

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am sure architects must have read with the greatest interest your article entitled, "The Architectural Profession of To-day." Certainly, the more the subject is properly ventilated the better, and this your article accomplishes in a very able manner. Carried out on these lines, I think we may reasonably hope that the series of articles may play a great part in turning the tide.

Probably the cause of depression lies chiefly in the attitude of the public towards the profession. It is a truism to say that architects are not thought much of by the public as a body. The truth of this is brought home to architects by many a client, whose interference on expert matters amounts to nothing less than impertinence. However, if the architectural profession apply themselves resolutely to adjust matters within their control, it is more than likely that public opinion will have an improving tendency.

Why should we not take a hint from the numerous gatherings held in London lately, and have a Congress of Architects? We could invite delegates from the colonies and foreign countries, etc. An immense amount of new life and activity might thus be created, and the various papers read would contain the best and weightiest opinions obtainable. Also, people would be brought together, and union is needed now more than any time to avert what is speedily becoming a crisis. The sale of tickets and programmes, etc., would provide a fund to finance the measures of reform decided upon.

It would be useful surely for a census of the profession to be made in the manner of other professions. We should then have the statistics and facts of the case to work upon.

It might also be well to institute a form of temporary registration, and eliminate those who do not really belong to the profession. The names of registered architects and assistants would be published. Each member would have a vote, and the executive would be elected by members. Various prominent men would be asked to become patrons. The profession could be placed on a business footing, and when it had taken its proper place among other professions, Parliamentary protection would be sought. The problem of the retention of architectural work for architects could be solved.

One or two immediate temporary measures would be of immense service until the above movements were realised; and I would suggest that a society for taking up law cases on behalf of architects would be an invaluable benefit. I suppose the amount of money owed to architects, which there is no likelihood will ever be paid, would, in the aggregate, amount to an enormous sum. Working for reduced commission and speculative work would be vastly diminished.

Another useful temporary measure would be the formation of an agency for providing some sort of home employment for those who are out of work, to help them to tide over till they could find employment. Doubtless in many cases it is a time of great stress. If the work

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were, say, some craft, the agency would dispose of the articles made. If only a little money resulted, it would still be a help.

There are numerous other points I should like to have touched upon did space permit.

"REGULAR READER."

Biggleswade.

["Regular Reader" has, perhaps, forgotten the International Congress of Architects, held every second year. In 1906 it met in London, and this year at Vienna. This would be too cosmopolitan in character for the discussion of the economic conditions of British architects. Probably a congress held every year in the United Kingdom might effect some improvement; but improvement depends on union, which is strength, and as long as the egotistical pride of some members of the profession bars the way, this consummation, devoutly to be wished, is hardly likely to be realised.—ED. B.J.]

To the Editor of THE BUILDERS' JOURNAL.

SIR,—If your columns are not open for discussing the merits or demerits of Socialism as bearing on the present depression, why put in "A Young Architect's" letter at all?

Many of us older architects know that a variety of reasons are the cause of the trouble, but the fear of Socialism (right or wrong) is certainly one of them, driving as it does money out of the country, which would otherwise have been spent here. But perhaps the two most powerful causes are—(1) the exacting conditions and regulations (right or wrong) of the various County Councils and local authorities, and (2) the autocratic tendency (right or wrong) of trades unions in fostering mediocrity at a high wage, instead of nursing high-minded individual freedom of effort.

AN ARCHITECT OF MANY YEARS' STANDING.

London.

[We have no objection to correspondents recording their belief that Socialism would or would not be beneficial to architects and architecture. But we are discussing the present state of distress among architects, and we do not intend that discussion to degenerate into a wrangle as to what are or are not the tenets of Socialism; and every discussion into which Socialism is obtruded usually ends in this manner.—ED. B.J.]

To the Editor of THE BUILDERS' JOURNAL.

SIR,—You are quite mistaken as to the number of explanations of Socialism. There is only one, as both H. G. Wells and Jack Williams would tell you. That one your correspondent has already given you concisely: "the social control of social necessities," and in this lies the only solution, as he says, of all unemployment. You are a specialist in building, and you are "not convinced," simply because you have not studied specially the subject of social evolution.

A. M.

Dundee.

[The impertinence of our fellow-countryman's epistle we attribute to "rash and impetuous youth." As a matter of fact, the study of social questions has been a hobby of ours for many years past. That the public is "the slave of phrases" is a mere truism; we could match our correspondent's with others. "The social control of social necessities" has an unctuous flavour. It likes us well. But!—well, we could take A. M. to logical lengths in "the social control of social necessities" from which even he would recoil. Does our correspondent really believe that great art is produced by battalions? — ED. B.J.]

Contractors and Reinforced Concrete.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In your issue of September 16th, you have an article on "Contractors and Reinforced Concrete." You say:—"Architects and engineers have begun to recognise the absolute necessity for great care and *adequate knowledge* in reinforced concrete construction," and "so much depends upon the *reinforcements being in the proper position to ensure the work being of the strength designed*, that the carelessness of the ordinary workman cannot be tolerated." In these two quotations you go to the weak spots of some reinforced concrete work. We would especially draw your readers' attention to the second of the quotations. "Carelessness of the ordinary workman" is most difficult to avoid invariably. Concrete has to be put in and consolidated. In the very action by any workman, good or bad, rods and other reinforcements that are not rigid run a great risk of being displaced from the positions the drawings represent as being needed by the calculations. Hence it should be borne in mind that the rods, bars, hoops, stirrups, etc., should be built together with such rigidity and exactness that the *concrete cannot* displace them, however "careless" a workman may be. The displacement of the reinforcements is one of the causes of failures, and rigidity of construction avoids it.

CHAS. HEATHCOTE AND SONS.

London, E.C.

Our Plate.

This school takes the place of the old Aylesbury Grammar School, dating from the seventeenth century, and now the home of the Bucks County Museum. The new buildings, providing accommodation for 150 boys and girls, are situated on an exceptionally fine site in the Walton Road. Local materials have been employed as far as possible, the exterior being faced with local red stocks, and the roofs covered with Broseley tiles. The internal decorations have been successfully carried out with Mander's green stain to the wood work, and the walls treated with the same firm's distempers. A feature has been made of the central hall, which is finished with a bold modillioned plaster cornice and deep frieze. The original tablet has been taken from the old school and placed in this room, together with a new one commemorating the erection of the new buildings. The general contractors are Messrs. Hocksley Brothers, of Wellingborough. The heating was carried out by Messrs. Musgrove, of London, the lighting by Messrs. Stott and Co. The total cost was £7,500, including the master's house. The plans, selected in competition, were prepared by Mr. Fred Taylor, A.R.I.B.A., of Aylesbury.

The architect of the new wing to Bishop's Stortford College is Mr. H. G. Ibberson, F.R.I.B.A., of London. The foundation stone of the new building was laid on September 26th.

Proposed New Works.

The Local Government Board have decided to hold, or have recently held, as the respective dates indicate, inquiries into proposed expenditure by public bodies as follows:—Water supply works and plant: Beaminster R.D.C., additional amount (September 23); Pentybont R.D.C., £2,700, for Middle Llangonoyd (September 23), £12,832 for Higher Coychurch, and £3,668 for Pencoyd (September 22); Skipton R.D.C., £600 for Appletreewick (September 25); Poole B.C., £400 for Broadstone (September 24).—Bridge construction and widenings: Beckenham U.D.C., £1,100 for widening railway bridge crossing Blakeney Road (September 22); Maidenhead B.C., £300 for footbridge over railway (September 24).—Electric light and power supply works and plant: Beckenham U.D.C., £1,750 (September 22); Elland U.D.C., £3,000 (including refuse destructor purposes) (September 23).—Sewerage, drainage tnd sewage disposal works and plant.—Burnley R.D.C., £3,800 for Worsthorne with Hurstwood (September 22); Heaton Norris U.D.C., £1,500 (September 25); Fishguard U.D.C., £1,200 (September 24); Morley B.C., £370 (September 22); Bridport R.D.C., £1,500 for Bothenhampton (September 22)); Poole B.C., £447 for Branksome (September 24); Braintree U.D.C., £6,500 (September 25); Risca U.D.C., £13,000 (Sept. 25); Southampton B.C., £790 (September 25); Springhead U.D.C., £17,000 (September 23); Friern Barnet, £2,400 (September 23); Farsley U.D.C., £500 for Wood Nook (September 22).—Street improvements, new roads, public walks, and pleasure grounds: Poole B.C., £1,412 (September 24); Risca U.D.C., £2,841 and £959 (September 25).—Various: Maidenhead B.C., £950 for subway under railway (September '24); Rochdale B.C., £8,500 for public baths (September 22); Bootle B.C., cemetery (September 23); Liverpool C.C., housing, £48,870 (September 27).

Amble, Northumberland.—The Northumberland County Council has applied for a loan of £3,513, £575 of which is for the land, to build a new elementary school, and a Local Government Board inquiry has been held.

Belfast.—Plans are being prepared for the extension of the Municipal Technical Institute.

Booth.—The proposal of the Corporation to erect a smallpox hospital in Maghull is being strongly opposed by the inhabitants there. A Local Government inquiry was held on the 22nd.

Bradford.—Five blocks of tenements, to house 432 persons, are to be erected on the cleared slum area at Longlands. Tenders are to be invited immediately by the Housing Sub-Commitee of the Corporation.

Chichester.—The City Council have purchased a site for new elementary schools, in Orchard Street, at a cost of £1,350.

Christchurch, Hants.—The L.G. Board have approved plans for the new infirmary, subject to certain modifications in the details to save cost, and the Board of Guardians have been requested to furnish a further estimate.

Creswell, Derbyshire.—The parishioners have requested the County Council to consider the advisability of erecting a new school. The cost is estimated at £8,000.

Folkestone.—Mr. Carnegie has expressed his willingness to give £5,000 towards a new library at Folkestone, on condition that there are no loan charges for land to be defrayed out of the penny library rate.

Gloucester.—It is proposed to form a side chapel at St. Paul's Church, by enclosing the north choir aisle with two oak screens at a cost of £100.

Guildford.—It has been decided by the Board of Guardians to erect a nurses' home at the infirmary. Accommodation is to be provided for the superintendent nurses, eleven nurses, and two ward-maids. The staff at present occupies uncomfortable and unsuitable quarters in the infirmary buildings, and when the staff is housed in its new home there will be room for 30 more inmates in the infirmary.

Harrogate.—The Town Council have approved plans for the following:—Mr. D. Simpson, plan for alterations and additions at 19, York Road; the Duchy of Lancaster, plan for extension of sewer at rear of Kent Road; Mesrs. Raworth Bros., plan for house at Norfolk Road (Plot 30); Messrs. Raworth Bros., plan for house at Leeds Road (Plot 31); Mr. D. Sayner, plan for 23 cottages at Birch Grove; Dr. Crawford Watson, plan for alterations to "Fawdington," Ripon Road: Mr. A. Wigglesworth, plan for packing shed to laundry at Forest Lane, Starbeck.

Hull.—It is proposed to build two new Wesleyan mission halls at a cost of £23,000. These will be built in Great Thornton Street and Scott Street respectively, and will be of a similar size to the existing Wesleyan Queen's Hall.

Keighley, Yorks.—The Town Council have approved plans for the following:—Mr. Rhodes Grace, additions, Gale Street; Mr. C. Hird, six new streets, Broomfield Estate; Messrs. Timothy Hird and Sons, shed, South Street; Messrs. Verity and Shuttleworth, workshop, Strawberry Street.

Mountain Ash.—Lady Aberdare has undertaken to enlarge the cottage hospital and build an operating theatre.

Newport, Mon.—The Wesleyan Connexional Chapel is to be restored after fire at a cost of £1,086.

Nottingham.—The City architect has prepared plans for extending the City Lunatic Asylum, at a cost of £10,800. The proposed works provide for the extension of the infirmary block on the female side to accommodate 43 patients, and for a separate block to be erected to accommodate 40 chronic cases in males.

Nottingham.—The City Council have purchased 48 acres of ground on Wilford Hills for the purpose of a southern cemetery. Three acres are to be given up for a reservoir in connection with the city waterworks; an area of 23½ acres is to be laid out immediately for cemetery purposes, according to plans prepared by the city architect, leaving 21½ acres for future extension. The work is estimated to cost £22,000, and includes the provision of two chapels, with a crematorium, mortuary and lavatories, two lodges with the necessary offices, entrance gates and fencing, the formation of carriage drives and paths, and the levelling, planting, etc.

Penrith.—The Town Council have approved plans for the following:— Co-operative Society, shop, etc., Burrowgate; Mr. T. L. Main; addition to house, Lonsdale Terrace.

Rishton, Lancs.—The District Council has approved the following plans:—Bakehouse, 57, High Street, for Miss Hothersall; amended building line of shop in Cliff Street for Co-operative Society; and alterations at rear of 92, High Street, for Mr. J. T. Proctor.

Rochdale.—The L.G. Board have held an inquiry into the application of the Town Council to borrow £8,500 to build public baths at Castleton.

Rosyth.—The Garden City Association is agitating for the erection of a garden city at Rosyth, as houses will be required for the workmen at the new naval dockyard, when this is completed. Meetings in support of the idea will be held during the autumn; and the Carnegie Dunfermline Trust, though not disposed at present to take definite action, are sympathetically inclined to the project.

Scarborough.—The Corporation is considering the erection of a destructor on a site in Seamer Road.

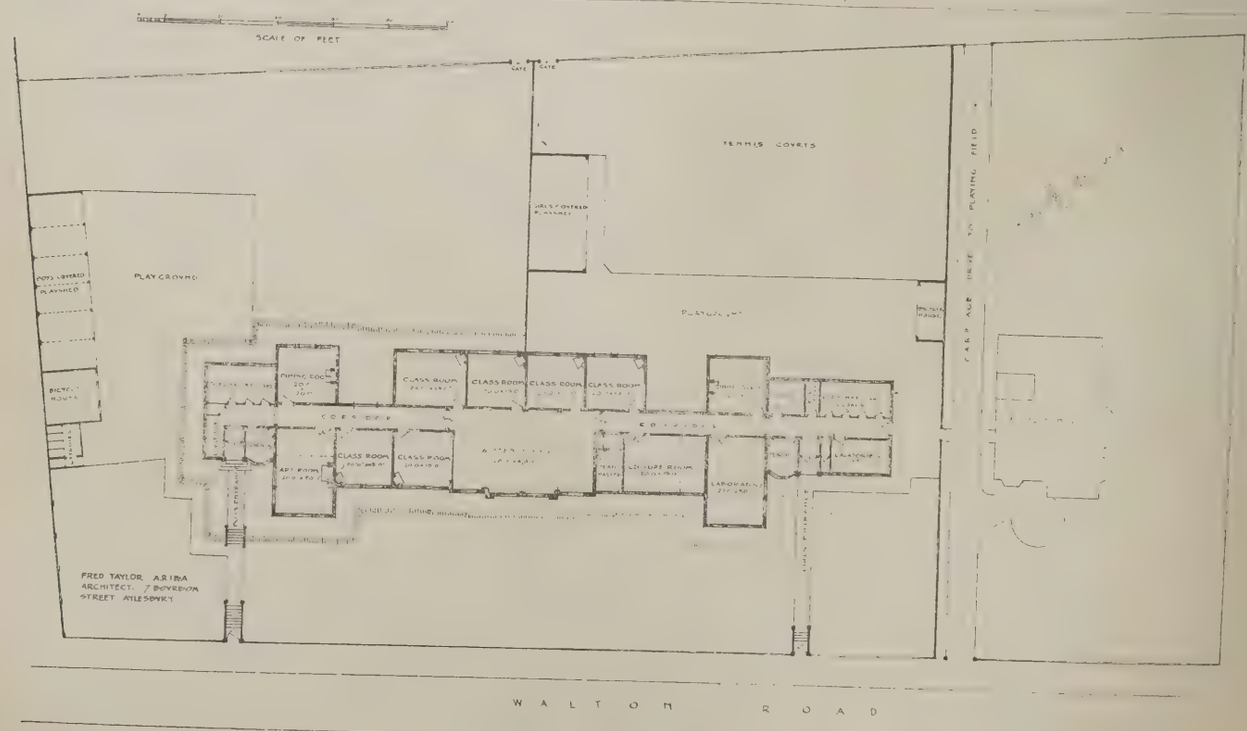
Watford.—Extra vagrant accommodation is to be provided at the Union workhouse; the plans have been passed by the U.D. Council.

Winslow, Bucks.—The Rural Council has passed plans for proposed new schools and headmaster's house, at Botolph, Claydon.

Wootton, I.W.—Mr. Percy G. Stone, F.R.I.B.A., F.S.A., is preparing plans for a new church, to seat 250 people, and for a parish room.

Walsall.—The Town Council has approved plans for the following:—D. E. Parry, 4 houses, Sneyd Lane, Bloxwich; Jesse Wootton, house and shop, West Street, Leamore; G. Pedley, two workshops, 136, Wolverhampton Road; W. H. Cooper, one house, Dale Street; Vicar and Churchwardens, vestry and porch, St. John's Church, The Pleck.

Swanage.—The U.D. Council have approved plans for the following:—Parsons and Hayter, house on Swanage Bay Estate; H. and J. Hardy, house in Rempstone Road; H. J. Smith, house on Hedes Estate; John Parsons, amended plan for house in Cliff Avenue; Parsons and Hayter, convenience at Anchor Hotel; H. J. Smith, bicycle shed, etc., in Victoria Avenue; Mrs. Hooke, shed at Highcliffe.



AYLESBURY GRAMMAR SCHOOL: GROUND PLAN. FRED TAYLOR, A.R.I.B.A., ARCHITECT

(*See Centre Plate.*)

Buildings in Progress and Completed.

Axminster.—The new post-office, which has just been opened, is situated on the north side of Trinity Square, and is a commanding structure. It has a frontage of 45ft., and rises to a height of 40ft. above the pavement. The lower portion of the front elevation is built in square ashlar walling of local blue stone with Ham Hill stone dressings. This is surmounted with a Ham Hill stone cornice. The upper portion is built in brick covered with rough-cast. The interior comprises three floors and a basement. The ground floor contains public offices, 21ft. by 15ft., a sorting office 40ft. long by 30ft. wide in the widest part, private office for postmen, and large lobby for the reception of the mails. The first floor contains the Postmaster's private office, instrument-room for receiving and dispatching telegrams and cablegrams, telephone-room for the future telephone exchange, men's room, women's room, and messenger boys' room. On the second floor there are two large store-rooms, and excellent quarters for the caretaker, which contain sitting-room, bedroom, kitchen, and pantry. The builder was Mr. R. G. Spillar, of Chard, and the architects were Messrs. Symes and Madge, of Axminster and Chard.

Beverley.—The sculpture of the west portal of the Minster, comprising 37 figures, has just been completed by Mr. Robert Smith. The figure of St. John the Evangelist, the patron saint, in the central niche, was presented by Mr. and Mrs. Thomson several years ago. Immediately below the west window are twelve niches. As the Twelve Apostles, with the seated figure of our Lord in the centre, have already been placed in the north porch, figures of the Twelve Patriarchs were inserted in these niches, and the other twenty-four niches have been filled with Old Testament saints and worthies. Beginning with the lowest range of four niches are the figures of Adam, as the gardener, with his spade, and Eve with her distaff; Noah holding the model of the Ark; and Abraham, arrested by the voice of God, when about to sacrifice his son; the ram appearing below, his horns entangled in a thicket. In the middle tier are Moses, with the Tables of the Law; Aaron, in the robes of the High Priest, holding the budding almond rod; David, with his harp; Solomon, with the plan of the Temple; Isaiah, holding a pen, and his prophetic scroll; and Daniel, with a lion at his feet. In the upper row, the Twelve Patriarchs appear, each with his distinctive emblem. "Unstable Reuben," a sword in his right hand, and an olive branch in his left, wavers between thoughts of peace and war; Simeon bears the "instrument of cruelty"; Levi, the father of the priestly tribe, displays mitre and censer; Judah, the progenitor of the royal tribe, is crowned and sceptred, and the lion crouches at his side; Zebulon, dwelling "at the haven of the sea," carries the model of a primitive ship; Issachar, of the peace-loving agricultural tribe, carries sickle and mattock; a field of corn appears in the background, and a lamb by his side. The warlike Gad is armed with a spear; Dan, the judge, holds a pair of scales, and a serpent lies at his feet; Asher is crowned with a chaplet of olive, and bears a sheaf of corn, emblematic of the fertility of his land; Naphthali is denoted by the hind at his side; Joseph by the fruitful vine; and the youthful Benjamin by a wolf.

Birmingham.—The new University Buildings, of which Sir Aston Webb, R.A., and Mr. E. Ingress Bell are the architects, are gradually approaching completion. The great hall is now finished, and the clock tower, some 30ft. square, has now risen to a height of 200 ft. out of the 325ft. which it will reach when completed. The clock, which is being presented by the contractor, Mr. Rowbotham, will be placed at the present level of the tower, and will have four dials, 17ft in diameter, with minute hands 8ft. 6ins. long. This is being made by Messrs. J. B. Joyce and Co., of Whitchurch, Salop. The Harding Memorial Library is finished outside; also the physics block, though much yet remains to complete the interiors of both. The chemistry block is proceeding but slowly at present, and one or two connecting blocks have yet to be started. The materials are Accrington bricks and Darley Dale stone, and the elevations, so far as embellishment goes, are plain, effect being sought in scale and mass rather than in sculpture and ornament.

Bradford.—Mr. Albert Halliday, of Baildon, has been entrusted with the design of the wrought iron balconies for the Town Hall extensions.

Camborne.—The new county school for girls erected from the designs of Mr. Sampson Hill, of Redruth, is now completed. The building is faced with Burhos pink elvan and granite dressings. The general arrangement of the school is on the central hall system. The hall is a well-proportioned room, with a gallery occupying three sides; the ceiling is segmental, with pitchpine moulds. The pupils' entrance opens on to the outer hall, on the right of which is a corridor leading to the sanitary offices, which are spacious and fitted with modern appliances. There is also a large cloak-room. Broad easy stairs lead to the upper gallery. The ground floor classrooms open on to the assembly hall, and the upstairs room to the gallery. The art room is on the first floor with the science room below. The upper storey is floored with reinforced concrete, which enables the whole of the rooms to have wood block floors, rendering them noiseless in use, and adding much to their safety. The walls are plastered throughout with "granite" plaster; the face of this plaster is perfectly hard and smooth, and is finished in a warm tint, having a comfortable and artistic effect. Accommodation is provided for 150 pupils. Careful attention has been paid to the ventilation and heating, the latter being by hot water, installed by Messrs. Alger and Sons, of Newport. The ventilation is by exhaust tubes leading to a turret placed over the central hall. It is intended to use an existing building for a dining hall. This will be fitted up forthwith. The whole of the contract has been carried out by Messrs. Mitchell and Bond, of Camborne, for the masonry, and Mr. W. C. Hodge, of Redruth, for the carpentry and joinery, Messrs. Tyack, of Camborne, doing the plumbing.

Darwen.—The extension of St. Cuthbert's Church has now been completed. A new tower has been added, 105ft. high, in Runcorn stone, to match the older portion of the building, and extensive alterations and improvements effected in the interior. A new carved oak screen, 23ft. high, has been erected at the chancel arch, new carved oak choir stalls installed, and new oak pews throughout. The floors have been relaid with Terralith and the chancel tiled with Marm marble. The plastered work has been treated with Walpamur, and the chancel walls hung with handpainted paper of lily design, the prevailing tone being soft green. The organ has been moved from the south transept to the north choir aisle, and a new heating system has been installed. The contractors for the building were Messrs. Lloyd and Millward; Messrs. Jas. Hatch and Sons, of Lancaster, executed the screen, pews, and choir-stalls; Messrs. Lloyd and Millward carried out the smaller screens and oak work to vestibules, etc.; Mr. E. Wrighton executed the plumbing; Mr. W. V. Fairhurst, the electric lighting; and the decorating has been executed by Mr. W. Bentley.

Dundee.—A new pavilion for diphtheria patients is being added to the King's Cross Hospital. Mr. Bennett is the builder.

Edinburgh.—The College of Art buildings, which are being erected from the designs of Mr. J. M. Dick Peddie, will be completed by the end of the year.

Edinburgh.—New engineering laboratories for the Heriot-Watt College were opened by Lord Rosebery on September 16th. The new buildings, on one floor, comprise wood workshop, 1,450 sq. ft.; engineering workshop, 1,700 sq. ft.; engineering laboratory, 4,400 sq. ft.; applied mechanics laboratory, 2,000 sq. ft.; strength of materials laboratory, 1,360 sq. ft.; smithy, 740 sq. ft.; motor pit, 375 sq. ft.; and the interior walls are faced with glazed bricks. The roofs are of steelwork, with patent glazing, wired glass being used. The floors are laid with pitch-pine blocks, except the motor and boiler pits, which are laid with concrete, and the motor pit with blue bricks. The cost of the buildings is £9,000, exclusive of the site. The general contractor was Mr. Colin Macandrew. Heating on the low-pressure steam principle has been installed by Messrs. Ritchie and Co. The plans were prepared by Mr. John Anderson, superintendent of works to George Heriot's Trust, while Mr. George Ballingall has acted as clerk of works.

Edinburgh.—The new premises of the Edinburgh Life Assurance Co., rapidly approaching completion, have been designed by Mr. J. M. Dick Peddie. The building, in the Renaissance style, is situated at the corner of George and Hanover Streets, the corner feature being a dome rising to a height of 100ft. The façade is of Portland stone on a base of grey unpolised granite five feet high, and is the first in Edinburgh to be erected of Portland stone, which was shipped from the quarries direct to Leith, and worked in Edinburgh. The building is constructed throughout with steel stanchions and floors of reinforced concrete. The drum of the dome is made of steel and concrete, and the dome itself is covered with copper. The Company's entrance is from George Street, and the pediment above the doorway contains a representation from the Company's coat-of-arms. The main office, which measures 54ft. by 45ft., has fine marble columns and mahogany fittings. The secretary's room and the manager's room are mahogany panelled and furnished with marble fireplaces, while the Board room is a handsome chamber, mahogany panelled, and

hung with the fine figured Utrecht velvet which adorned the old premises. The marble fire-place is a work of great beauty. The typewriters' room is in the basement, where the noise will cause no annoyance; and here, too, are several apartments and strong rooms for the safe custody of important documents. Special attention has been given to heating and ventilation.

Hornsea, Lincs.—A new holiday home for the Hull Guild of Braves is being erected. The building, designed by Messrs. Runton and Barry, is intended for cripples, and is therefore on one floor, except the front portion, where bedrooms, bath-room, etc., for the ladies in charge, have been arranged. The accommodation comprises four wards, a large dining-room, a sitting-room, bathroom, and offices. The site cost £264, and the contract has been let to Mr. Levitt at £1,200.

Kirkcaldy.—A new school erected by the Dysart School Board in Loughborough Road has been opened. The new school, a one-storey building, is a very pleasing structure in the modern Renaissance style. Besides ten ordinary class-rooms, provision is made for cookery and laundry work. There are also chemistry and physics laboratories with dark rooms, and a manual instruction room. A large airy central hall, measuring 66ft. by 30ft., with corridors to the side wings of the buildings, is a prominent feature, and there is also a well-arranged art room; provision being made for the teaching of technical drawing such as building construction and engineering. The heating is by the low-pressure hot water system, while the ventilation is by three extract fans. The building is lit by electricity. The front of the building is relieved by some sculpture by Mr. A. Murdoch, Kirkcaldy. Mr. D. Forbes Smith, Kirkcaldy, is the architect. The following are the contractors:—Mason, David Wallace, Pathhead; joiners, Bogie and Nicol, Kirkcaldy; plumber, James Robb, Dysart; plasterer, Alexander Hutcheson, Kirkcaldy; slater, William Currie; tile work, Field and Allan, Edinburgh; glazier, Dickson and Walker, Edinburgh; smith work, James Lessels, Dunfermline; heating, Charles Ritchie and Co., Edinburgh; furniture, Bennett Furnishing Company, Glasgow.

Lancaster.—The new Grand Theatre, built from the designs of Mr. Albert Winstanley, was opened on the 14th instant. Only the outer walls were left after the fire which destroyed the former structure, the Athenæum Theatre, and these have been strengthened and renewed where necessary. The new building seats 1,000 people, there being an area, divided into stalls, pit stalls, and pit, with one gallery for grand and upper circle, and two boxes. The proscenium has been widened to 22ft., and the general decorations, in fibrous plaster, are carried out in a colour scheme of cerise, cream and gold.

Leeds.—The foundation stone of a new Baptist school in Cardigan Road, to which a church will be added later, was laid on the 19th instant. This is part of an extension scheme for the whole city. The building is to be of brick, with stone dressings, and will comprise an institute, gymnasium, and reading rooms for young men and women, as well as the school. The cost of the whole scheme is £8,000, of which the school portion will absorb £4,000. Messrs. Percy Robinson and W. Alban Jones are the architects.

Liversedge, Yorks.—New day and Sunday schools for Robertstown Church have been erected at a cost of £780.

Lochee.—A parish hall in connection with St. Luke's Church, to seat 650 people, has been erected at a cost of £1,200, from the designs of Mr. Leslie Owen, of Dundee. The contractors were—Mason work, Mr. Bruce, Lochee; joiner, Mr. Andrew Davidson, Lochee; slater, Mr. Brand, Dundee; heating, Mr. Peacock, Dundee; plasterer, Mr. McRitchie, Dundee; plumber, Mr. Reoch, Lochee; painting, Mr. W. Norwell, Dundee; chairs, Messrs. East Brothers, Lochee.

London: Fulham.—The new Congregational Church erected in the Fulham Palace Road, providing sittings for over 1,000 people, has been completed with the exception of the tower. The elevations are of sandfaced bricks, with terra-cotta dressings, the roofs are covered with red Broseley tiles, and the windows have leaded lights. The architects are Messrs. Cooper and Williams, of Kettering, whose design was accepted in a limited competition. The general contractor was Mr. William Downs, of Walworth Road, S.E., Messrs. Marriott and Co., of Higham Ferrers, carried out the heating and ventilating, and Messrs. Russell and Co., of Putney, executed the electric lighting. The cost of the whole scheme when completed will be £11,000.

London: South Kensington.—The Victoria and Albert Museum extension is approaching completion, and is to be opened by the King early next year. The building, which was designed by Sir Aston Webb, R.A., and will cost £800,000, has a frontage to Cromwell Road of 700ft., and extends up Exhibition Road for over 300ft. Five domes and two minarets spring from the roof, and far above them all is the great lantern, on which is poised Professor Lanteri's colossal statue of Fame. On the façade there are 32 niches, filled with as many statues of distinguished masters in science and art, as well as many other figures, the whole representing the work of 23 sculptors. The arched doorway is the only portion of the exterior left in the hands of the workmen, and Mr. Alfred Drury's imposing statues of Queen Victoria, flanked by St. Michael and St. George, as well as Mr. Goscombe John's figures of King Edward and Queen Alexandra, at the porch, have long been finished. Immense as is the space in the galleries, there is abundant material to equip every room. The whole of the Oriental section now housed in temporary galleries behind the Imperial Institute will be transferred to the new building, as well as the largest portion of the exhibits now crowded together in the old Museum.

Manchester. — The new infirmary is rapidly approaching completion. It provides accommodation for 600 patients, and, including land and furnishing, will cost close upon £500,000. Mr. Edwin T. Hall, F.R.I.B.A., of London, is the architect.

Montrose.—The new Y.M.C.A. buildings in Murray Street, erected in stone at a cost of £2,220, were opened recently.

Newcastle: Scotswood.—New schools for the Newcastle Education Committee have been erected at the corner of Denton and Armstrong Roads to accommodate 1,080 children in three departments—senior boys and girls, junior boys and girls, and infants. The schools are built of red brick, with stone dressings. The ground floor is laid with maple wood block floring on concrete, and the first floor with maple flooring. The internal stairs are of solid oak, and the whole of the internal walls have a dado of glazed bricks. The main roofs of the schools and the caretaker's house are covered with green Welsh slates, the flat roofs to playsheds being finished in vulcanite. Each department of the schools has a large central hall from which the class-rooms open out, each class-room being arranged to have left-hand light for the scholars. The cloak-rooms and lavatories are arranged near the entrance of each department, the fittings being of the latest and most approved pattern. Rooms are provided for the teachers and head teachers, with lavatories and other necessary conveniences. The buildings are heated throughout with hot water, and are lighted with gas. A house is provided on the south side of the site between the two school blocks for the caretaker. The buildings have been erected by Messrs. Veitch and Jordan, Newcastle-on-Tyne, from the designs and under the supervision of Messrs. Watson and Curry, architects, Newcastle-on-Tyne.

Stafford.—A workmen's institute building is being erected here in connection with St. Thomas's Church. The structure, a simple red-brick building of two rooms and offices, is being erected by the workmen gratuitously, the parish being a poor one, and the funds collected are being expended in the purchase of materials.

Taunton, Somerset.—Extensions to the Taunton branch to form new head offices for Stuckey's Banking Co. have been made at the corner of Market Place and Corporation Street, from the designs of Messrs. Oatley and Laurence, of Bristol. The façade is entirely of Bath stone, and the interior fittings are of selected oak, the staircases and floors being of fire-resisting construction. The doors are particularly noticeable for the fine grain of the oak used. The new portion harmonises completely with the older portion of the pile, and in it accommodation is found for clerks, secretarial and inspectors' offices, etc., waiting-room, and a spacious room reserved for the purpose of meetings of shareholders. Several strong rooms have also been provided. The heating of the building is on the low-pressure hot-water principle, and throughout there is a complete installation of the electric light. The builders are Messrs. H. J. Spiller and Son, Taunton.

Wallsend.—The new municipal buildings in High Street were opened on the 16th instant. The new buildings include the Council chamber committee rooms, the usual departmental offices, caretaker's quarters, a police court, and fire station, and are faced with stone. The work has been carried out from the designs and under the superintendence of Messrs. Liddle and Browne, architects, Newcastle. The contractors were Messrs. W. Franklin and Sons, of Newcastle. The heating engineers were Messrs. Boyd, of Paisley. The tile work and mosaic floors were laid by Messrs. Emley and Sons, Ltd., Newcastle. The furnishing to the Council Chamber and police court was done by Messrs. Robson and Sons, Ltd., Newcastle, and the electric lighting and ventilating installations by Messrs. Siemens Bros., of Newcastle. Mr. R. B. Richley has acted as clerk of the works. The total cost, exclusive of furnishing and site, is about £14,000.

Federation News.

Northern Centre of the National Federation of Building Trade Employers (comprising the Lancashire, Cheshire, and North Wales, the Yorkshire and Northern Counties' Federations).—The half-yearly meeting of the executive council was held at the Acorn Hotel, Temple Street, Birmingham, on Tuesday, July 28th, at 6.30 p.m., when Mr. Henry Matthews, J.P., Manchester, presided over an attendance of 13 representatives from the three federations forming the centre. Mr. James Denver, Manchester, was appointed secretary for the centre in place of Mr. John Tomlison, resigned. A long discussion took place with reference to the admittance of the labourers' union to the conciliation scheme, and ultimately it was agreed to allow the matter to stand over, pending the report of the National Board, who were to reconsider the same. Several other matters of importance affecting the centre were discussed, and resolutions passed thereon, and a vote of thanks passed to the chairman for presiding brought the meeting to a close.

Northern Centre Conciliation Board for the Building Trades. — A special meeting of the above Board was held at the Grand Central Hotel, Briggate, Leeds, on September 14th, at 2.30 p.m., when Mr. T. Wilkinson, Middlesbrough, took the chair, and Mr. D. Richards, J.P., Southport (operative), took the vice-chair. Mr. James Denver, Manchester, was appointed secretary for the employers' section of the Board, in place of Mr. John Tomlison, resigned. Some correspondence was read from the Liverpool Association having reference to a complaint which had arisen under the St. Helen's boundary radius, arranged by this Board a short time ago, and after some discussion a resolution was passed thereon. The appeal from the Rochdale Local Board for an advance in joiners' wages of 1d. per hour—from 9d. to 10d.—together with a proposed alteration in the overtime rule and the extension of the discharge notice from one hour to two hours, referred back from the meeting held on June 29th last, was again down for consideration, and representatives were admitted to state their case. The evidence from both sides having been heard, several votes were taken on each of the points in dispute, but no decision could be arrived at, both sides voting equal on each occasion, so that the matter will go before the National Board according to rule. Some discussion then took place on the use of these Boards from both sides, and the meeting terminated.

Scottish Building Trades Federation. —The half-yearly meeting of the Scottish Building Trades Federation was held in the Imperial Hotel, Aberdeen, on September 18th, Mr Jas. Leslie, Aberdeen, presiding. The report of the executive for the past year was submitted, showing, that trade was in a very depressed state throughout Scotland. Reports were communicated from Aberdeen, Oban, Perth, Inverness, Hawick, Kilmarnock, Paisley, Dundee, Edinburgh, and Glasgow, and in each of these centres, without exception, it was reported that trade was very dull, and so far as could be judged there was no immediate prospect of an improvement. As regards the proposed new scaffolding regulations, the meeting had under consideration amendments which had been framed by the Scottish builders, as in many cases the regulations drawn up by the Government Departmental Committee were inapplicable to Scotland. In order that the amendments might be properly brought under the notice of Mr. Gladstone, the Home Secretary, a deputation, consisting of Mr. James Leslie, Aberdeen; ex-Bailie Farquhar, Aberdeen; and Mr. John Lonie, Edinburgh, was appointed to interview him in London on the subject. It was agreed to send a deputation, consisting of Messrs. Craig and T. C. Stokes, Dundee, and the secretary (Mr. James Cameron, Edinburgh) to Perth to stir up the local association, which was in a bad way in consequence of the depressed and stagnant state of trade in that district. It was agreed to hold the next half-yearly meeting of the Federation in Perth. The secretary read a paper on "Federation Organisation," and threw out hints which, if acted upon, would help materially to strengthen the cause of the Federation throughout Scotland. Mr. James Leslie, Aberdeen, was appointed president for the ensuing year, and Mr. Hector McVinish, Inverness, was appointed vice-president. These gentlemen were also elected representatives to the National Federation of Building Trade Employers of Great Britain and Ireland.

Sheffield.—On September 18th a representative party of the members of the Sheffield Master Builders' Association were conducted over the new Victoria Hall in Norfolk Street, which has been built by Messrs. G. Longden and Son, Ltd. The party, which included Mr. T. Eshelby, president of the association, were met at the Builders' Exchange, where the party assembled, by Mr. W. Longden, who is junior vice-president of the Association, and at the Victoria Hall they were received by Mr. Hale (the architect of the new building) and Mr. Lewtas (clerk of works), the latter of whom took charge of the party, and showed them over the building, which has cost £41,000. The chief feature is a hall capable of seating 2,000 persons. There are, in addition, a lecture-hall to accommodate 500 persons, a schoolroom for 250, and sixteen large classrooms.

South Shields. — The members of the South Shields branch were still deploring the death of one of their number, Mr. Samuel Deacon (who had been for many years an active member of the committee, and one of the honorary auditors of the branch, and who, less than a month ago, died at the early age of forty-four), when they were further shocked by the death, on September 8th, of another valuable colleague, Mr. Thomas Banks, at the age of fifty-five. For nearly a quarter of a century Mr. Banks had been a builder and contractor in South Shields, his last enterprise being on the Fairless Estate. At a meeting of the South Shields Master Builders' Association, held on September 10th, Councillor J. T. Armstrong, Mr. A. Ross, Mr. J. Moore, and other members, spoke in feeling terms of the esteem in which Mr. Banks was held and of the valuable work that during the past twenty years he had done for the Association, particularly during the year of his presidency and as a representative on the Northern Counties Federation of Building Trades Employers, as well as on the Tyne and Blyth District Federation. The funeral, at the Westoe Cemetery, on September 12th, was attended by many Freemasons, and by a large number of members of various master builders' organisations; Mr. T. Weir, president of the Tyne and Blyth Conciliation Board, represented the Northern Counties Federation, while more than thirty members of the local association were present, including Councillor J. T. Armstrong, president, and Mr. J. G. Robertson, secretary.

Trade and Craft.

The "Edwardian" Chimney-pot.

Incidental to the season for the renewal of fires in the living-room is the revival in an acute form of the perennial nuisance known to the laity as "smoky chimneys," and to the profession as "downdraught." There is still time to provide against this distressing condition, and Messrs. Mark Fawcett and Co. offer a simple and effective solution of the problem. Their "Edwardian" downdraught-preventing chimney-pot, having been patented nearly two years ago, has got far beyond its merely experimental stage. It has been widely adopted in actual practice, and its makers are able to produce, from all parts of the kingdom, a profusion of testimonials as to its efficacy. These pots are simple in construction, and of artistic appearance. The pot proper is a hollow truncated cone, and, supported above it, on triangular legs, like an inverted canopy, is a dished cover. A descending current striking the cover on the windward side follows the curve of the dish and rises on the lee side, the thick rim to the cover preventing the current from striking under the dish and being led into the pot, as would happen with a thin rim. The dish has a flat soffit, allowing the wind to blow clean through horizontally. Thus, the thick rim to the cover acts as a baffler on the windward side, and as a "lull" on the lee side. The legs supporting the cover are of triangular section, and hence they act as bafflers on the windward side, while on the lee side they offer the least possible obstruction to wind and smoke. The legs rise out of the base of the pot, and turn upwards the wind that strikes on the sloping sides. The dished covers are glazed, and the rain that they prevent from entering the chimney soon evaporates under the influence of wind and heat. The pots are heavy and strong, and cannot be disturbed by the wind or by vigorous application of the sweep's brush, and they contain no crannies to harbour soot. They are made in one piece—pot, legs, and cover being integral—of ordinary red chimney-pot clay, or the same black-glazed, or of buff or salt-glazed fireclay. The makers state that frequently, in cases where ordinary pots have been fixed and found wanting, these patent pots are ordered by telegraph at the last moment before the new house is occupied, and that obviously it would be in every way far better to specify the Edwardian pot at the outset. They further point out that the Edwardian pot does not get a fair chance when it is jammed in between ordinary pots or tallboys. In a stack of Edwardians, the pots are so set as to allow the wind a clean sweep through the entire range. The Edwardian pots are being largely specified for new work by leading architects, many of whom have adopted them in preference to other pots after the work had been started—as, for instance, at the artisans' dwellings built by the St. Pancras Borough Council, where 238 have been fixed; and at the Sutton's Trust dwellings,

James Street, Bethnal Green, where 413 have been used. These pots can be obtained from Messrs. Mark Fawcett and Co., 250, Queen Anne's Gate, Westminster.

A New Material: Asbestos Wood.

Calmon Asbestos and Rubber Works, Ltd., have hit upon the very ingenious expedient of combining the fire-resisting and non-conducting properties of asbestos with the appearance of ordinary wood. The fire-resisting properties of Calmon asbestos slate are well known and highly appreciated; and the proprietors have conceived the happy idea of adapting it to wider applications. Of course, the firm's asbestos sheets for ceilings and partitions can be distempered or papered like walls of ordinary plaster; but the Calmon asbestos wood presents a surface that is at once beautiful in appearance and agreeable to the touch. By a special process, veneers are immovably fixed to the asbestos slate, either on one side or on both sides, producing a material that has, of course, all the properties that render the slate valuable, with the additional merit of handsome figure and high polish, if those decorative features are desired. Asbestos wood offers, therefore, all the advantages of high-class woodwork, without its liability to take fire, or to become affected by heat or damp. It neither warps nor cracks. The firm claim that it is an ideal material for the lining of buildings, ships, and railway carriages, and for the construction of such furniture or fittings as may be required for the storage of valuables. It is worked and fitted in exactly the same way and with the same materials as ordinary wood; it can be sawn, drilled, and nailed without difficulty. Judging from the sample forwarded to us for inspection (and we are informed that similar pieces will be willingly supplied to architects and others who wish to make a practical test), we should suppose that the material would lend itself with special facility to decorative panelling. The varieties stocked comprise veneers of oak, mahogany, walnut, maple, and white wood, in sheets or panels 4ft. by 4ft. by 9/64in. thick, and 8ft. by 4ft. by 3/16in. thick. The firm's well-known asbestos fireproof sheets for partitions, ceilings, etc., as used at Messrs. Waring and Gillow's premises in Oxford Street, at the new public offices in Whitehall, and in many hospitals and other institutions where fire-resistance is of first and last importance, will no doubt continue in favour for such services; but where a handsome finish and decorative effects are required in addition to incombustibility, asbestos wood will naturally be preferred; asbestos wood being virtually asbestos slate of superior appearance and of a much wider range of adaptability. Specimens and all further particulars may be obtained from Calmon Asbestos and Rubber Works, Ltd., 1, 2, and 3, Trinity Place, Tower Hill, London, E.C., who are also manufacturers of the asbestos roofing slates.

"Xelite" Plaster.

We are given to understand that Messrs. Clark and Co.'s "Xelite" plaster was used in the construction of cottages Nos. 79 and 80, awarded the gold medal in Class B at the Walker Cottage Exhibition, held at Newcastle-on-Tyne. The cottages in question were designed by Messrs. White and Stephenson, architects, and erected by T. Clements, the cost being limited to £235.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Accident Insurance Coupons have this week been sent to the following:—

J. H. S. (Forest Hill), H. J. W. (London, W.C.), G. B. C. (London, W.C.), J. B. (Hull), F. R. P. (Blackpool), J. W. G. (Heywood), T. D. (London, N.W.), R. T. F. (Dalston), G. M. M. (Reading), E. C. S. (Richmond), W. C. L. (Leicester), S. K. T. (Usk), A. S. B. (Aberdeen), J. H. W. (Fulham), A. T. T. (Cleethorpes), G. G. (Oxford), D. B. (Timperley), E. J. W. D. (Dumfries), H. W. H. H. (Leeds), F. L. (Burton-on-Trent), (L. A. P. Newport, Mon.), I. T. (Llanelly), F. N. S. (Birmingham), T. K. (Manchester), C. P. (Farnborough).

Coming Events.

Monday, Sept. 28, to Friday, Oct. 2.
Iron and Steel Institute.—Autumn Meeting, at Middlesbrough.

Saturday, October 3.
Royal Institute of British Architects. — Last day for applications for the Preliminary and Intermediate Examinations.

Monday, October 5.
University College, London.—School of Architecture. Session re-opens.

Thursday, October 6.
Institute of Sanitary Engineers.—First lecture of Preliminary Course, 7 p.m.

Bankruptcies.

Armstrong, Wm., granite merchant, Honey Street, Bodmin, and Wenford Street, Breward First meeting O.R.'s, Truro, Sept. 28. P.E., Town Hall, same, Oct. 10, at 11.45.

Bradley, Jno. Geo., contractor, Dacre Gardens, Consett, and The Avenue, Durham. R.O., Sept. 15. First meeting, C.C., Newcastle-on-Tyne, Sept. 28. P.E., same place, Oct. 8, at 11. Adj., Sept. 15.

Bray, Harry, surveyor, late 17, Montserrat Road, Putney. Adj., Sept. 12.

Brewis, Jno. Jas., painter, 281, Albert Road, Jarrow. R.O., Sept. 14. First meeting, O.R.'s, Newcastle-on-Tyne, Sept. 26. P.E., C.C., same, Oct. 8, at 11. Adj., Sept. 14.

Caunter, Ernest Hy., builder, 5, Burshill Terrace, Well Street, Paignton. R.O., Sept. 17. Adj., same day.

Chambers, Harry, joiner and builder, 44, Revidge Road, and Back Granville Road, Blackburn. First meeting, C.C., Blackburn, Sept. 30. P.E., same place, Oct. 7, at 9.45.

Grover, Sydney (trading as Sydney Grover and Co.), timber and veneer merchant, 9, South Street, Finsbury, Aug. 28.

Hemingway, Herbert, painter and decorator, 168, Pontefract Lane, late 190, York Road, Leeds. R.O., Sept. 17. First meeting, O.R.'s, Leeds, Sept. 30 P.E., C.C., same, Oct. 6, at 11. Adj., Sept 17.

Higby, Chas., builder and contractor, Hare Lane, Claygate. Adj., Sept. 17.

Hunt, Alf. (trading as A. Hunt), builder, late 69, Marshall Road, Woodseats, Sheffield. Adj., Sept. 18.

Irving, Wm. Robt., builder, Leabourne Lea, Blackwell Road, near Carlisle. R.O., Sept. 16. Adj., Sept. 18.

Kingswell, Clement, Edwd., contractor, Braemar, Zig-Zag Road, Ventnor (I. of W.). First meeting, O.R.'s, Newport, Sept. 30. P.E., Town Hall, same, Oct. 12, at 3.15.

Lacey, Joseph Chas., builder and contractor, 1, Ashburnham Road, Eastbourne. First meeting C.C., Eastbourne, Sept. 29. P.E., Town Hall, same, same date.

New Companies.

Bridge, Barrett and Co., capital £5,000, painters, decorators, etc., 72, Asylum Road, Peckham, S.E. Registered September 17, by Jordan and Sons, Limited, 116-117, Chancery Lane, W.C.

Perry Brothers, Ltd., capital £1,000, to carry on the business of builders, contractors, decorators, builders' merchants, property owners and dealers, etc. The first directors are H. W. Perry and E. S. Perry. Registered office, 11 and 12, Finsbury Square, E.C. Registered September 18, by Francis, Miller and Steele, St. Stephen's Chambers, Telegraph Street, E.C.

Stuccolin, Ltd., capital £16,000, to adopt an agreement with W. Dederich and M. Tuite, to acquire the agency for Alb Lauermann, G.M.B.H., for the sale of plaster decorations known as "Stuccolin," and "Gipsoxylin," of architectural decorations manufactured of "Stone-Stucco," of stone imitations known as "Terranova," and of any goods for the inside and outside decoration of buildings. The first directors are H. F. Behnke, W. Dederich and M. Tuite. Registered office, Imperial Buildings, Ludgate Circus, E.C. Registered Sept. 15, by W. Dederich, Imperial Buildings, Ludgate Circus, E.C.

William C. Clark, Ltd., capital £2,500, to acquire the business of a commission agent, general mineral merchant, builders' factor and merchant and insurance agent and broker, carried on by Mrs. Elizabeth G. Clark, at 137, Victoria Road, Darlington, as "William C. Clark." The first directors are Mrs. E. G. Clark and H. R. Gatenby.

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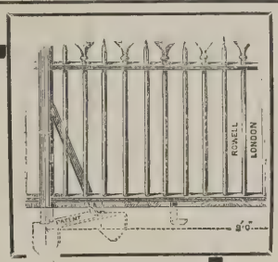
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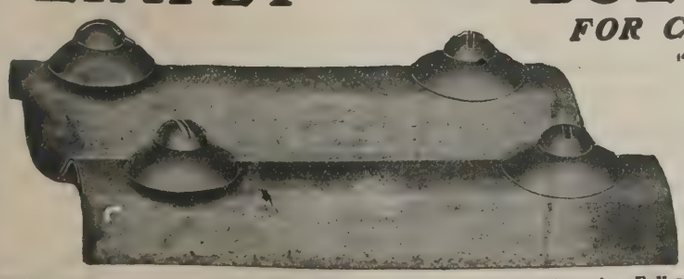
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Offices : ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address : "Buildable, London."

Telephones : ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

	s.	d.
At all newsagents and bookstalls - -	8	8
By post in the United Kingdom - -	10	10
By post to Canada - - - - - - -	13	0
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The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.

Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.

Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for Serial Advertisements, Special positions etc., sent upon application.

Situations Wanted, Situations Vacant.

4 lines (about 28 words), one insertion - 1s. 6d.
Each additional line - - - - - 6d.
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Miscellaneous, Drawings and Tracings, Educational, Competitions Open, Partnerships etc. 6d. per line.

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Property and Land Sales, Legal Notices, etc., 9d. per line

Advertisements for the above can be received up till 10 o'clock on Tuesday at

CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Brenchley Paddock Wood (Kent).—For erection of Council school to accommodate 200 boys, for the Kent Education Committee. Mr. Wilfrid H. Robinson, M.S.A., architect, to the committee:—

Sykes and Son	£2,325 15 0
J. Crates and Son	2,222 0 0
A. C. Sartin	2,221 15 4
W. H. Simmonds	2,140 0 0
J. Gregory	2,125 0 0
J. W. Ellingham	2,100 0 0
A. H. Wood	2,070 0 0
G. and F. Penn	2,065 0 0
Davis and Leaney	2,043 0 0
R. A. Lowe and Co.	2,037 0 0
J. Lonsdale	2,034 0 0
K. C. Jarvis	2,030 0 0
Stephens, Bastow and Co. Ltd.	1,996 0 0
G. H. Denne and Son	1,990 0 0
F. H. Pye	1,990 0 0
Barden and Head	1,950 0 0
L. Edwards	1,918 0 0
Strange and Sons	1,898 0 0
J. Jarvis	1,895 0 0
G. Browning	1,890 0 0
W. Shippam	1,861 0 0
W. T. Burrows	1,819 15 0
E. Green	1,784 13 1
Martin and Co.	1,783 0 0
Fairman and Blackman ...	1,780 0 0
J. Podger and Sons	1,775 0 0
C. E. Skinner	1,767 0 0
C. B. Benfield	1,765 0 0
J. A. Davison,* West Malling	1,746 0 0

*Accepted.

Bristol.—Accepted for builder and plumber's work connected with erection of a Council school at Sefton Park, Ashley Down, for the Bristol Education Committee. Accepted tenders:—

G. Humphreys and Son, general contractors, Woodborough Street, Bristol	£11,982
S. H. Povey, plumber's work, 6, Ashley Hill, Bristol	1,190
W. Freer, heating engineer, Lawrence-hill, Bristol	635

Brough (Westmorland).—For construction of works of water supply for Brough for the East Westmorland Rural District Council:—

W. Grisenthwaite, Penrith ...	£1,857 8 8
A. E. Nunn and Co., London	1,768 3 5
D. Thomson and Son, Carlisle	1,715 17 8
J. Jackson, Penrith	1,639 10 2
F. Mitchell and Son, Manchester	1,633 4 6
W. Carridice, Kendal	1,605 5 8
G. Carrathurs, Penrith... ...	1,490 1 9
J. and W. Scott, Penrith ...	1,447 0 0
J. G. Reynoldson,* Brough ...	1,329 2 8

*Accepted.

Carlisle.—For erection of Turkish baths in James Street, for the Corporation. Mr. H. C. Marks, M.I.C.E., city engineer and surveyor, 36, Fisher Street, Carlisle:—

A. and T. H. Anderson	£2,564
E. Musgrove	2,538
W. Martin	2,532
R. M. Ormerod and Sons	2,521
J. Baty and Sons	2,498
J. H. Reed and Co.	2,407
J. and R. Bell	2,385
J. Logan	2,368
J. Laing and Son	2,357
J. Bell	2,357
E. J. Hill	2,350
W. Johnstone,* Carlisle	2,289

Engineer's estimate, £2,500.
*Accepted.

Colwyn Bay (Wales).—For erecting first portion of St. Paul's Mission Church. Messrs. J. M. Porter and Elcock, architects, Estate Offices, Colwyn Bay:—

Jones and Pritchard	£1,670 0 0
S. Bond and Sons	1,472 3 6
E. Jones and Son	1,300 0 0
T. Jones	1,198 0 0
J. Tucker and Sons	1,120 0 0
O. Jones and Hughes	1,100 0 0
J. O. Davies,* Bron-y-Nant, Colwyn Bay	1,065 8 0

*Accepted.

Dowlais (Wales).—Accepted for erecting new infants' school to accommodate 500 children, for the Merthyr Tydfil Education Committee. Mr. J. Llewellin Smith, architect, Town Hall, Merthyr Tydfil:—

E. Williams, Dowlais, £7,797.

(*Tenders continued on page viii.*)

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See page xviii.

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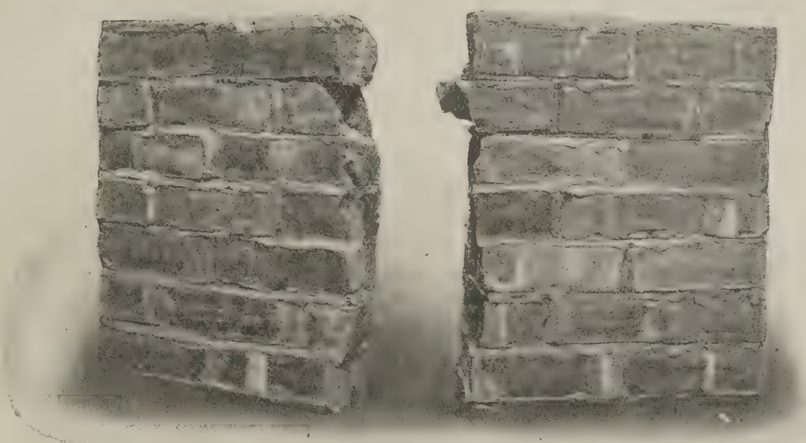
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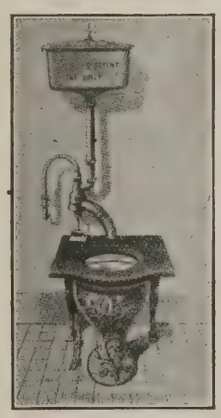
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Agents for Nottinghamshire and Lincolnshire:
W. Robinson, (Nottingham) Ltd., 7 & 9, Victoria Street, NOTTINGHAM.
Agents for Leicestershire:
W. Robinson, (Nottingham) Ltd., Churchgate, LEICESTER.

(*Tenders continued from page vi.*)

Fleetwood (Lancs.).—For erecting new ward, etc., at the Cottage Hospital, for the Governors. Mr. Bertram Drummond, A.R.I.B.A., architect, 54, Alfred Terrace, Fleetwood. Quantities by the architect:—

R. Leach and Son, Cleveleys...	£1,670 0 0
T. Cottam,, Preston	1,650 0 0
Smith Bros., Ltd., Blackpool	1,597 0 0
J. Eaves, Blackpool	1,538 0 0
T. Riley, Ltd.,* Fleetwood ...	1,474 17 10
Estimate No. 1.	
Smith Bros., Ltd., Blackpool ...	£52 18 0
R. Leach and Son, Cleveleys	46 11 0
T. Cottam, Preston	35 0 0
J. Eaves, Blackpool	32 10 0
T. Riley, Ltd.,* Fleetwood ...	30 13 8
Estimate No. 2.	
T. Cottam, Preston	100 0 0
T. Riley, Ltd.,* Fleetwood ...	98 5 0
Smith Bros., Ltd., Blackpool...	94 19 0
J. Eaves, Blackpool	94 0 0
R. Leach and Son, Cleveleys...	93 19 1
Estimate No. 3.	
Smith Bros., Ltd., Blackpool...	28 15 0
J. Eaves, Blackpool	28 0 0
T. Cottam, Preston	25 0 0
R. Leach and Son, Cleveleys...	18 1 4
T. Riley, Ltd.,* Fleetwood ...	15 9 3

*Recommended for acceptance.

Godreaman (Wales).—Accepted for new boys' school out-buildings, laundry, cooking, kitchen, workshops, etc., for the Aberdare Urban District Council Education Committee. Mr. T. Roderick, architects:—J. Morgan and Son, Ltd., Aberdare, £9,387.

Halesowen (Worcs.).—Accepted for erection of a Council elementary day school in Tenter Street, Halesowen, for the Worcestershire County Council Education Committee. Mr. T. Grazebrook, architect, Stourbridge and Dudley:—

John Guest and Son, Brettell-lane Stourbridge...	£7,250

Kingswear (Devon).—For erecting a villa residence for Mr. E. Horne. Mr. T. O. Veale, surveyor, Castle View, Dartmouth:—

H. Drew	£887 0 0
Crocker	695 0 0
W. G. Row	680 0 0
J. Short and Sons	660 0 0
Knight	629 0 0
J. Triggs	616 10 0
J. Back	599 0 0
Bovey and Sons,* Torquay ...	520 0 0
Anderson (tender informal) ...	473 0 0

*Accepted.

Leeds.—Accepted for the execution of the Hope Street improvement works, including subways, retaining walls, paying, etc., for the Leeds City Council. Mr. W. T. Lancashire, A.M.I.C.E., city engineer:—

Paul Rhodes, Skinner Lane, Leeds	£17,132 4 6

Leicester.—For extension to Fairfax Mills. Messrs. Tait and Herbert, architects, Leicester and Coventry:—

A. and W. Chambers	£1,007
Hutchinson and Son	993
H. Herbert and Sons	989
Hardington and Elliott	971
Clarke and Garrett	909
Bentley and Co.	901
F. Elliott,* Leicester	880

*Accepted.

London, W.—For proposed alterations to 2, Carlton House Terrace. Mr. F. W. Foster, architect, 41, Bedford Row, W.C.:—

F. G. Minter	£2,490
J. Simpson and Sons	2,436
Whitby	2,300
J. Carmichael	2,297
Foxley*	2,044

*Accepted.

London, W.—For alterations and additions to 42, Bryanston Square, for Mr. H. Beaumont. Mr. F. W. Foster, architect, 41, Bedford Row, W.C. Quantities by Mr. Ernest T. Verity:—

Kirkby	£4,987
Bywaters	4,765
Foxley	4,700
Minter	4,592
Carmichael	4,527
Whitby*	4,285

*Accepted.

London, E.—For high tension electricity generating station for the Stepney Borough Council. M. W. Jameson, A.M.I.C.E., borough engineer:—Tender A.—Building to accommodate boilers and machinery required at present.

Walker Bros., Ltd., Walsall...	£19,410 13 8
Heenan and Froude, Ltd., Manchester	17,765 0 0
Dawnay and Sons, Ltd., Battersea, S.W.	16,743 15 5
H. J. Saville, Waltham Cross	16,211 4 4
A. Findlay and Co., Ltd., S.W.	16,100 0 0
E. C. and J. Keay, Ltd., Birmingham...	15,131 7 6
J. Mowlem and Co., Ltd., S.W.	15,108 0 0
Muirhead and Co., E.C. ...	14,925 15 5
B. E. Nightingale, S.E. ...	14,464 0 0
Kirk and Randall, Woolwich	14,205 0 0
Dorman, Long and Co., Ltd., Westminster	13,900 0 0
Drew-Bear, Perks and Co., Battersea, S.W	13,643 14 1
Fulham Steelworks Co., Fulham, S.W.	13,588 0 0
Goddard, Massey and Warner Nottingham	13,479 1 4

Tender B.—Alternative building to accommodate one additional set of boilers and machinery as well as those sets that are required at present:—

Walker Bros., Ltd.	£24,065 11 5
Heenan and Froude, Ltd. ...	20,651 0 0
Dawnay and Sons, Ltd. ...	19,115 16 0
H. J. Saville	18,882 13 11
A. Findlay and Co., Ltd. ...	18,445 0 0
E. C. and J. Keay, Ltd. ...	17,439 8 7
J. Mowlem and Co., Ltd. ...	17,342 0 0
Muirhead and Co.	17,242 1 6
B. E. Nightingale	16,711 0 0
Kirk and Randall	16,258 0 0
Dorman, Long and Co., Ltd....	16,013 0 0
Drew-Bear, Perks and Co. ...	15,867 5 3
Fulham Steelworks Co. ...	15,609 0 0
Goddard, Massey and Warner	15,494 17 11

Tender C.—Additional charge if progress of certain portions of building is accelerated by two months. Would charge bonus of £10 for every day in advance of times specified:—

Fulham Steelworks Co.	£1,000 0 0
Kirk and Randall	1,600 0 0
B. E. Nightingale	500 0 0

Heenan and Froude, Ltd. 2½ p.c. on tender A.

London, S.W.—For erection of a new Council school for boys at Barnes, for the Surrey Education Committee. Messrs. Jarvis and Richards, architects, 10, Queen Anne's Gate, Westminster, S.W.:—

G. Kemp	£5,568
Goddard and Sons	5,465
S. N. Sooke and Son	5,412
Martin, Wells and Co., Ltd.	5,380
W. Smith and Sons	5,208
D. Waller	5,109
T. J. Hawkins and Co.	5,180
W. Lowe	5,090
J. Burges and Sons	5,071
W. Lawrence and Son	4,974
R. T. Hughes and Co., Ltd.* ...	4,924

*Accepted.

London, W.—For proposed alterations at 7, Hyde Park Gate, for Mr. Arthur Samuel. Mr. F. W. Foster, architect, 41, Bedford Row, W.C.:—

J. Kirkby	£1,368
Foxley and Co.	1,335
Simmonds Bros.	1,224

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Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Oct. 1. PENYGRAIG.—Rebuilding two shops at Penygraig for J. T. Thomas, Emporium, Penygraig, where plans and specifications may be seen, or at the office of R. S. Griffiths, M.S.A., architect and surveyor, Tonypandy. Tenders to be delivered endorsed "Tender for Shops," by October 1.

Oct. 2. ASHFORD. — Erection of a manual training workshop at the Ashford Grammar School. Plans and specifications can be seen at the office of A. E. Lacey, A.R.I.B.A., North Street, Ashford. Tenders on form supplied, to be forwarded to Horace Hamilton, clerk, 11, Bank-street, Ashford, by 10 a.m. on October 2.

Oct. 2. BROMPTON (near Northallerton). — Alterations and additions to Brompton Council school for the education committee of the North Riding of Yorkshire county council. Plans and specifications can be seen and forms of tender obtained, at the school during ordinary school hours. Tenders to be delivered to J. C. Wrigley, secretary, county hall, Northallerton, by noon on October 2, sealed and endorsed "Tender, Brompton Alterations."

Oct. 2. NAVAN (Co. Meath).—Erection of a new national school at Navan, Co. Meath, for the sisters of mercy. Plans and specification can be inspected at the office of Thomas F. McNamara, architect, 50, Dawson Street, Dublin, between 10 and 5, Saturdays 10 and 1. Bills of quantities, prepared by James Mackey, surveyor, 58, Dame street, Dublin, and can be had from him on payment of £2. Tenders, endorsed "Tender for National Schools, Navan," to be delivered to the Very Rev. P. Farrell, Adm., Parochial House, Navan, not later than noon on October 2.

Oct. 3. MYLOR (Cornwall).—Erection of a cottage at Churchtown Farm, Mylor, in the occupation of A. N. Bath, where the plans and specification can be seen; also erection of a reading-room at Flushing, Mylor. Plans and specifications can be inspected at the residence of R. J. Bird, Mount Pleasant, Flushing. Separate tenders to be sent to J. T. Holmes, the Manor Office, Plympton, by October 3.

Oct. 3. HELENS BAY (Co. Down).—Erection of a villa at Helens Bay, Co. Down. Plans, specification, and particulars may be obtained at the offices of the architect. Tenders must be delivered not later than October 3, to J. V. Brennan, C.E., architect, Belfast Bank Chambers, Belfast.

Oct. 3. DUNGLOE (Ireland).—Erection of a shop and house at Dungloe, Co. Donegal, for Anthony O'Donnell, Seskinarone, according to plans and specifications to be seen at the offices of J. P. M'Grath, architect, Commercial Buildings, Foyle Street, Londonderry. Tenders sealed and endorsed to be lodged with the architect by noon on Oct. 3.

Oct. 5. LLANELLY.—Erection of a new Calvinistic Methodist chapel, at Glenalla Road, Llanelly. Plans and specifications may be inspected at the office of Wm. Griffiths, F.S.I., architect. Sealed tenders to be delivered on or before Oct. 5, to T. Davies, 59, Marble Hall Road, Llanelly.

Oct. 5. LAMPETER.—Erection of premises at Lampeter, for the London and Provincial Bank. Ltd. Plans and specifications may be seen at the office of the architect. Tenders, sealed and endorsed, to be delivered not later than noon, on Oct. 5, to Ll. Bankes Price, architect, Doldrement, Lampeter.

Oct. 5. ST. IVES (Cornwall).—Erection of a caretaker's cottage, for the Corporation. Plans may be inspected at the office of the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, where specification, form of tender, and bill of quantities may also be obtained on deposit of 3 guineas. Tenders on the form provided must be delivered under seal, and endorsed, "Tender for St. Ives Waterworks," before 10 a.m. on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Engineering.")

Oct. 5. WESTPORT (Co. Mayo).—Excavations, pipe laying, erecting pumping station, and concrete reservoir, etc., at the Westport waterworks, for the Urban Council. Copies of the specification and quantities may be had on application to C. Mulvany, M.I.C.E., Athlone, on deposit of £1. Sealed tenders, properly endorsed, must be lodged, not later than noon on Oct. 5, with Francis Egan, town clerk, urban council office, Westport (co. Mayo). (See also "Engineering" and "Iron and Steel.")

Oct. 5. SEVENOAKS.—Erection of a chapel at the new cemetery, Greatness Park, Sevenoaks, for the Urban District Council. Plans, sections, detail drawings, and specifications may be inspected, forms of tender and further information obtained at the offices of S. Towlson, A.M.I.C.E., surveyor to the Council, upon payment of a cash deposit of £5. Tenders must be on the forms supplied and sent enclosed in an envelope, endorsed "Tender for Cemetery Chapel," on or before Oct. 5, to Herbert J. Thompson, clerk to the council, Urban Council offices, Argyle road, Sevenoaks.

Oct. 5. NEWPORT.—Erection of a technical institute in Clarence Place, for the Education Authority, in accordance with drawings and specification, which may be seen at the office of the borough engineer, town-hall, where the bills of quantities, specification, and form of tender may also be obtained upon production of the borough treasurer's receipt for £5 5s., Sealed tenders, endorsed "Technical Institute," are to be sent not later than 5 p.m. on Oct. 5, to Albert A. Newman, town clerk and clerk to the local education authority, town hall, Newport. Fair wages clause.

Oct. 5. BOLTON-UPON-DEARNE.—Erection of chapel and boundary wall to cemetery, Bolton-upon-Dearne, for the Urban District Council. Drawings and specifications may be seen, and copies of quantities obtained, from the surveyor's office, between 10.0 a.m. and 3.0 p.m. daily (Saturdays excepted), upon a deposit of £1 1s. Tenders to be delivered not later than October 5, endorsed "Chapel" to J. Ledger Hawksworth, clerk, council offices, Station Road, Bolton-upon-Dearne.

Oct. 5. MIDDLETON.—Erection of an elementary school in Durnford Street, Middleton, to accommodate about 1,000 scholars, for the Corporation. Persons desirous of tendering are requested to send names and addresses not later than October 5, to Frederick Entwistle, town clerk, town hall, Middleton. Further particulars may be obtained from Edgar Wood, architect, 78, Cross Street, Manchester.

Oct. 5. BOURNEMOUTH.—Widening the Landing Stage at Bournemouth Pier (mainly of Greenheart timber), and other works in connection therewith for the town council. Drawings may be seen and full particulars and forms of tender and with F. W. Lacey, M.Inst.C.E., borough engineer office, provided a deposit of £5 has been lodged with F. W. Lacey, M.Inst.C.E., borough enginner and surveyor, municipal office, Bournemouth. A further deposit of a £20 Bank of England note is to accompany the tender. Tenders to be sent in envelopes provided to Geo. Wm. Bailey, town clerk, before 10 a.m. on October 5.

Oct. 5. LLANHILLETH (Mon.).—Erection of 20 houses at Llanhilleth, Mon., for the Hafodarthen Building Club. Plans and specifications may be seen at the office of D. J. Loughter, architect, Bank Chambers, Pontypool, to whom tenders, endorsed "Hafodarthen Club Cottages," are to be sent by October 5.

Oct. 5. YNYSYBWL (Wales).—Erection of a building for an electrical sub-station at Ynysbwl, for the Mountain Ash urban district council. Specification and form of tender and contract may be obtained and plans may be seen at the surveyor's office, town hall, Mountain Ash, and at the office of Mr. B. J. Day, 3, Park Place, Cardiff, upon deposit of one guinea. Sealed tenders upon the form supplied, endorsed "Electrical sub-station," must be addressed to the urban district council's offices, town hall, Mountain Ash, by Oct. 5. (See also "Engineering.")

Oct. 6. LLANELLY.—Additions, alterations, and improvements to Capel Newydd C.M. chapel, Llanelly. Plans and specifications, by Owen Morris, Roberts and Son, Mm.S.A., architects and surveyors, Portmadoc, can be inspected at the house of I. Davies, Ardwyn, Bryncaerau Villas, Llanelly, to whom tenders are to be sent (sealed and endorsed "Capel Newydd"), not later than Oct. 6.

Oct. 6. ELTHAM PARK, S.E.—Erection of a shelter and conveniences at Eltham Park, S.E., for the L.C.C. (No quantities have been prepared.) Persons desiring to tender may obtain drawings and specifications, form of tender, and other particulars at the architect's department, 19, Charing Cross Road, W.C., upon previous payment to the cashier of the council, at the county hall, Spring Gardens, S.W., of 10s. Tenders must be upon the official forms. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W., and marked "Tender for Eltham Park." No tender will be received after 11 a.m. on October 6. Fair wages clause.

Oct. 6. BURGHEAD.—Mason, carpenter, slater, plumber, plaster, painter, and glazier works of dwelling-house to be erected in Dunbar Street, Burghead. Plans, etc., may be seen with Charles C. Doig, architect, Elgin.

Oct. 6. SUNDERLAND.—Erection of a branch library in Church Street North, Sunderland, for the Corporation. Drawings, etc., may be seen, and form of tender obtained, at the office of Davidson and Cratney, architects, 22, Fawcet. Street, Sunderland, by whom bills of quantities will be supplied on payment to them of a deposit of £2 2s.

Oct. 6. WELLINGBOROUGH.—Alterations and additions to the buildings at "Bushfield" Waterworks pumping station, to provide for new filtering and softening plant. Plans, specifications, and particulars can be seen at the office of the surveyor, E. Y. Harrison, Park Road, Wellingborough. Tenders, sealed and marked outside "Buildings, Bushfield," must be delivered at the office of J. T. Parker, clerk, 29, Church Street, Wellingborough, by 5 p.m., on October 6.

Oct. 6. BRENTFORD.—Extensions to the Nurses' Home at the infirmary, for the Guardians, in accordance with plan and specification prepared by W. H. Ward, architect, Paradise Street, Birmingham, and which can be seen between the usual hours at the Union Offices. Surveyor's quantities will be supplied on receipt of one guinea. Tenders to be delivered before 4 p.m. on October 6, to William Stephens, clerk to the guardians, union offices, Isleworth, W.

Oct. 7. WALLS (Shetland).—Construction of a steamboat pier at Walls, Shetland. Plans and specification may be inspected at, and schedules of quantities obtained from Sievwright and MacGregor, solicitors, Lerwick; Scottish office, engineering dept., 122, George Street, Edinburgh; and from G. Woulfe Brenan, M.I.C.E., Albany Street, Oban,

Oct. 7. BURTON-UPON-TRENT.—Erection of a new Police Station, Superintendent's House and Court House, in the borough, for the Corporation. Drawings, specifications, and conditions of contract may be seen, and bill of quantities and form of tender obtained at the office of Henry Beck, architect, 10, High Street, Burton-upon-Trent, on and after Sept. 23, upon the deposit of a cheque or post-office order for £3 3s. Tenders, endorsed "New Police Station, etc.," must be delivered, not later than 10 a.m. on October 7, to T. N. Whitehead, town clerk, town hall, Burton-upon-Trent. Fair wages clause.

Oct. 7. BRIDGEND.—Erection of block of conveniences in Airing Court and additions, etc., to laundry at Angelton Asylum, Bridgend. Repairs to attendants' messroom, etc., at Parc Gwyllt Asylum for the committee of visitors of the Glamorgan county asylum. Specifications, bills of quantities, and forms of tender may be obtained from the clerk, and the drawings may be seen either at the office of the architect, R. S. Griffiths, Tonypandy, Rhondda Valley, or at Angelton asylum, Bridgend. Separate sealed tenders, marked outside "Tender for Laundry and Conveniences, Angelton," or "Repairs to Floors, Parc Gwylt," must be received not later than noon on October 7th, to W. E. Allen, clerk to the committee of visitors, Glamorgan county council offices, Westgate Street, Cardiff.

Oct. 7. SOUTH DUBLIN.—Erection of 206 labourers' cottages, under 46 contracts for the R.D.C. The works are to be completed under a penalty for delay. Plans, specifications and schedules may be inspected, and tender forms obtained at the offices of the rural district council; tenders are to be lodged not later than 11 a.m. on October 7, with T. J. Byrne, clerk of the council, 1, James Street, Dublin. Tenders must contain the names and addresses of two solvent persons willing to join the person tendering in a bond for the execution of the work of an amount equal to that of the tender.

Oct. 9. HEREFORD.—Extension of a classroom at Allensmore council school and other incidental works connected therewith, for the Herefordshire county council. Plans and specification may be seen and form of tender obtained at the office of the county surveyor, Shirehall, Hereford. Sealed tenders marked 'Allensmore" to be addressed to John Wiltshire, county education secretary, education office, Shirehall, Hereford, and delivered by noon on October 9.

Oct. 10. TROON (Cornwall).—Erection and completion of the proposed Wesleyan Methodist church at Plantation, near Troon, according to plans and specifications, which may be seen by appointment at the residence of Mr. Viant, near the present chapel, or at the office of Sampson Hill, architect, Green Lane, Redruth, from whom all particulars may be obtained. Sealed endorsed tenders to be sent to the Rev. W. M. Briggs, "Sidlands," Cambourne, by October 10th.

Oct. 10. COLCHESTER.—Extension of the Colchester Royal Grammar School for the governors, from plans and specifications prepared by Newman, Jacques, and Round, 2, Fen-court, London, E.C. Written applications for copy of bills of quantities, conditions, and form of tender must be made on or before October 10, to H. C. Wanklyn, town hall, Colchester, to be accompanied by a deposit of £5. A guarantee policy in £500 in some society, or company to be approved by the governors will be required for the performance of contract.

Oct. 10. GREAT BRIDGE.—Erection of goods Offices and extension of goods shed at Great Bridge, for the Great Western Railway. Plans and pecification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Wolverhampton station, between 10 a.m. and 4 p.m. Tenders marked outside "Tender for Works at Great Bridge," will be received until October 6, by G. K. Mills, secretary, Paddington Station, London.

Oct. 12. BISHOP AUCKLAND.—Erection of a secondary school at Bishop Auckland, for the Durham county council. Plans, specification and general conditions can be seen at the education architect's office, Shire Hall, Durham. Bills of quantities can be obtained on application to J. A. L. Robson, secretary for higher education, to whom sealed and endorsed tenders should be sent by October 12.

Oct. 13. EPSOM.—Erection of an iron and glass verandah at the Epsom workhouse infirmary for the guardians. Specification and drawings can be seen at the workhouse Epsom, between 10 a.m. and noon. Forms of tender can be obtained on application to the clerk. Tenders in sealed covers marked outside "Tender for Verandah" must be delivered not later than 7 p.m. on October 13, to Alick G. Ebbutt, clerk, "Gynsdale," Epsom.

Oct. 13. BILLINGE.—Erection of a roller shed at the council offices, Billinge, in accordance with plans and specifications, to be seen on application to the surveyor, at the offices. Tenders must be forwarded by Oct. 13, endorsed "Roller Shed," to Alfred Darlington, surveyor, Billinge, Wigan.

Oct. 16. BUSHEY.—Alterations and additions to the Merry Hill county council school at Bushey, for the Hertfordshire County Council. Persons desirous of tendering may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between 10 a.m. and 4 p.m., Saturday, from 10 a.m. till noon. A copy of the schedule of works (quantities) and form of tender can be obtained at the county surveyor's office upon deposit of 2 guineas. Sealed tenders, endorsed "Tender for Merry Hill School, Bushey," must be delivered not later than 5 p.m. on Oct. 16, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Security for the due erection of the works must be given by the contractor.

Oct. 20. DURHAM.—Alterations and improvements at Flint Hill, Marley Hill Colliery, Croxdale, and Hetton girls' and infants' council schools, for the county council. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained for Flint Hill and Marley Hill Colliery council schools only at the office of F. E. Coates, A.R.I.B.A., Shire Hall, Durham. Sealed tenders, endorsed with name of school, to be sent to A. J. Dawson, clerk to the education committee, shire hall, Durham, not later than Oct. 20.

Oct. 26. WILMSLOW (Cheshire).—Erection of new council schools, to accommodate 700 scholars, at Wilmslow, Cheshire, for the Knutsford and Wilmslow administrative sub-district committee. Plans, specifications, etc., prepared by Herbert H. Brown, architect, may be inspected at his offices, 17, Dickinson Street, Manchester. Persons desirous of tendering must send their names to the architect, accompanied by a deposit of two guineas, before Oct. 9. Tenders, enclosed in sealed envelopes, endorsed "Tender for Council Schools at Wilmslow," must be delivered by 10 a.m. on Oct. 26, to George Leigh, clerk, union offices, Knutsford, Cheshire.

No date. BRIXWORTH (Northants).—Erection of a bakery at Brixworth, for the Provident Co-operative Society, Ltd. Bills of quantities will be posted to contractors on application to A. H. Walsingham, architect, or C. E. Roberts and Co., bakery engineers, 62, Market Street, Manchester. Drawings may be seen at the Society's office.

No date. OLDHAM.—Erection of thirty-eight houses on the Hollin Hall Estate, Oldham, for the Oldham Equitable Co-operative Society, Ltd. Specifications, etc., may be obtained of the Society's architect, F. Thorpe, 7, Clegg Street, Oldham, on deposit of £2 2s.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. WEST LYNN.—Alterations to cottages at West Lynn, for Wm. Wing. For bill of quantities and all information apply to Walker and Walker, architects and surveyors, Wisbech and Terrington.

ENGINEERING.

Oct. 5. WESTPORT (Co. Mayo).—Supplying and erecting a turbine water wheel, two triplex pumps, one engine, and suction gas plant about 14 B.H.P., at the Westport waterworks, for the urban council. Copies of the specification and quantities may be had on application to C. Mulvany, M.I.C.E., Athlone, on deposit of £1. Sealed tenders, properly endorsed, must be lodged not later than noon on Oct 5 with Francis Egan, town clerk, urban council office, Westport (Co. Mayo). (See also "Iron and Steel" and "Building.")

Oct. 5. ST. IVES (Cornwall).—Construction of an impounding reservoir at Bussow Moor, providing and erecting filters and filter-house at Hellesveor, and providing and laying about two miles of cast-iron mains varying from 6 in. to 9 in. in diameter, together with valves, etc., for the corporation, in accordance with plans submitted to the L.G.B. Plans prepared by the engineer, A. P. I. Cotterell, M.I.C.E., 28, Baldwin Street, Bristol, may be seen at his office. Specification, form of tender and bill of quantities may be obtained from the engineer, on deposit of 3 guineas. Tenders, on the forms provided, must be delivered under seal, and endorsed "Tender for St. Ives Waterworks," before 10 a.m., on October 5, to Edward Boase, town clerk, town clerk's office, St. Ives, Cornwall. (See also "Building.")

Oct. 7. LONDON.—Supply and erection of a steel-wire rope suspension bridge to span the boating lake at Victoria Park, for the L.C.C. Persons desiring to tender may obtain sketch, plan, specification, form of tender and other particulars at the Parks Department, 11, Regent Street, S.W. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London county council, county hall, Spring Gardens, S.W., and marked "Tender for Bridge, Victoria Park." No tender received after 11 a.m., on October 7, will be considered. Tenders must be upon the official forms, and the instructions contained therein must be strictly complied with. Fair wages clause. (See also "Plumbing and Sanitary.")

Oct. 13. FULHAM.—Reconstructing and widening Stanley Bridge, carrying King's Road, Fulham, over the West London Extension Railway, for the L.C.C. Persons desiring to tender may inspect the drawings and obtain the specifications, bills of quantities, form of tender, and other particulars on application to the chief engineer of the council, Maurice Fitzmaurice, C.M.G., at the county hall, Spring Gardens, S.W., upon payment to the cashier of the council of £3. Tenders are to be delivered, sealed, and marked "Tender for Reconstruction of Stanley Bridge," King's Road, Fulham, by 11 a.m. on Oct. 13, to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W Fair wages clause.

Oct. 17. CARDIFF.—Providing a steam radiator, etc., at the Cardiff Workhouse, in accordance with specification prepared by S. W. Allen, M.I.M.E. Form of tender to be obtained from the clerk, and returned not later than 10 a.m. on Oct. 17, to Arthur J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff.

IRON AND STEEL.

Oct. 2. LANARK.—Providing and delivering about 1,600 tons of 16in. and 14in. diameter dry sand Cast Iron Pipes and special castings; also about 1,100 tons of 8in. diameter dry sand Cast Iron Pipes and special castings for the district committee of the Middle Ward. Copies of the specifications and schedules may be obtained at the office of the water superintendent, W. L. Balmer, district offices, Hamilton, on payment of £1. Tenders, endorsed "Tender for Pipes," must be lodged not later than Oct. 2, with W. E. Whyte, district clerk, Hamilton.

Oct. 3. EGREMONT.—Manufactory and delivery at Woodend and Moor Row railway stations 6 in. cast iron water pipes with the necessary bends, junctions, branches, tapers, valves, and other castings, for U.D.C. Forms of tender, with schedule of quantities and specification, may be obtained of James Cowan, surveyor, etc., town hall, Egrement, on deposit of one guinea. Sealed tenders, endorsed "Water Mains," must reach John Bowly, clerk to the council, town hall, Egremont, not later than October 3. (See also "Roads and Cartage.")

Oct. 3. BURNTISLAND (Scotland).—Deepening the east end of Cullaloe Reservoir and constructing bye-wash channel there, for the town council. Schedules of quantities may be obtained from the burgh surveyor, Burntisland, on payment of £1. Plans and drawings may be seen at the burgh surveyor's office or at Cullaloe reservoir, by Aberdour. Tenders, marked outside, to be lodged with Thomas A. Wallace, town clerk, Burntisland, not later than October 3.

Oct. 5. YNYSYBWL (Wales).—Supplying and erecting switch gear and transforming apparatus, and overhead distributing mains, for the Mountain Ash urban district council. Specifications and forms of tender and contract may be obtained, and plans inspected at the surveyor's office, town hall, Mountain Ash, and at the office of B. J. Day, 3, Park Place, Cardiff, upon deposit of one guinea. Sealed tenders upon forms supplied endorsed "Switchgear and Transforming Apparatus," or "Overhead Distributing Mains," as the case may be, must be addressed and delivered to the urban district council's offices, town hall, Mountain Ash, by October 5. (See also "Building.")

Oct. 9. CHADDERTON. — Construction of twenty-three Bacterial Filters, storm filters, sedimentation tanks, etc., for the U.D.C. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind Hill Street, Heywood, and 14, Victoria Street, Westminster, S.W., on deposit of two pounds. Tenders, endorsed "Tender for Bacterial Filters, etc., Contract No. 20," to be delivered by noon on October 9, to Henry Hoyle, clerk of the council, town hall, Chadderton.

Oct. 12. SOWERBY.—Supplying about 3,000 yds. of iron pipes and special castings for the U.D.C. Persons desirous of tendering should send their names to the engineers, Utley, Hebblethwaite, and Utley, 10, Waterhouse Street, Halifax, by Oct. 12. A deposit of £2 2s., prior to bills of quantities being furnished, must be paid to Edgar Booth, clerk to the council, Harrison Road, Halifax.

Oct. 13. MORTLAKE.—Construction of a pump well, engine foundations, outfall to river, and other works in the parish of Mortlake, for the Richmond main sewerage board. Specification and drawings may be inspected at the office of William Fairley, civil engineer, 69, Victoria Street, Westminster; also at the main drainage works, West Hall Road, Kew Gardens. A copy of the bill of quantities and form of tender may be obtained on deposit of a crossed cheque for two guineas, made payable to the board. Sealed tenders on forms provided must be delivered by October 13, to J. Leslie G. Powell, clerk to the board, Sessions House, Richmond, Surrey. Security for the due fulfilment of the contract will be required in accordance with the provisions of the Public Health Act, 1875.

PAINTING.

Oct. 5. NANTYMOEL (Wales).—Painting, decorating and repairing Gilead C.M. Chapel Nantymoel. Specifications may be seen at post office, Nantymoel, and at office of W. D. Morgan, architect, Post Office Chambers, Pentre. Tenders to be sent to J. E. Price, 12, Osborn Terrace, Nantymoel, endorsed, by October 5.

Oct. 5. GLASGOW.—Painter's work at A. Block (North), B, Block (Gatehouse), C, Block (Nurses' Home), D. Block (Power House), and E. Block (Laundry), for the Managers of the Royal Infirmary. Drawings may be seen at the office of the architect, James Miller, A.R.S.A., 15, Blythswood Square, and copies of the schedule may be obtained from the secretary on payment of one guinea. Sealed tenders, endorsed "Tender for Painter Work," to be lodged not later than 10 a.m. on October 5, with Peter Rintoul, secretary, 212, West George Street, Glasgow.

Oct. 5. ROTHWELL HAIGH.—Painting and lime and colour washing required at the children's homes at Rothwell Haigh, for the guardians of Hunslet Union. Forms of tender with specification may be obtained on application at the clerk's office. Sealed tenders, endorsed "Painting, etc.," must be delivered by 10 a.m. on Oct. 5, to Fred W. Mee, clerk to the guardians, union offices, Hunslet, Leeds.

Oct. 6. LANCASTER. — Exterior painting of buildings at the county lunatic asylum for the visiting committee. Printed forms of tender and full particulars may be obtained on application to J. R. Wilson, clerk and steward, clerk's office. Tenders, endorsed "Tender for Painting," and addressed "The Chairman of the Visiting Committee," must be delivered not later than 9 a.m. on Oct. 6.

PLUMBING & SANITARY

Oct. 5. FINCHLEY.—Construction of about 358 yds. of 12 in. soil sewer, together with manholes and other incidental works, for the drainage of Chandos Road, East Finchley, for the U.D.C., to be constructed in accordance with drawings, specification, etc., to be inspected at the offices of the engineer, and surveyor to the council, at Church End, Finchley. Copies of the specification, schedules and form of tender may be obtained from the engineer on application, accompanied by a deposit of £2. Sealed tenders, endorsed "Chandos Road Sewer," to be sent by 5 p.m. on Oct. 5, to E. H. Lister, clerk to the council, council offices, Church End, Finchley, London, N.

Oct. 5. GLASGOW.—Construction of a 3 ft. 6 in. brick sewer, for the Corporation, from the culvert carrying gads burn under the Caledonian Railway to the end of the sewer carrying that burn south of Barnhill station, Petershill Road. Specifications and forms of tender may be had on application at the office of public works, City Chambers, Cochrane Street. Sealed offers, marked outside, "Offer for Sewer, Petershill Road," must be lodged not later than 10 a.m. on Oct. 5, with A. W. Myles, town clerk, City Chambers, Glasgow.

Oct. 12. SOWERBY. — Execution of about 5,000 yds. of main sewer in the bed of the river Ryburn, Lumb Clough, and along the turnpike road at Triangle, for the U.D.C. Persons desirous of tendering should send their names to the engineers, Utley, Hebblethwaite, and Utley, 10, Waterhouse Street, Halifax, by Oct. 12. Prior to bills of quantities being furnished, a deposit of two guineas is required to be paid to Edgar Booth, clerk to the council, Harrison Road, Halifax.

Oct. 13. ARTINGTON.—Sewering the remainder of the parish of Artington, for the Corporation of Guildford. The approximate length of sewers is as follows: — 500 yds. lineal 9 in. cast iron pipes; 234 yds. lineal 6 in. cast iron pipes; 950 yds. lineal 9 in. stoneware pipes, with the necessary manholes and screening chamber. Plans may be seen and specification and bill of quantities obtained on application to C. G. Mason, Assoc.M. Inst.C.E., borough engineer and surveyor, at his office in Tun's Gate. Tenders, endorsed "Sewerage of Artington," are to be delivered by noon on Oct. 13, to F. S. Miller, town clerk, Bridge Street, Guildford.

Oct. 21. CHORLTON.—Work in connection with laying drains for the purpose of diverting the rain water from main drains at the Styal cottage homes, Cheshire, for the guardians of the union. Plans may be seen at the office of J. W. Beaumont and Son, architects, 10, St. James's Square, Manchester, from whom specifications and plans may be obtained on and after Oct. 1, on deposit of £1 1s. Sealed tenders, endorsed "Tender for Drainage at Styal Homes," are to be delivered not later than Oct. 21, to David S. Bloomfield, clerk to the guardians, union offices, All Saints, Manchester.

ROADS AND CARTAGE.

Sept. 30. KESTEVEN.—Supplying granite, slag-dust, and gravel, for footpaths, required for the main roads for the year ending March 31, 1910, for the county council. Specifications and form of tender may be obtained on application to the surveyor. Tenders, marked "Tender for Materials," with small samples, to be sent not later than Sept. 30, to W. B. Purser, Assoc.M.Inst.C.E., county surveyor's office, Grantham.

Sept. 30. LITTLEHAMPTON.—Scarifying and steam rolling of highways, about the district, in the months of November, and December, for the U.D.C. Tenders are to include a ten-ton steam roller, proper scarifier, fuel, oil, driver, driver's house, water barrel, and everything necessary for efficiently carrying on the work. Tenders, under cover, and marked "Steam Rolling," to be forwarded to the chairman of the Urban District Council, town office, Littlehampton, not later than Sept. 30, on forms to be obtained of the surveyor, H. Howard, F.S.I.

Sept. 30. TOOTING, S.W.—Repairing and remaking roads at the Grove fever hospital, Tooting Grove, Tooting Graveney, S.W., for the Metropolitan Asylums Board, in accordance with drawing, conditions, and specifications prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief. Drawing, conditions, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and obtained upon payment of a deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board not later than 10 a.m. on Sept. 30.

Oct. 1. WOOLWICH.—Supplying 400 tons of Guernsey Granite Spalls for breaking, for the union guardians. Tenders stating price per ton to include delivery at the workhouse, Plumstead, and, accompanied by samples, to be sent by 10 a.m. on October 1, endorsed "Tender for Stone," to Tom Cutter, clerk to the Guardians, workhouse, Plumstead.

Oct. 1. SOUTH NEWSHAM.—Making up back railway cottages, at South Newsham, within the district of the Blyth U.D.C. Plans, sections, and specification may be seen and all information obtained at the offices of the surveyor. Sealed tenders, endorsed "Tender for Street Work," to be delivered by 4 p.m. on Oct. 1, to Robert Grieves, surveyor to the council, Seaforth Street, Blyth.

Oct. 3. SLOUGH.—Supplying materials and labour for making up Princes and Connaught Roads, Slough, for the U.D.C. Plans and specification may be seen and schedule of quantities obtained from W. W. Cooper, town surveyor, Slough, on deposit of one guinea. Sealed tenders, endorsed "Private Street Works," addressed "Chairman, Highways Committee, 1, Mackenzie Street, Slough," to be sent in by October 3

Oct. 3. BOLSOVER.—Materials and work required in metalling, paving, curbing, channelling and draining Spencer Street, within the district, in accordance with plans and specifications prepared by the surveyor to the council. Persons desirous of tendering may inspect the plans and specifications at the office of W. G. H. Browne, Ivan House, Bolsover. Bills of quantities may be obtained on payment of one guinea. Sealed tenders to be sent, marked "Tenders for Streets," on or before Oct. 3, to G. E. Carline, clerk to the Bolsover urban district council, 2, New Square, Chesterfield.

Oct. 3. MANCHESTER.—Supplying the following materials and labour, for the Corporation, grit stone pitching, red shale, carting. Tender forms may be obtained on application at the city surveyor's office, town hall, Manchester, on payment to the city treasurer of one guinea. All cheques or postal orders are to be made payable to the order of the "Corporation of Manchester." Tenders, enclosed in the official envelope, to be delivered at the city surveyor's office not later than 10 a.m. on Oct. 3.

Oct. 3. NEW ROMNEY.—Supplying a 10-ton steam roller and scarifier at per day, for the Corporation, the contractor to find all coal and sharp all tines and supply a water cart. Sealed tenders, endorsed for rolling, to be sent not later than Oct. 3, to Albert E. Hayward, borough surveyor, New Romney.

Oct. 3. ANSTRUTHER EASTER.—Recauseway, laying streets within the burgh for the town council. Specifications may be seen of H. Elliot, burgh surveyor, Anstruther, who can also point out the streets to be renewed. Sealed offers may be lodged on or before Octobr 3, with Guthri and Maxwell, town clerks of Anstruther Easter.

Oct. 3. EGREMONT.—Cutting trenches, carting, laying, and jointing about 4,750 yards of 6in., 5in., and 4in. cast iron water mains from the service reservoir at Pallaflat to Moor Row, for the U.D.C. Forms of tenders, with schedule of quantities and specification, may be obtained of James Cowan, surveyor, etc., town hall, Egremont, on payment of one guinea. Sealed tenders, endorsed "Water Mains," must reach John Bowly, clerk to the council, town hall, Egremont, not later than October 3. (See also "Iron and Steel.")

Oct. 5. HALIFAX.—Private improvement works in Scott's Row, for the Corporation. Plans and specifications may be seen, and forms of tender obtained, on application to James Lord, M.I.C.E., borough engineer, town hall, Halifax, upon payment of £1. Tenders, endorsed "Scott's Row," must be sent by October 5, to Keighley Walton, town clerk. Fair wages clause.

Oct. 5. SEVENOAKS. — Levelling, metalling, kerbing, tar-paving footpaths, channelling, and making good Sandy Lane, Sevenoaks, for the U.D.C. Plans, etc., may be inspected, forms of tender and further information obtained, at the offices of S. Towlson, A.M.Inst.C.E., surveyor to the council, upon cash deposit of £5.

Oct. 6. CROYDON.—Repairing Beauchamp Road (from Spa Road to Moffatt Road) and Ladbrook Road (Whitehorse Lane) to a point opposite No. 19, within the borough for the Corporation. Plans and specification may be seen, and forms of tender obtained on application at the borough road surveyor's office, town hall, Croydon. Tenders to be sent by 11 a.m. on Oct. 6, endorsed "Tender for Private Street Works," to F. C. Lloyd, town clerk, town hall, Croydon.

Oct. 6. BEDLINGTON.—Supply and delivery of about 4,000 tons of hand-broken road whinstone, for the U.D.C., to be delivered at the various railway stations and sidings in the district, as the surveyor shall direct. Further particulars can be had from J. E. Johnston, surveyor, Bedlington, to whom samples of each sized material must be sent. Hire of a steam road roller, scarifier, and water cart, according to conditions to be seen at the surveyor's office. Sealed tenders, marked respectively on the outside "Tender for Road Metal," and "Tender for Road Roller, etc.," must reach Charles D. Forster, clerk of the district council, clerk's office, 24, Grainger Street West, Newcastle-on-Tyne, on or before Oct. 6.

Oct. 7. CLACTON.—Making-up Watson Road and Avondale Road within the district, for the U.D.C. Drawings, specifications and conditions may be seen, and copies of quantities obtained, upon application to A. R. Robinson, surveyor, town hall buildings, Clacton-on-Sea. £1 1s. will be charged for the quantities. Tenders, sealed and endorsed "Tender for making up New Streets," must be on the prescribed form and delivered not later than noon on October 7, to Geo. T. Lewis, clerk to the council, town hall, Clacton-on-Sea.

Oct. 7. HERNE BAY.—Paving, etc., the following streets for the U.D.C.:—Grand Drive, Sea View Road, Section III., under the Private Streets Works Act, 1892. Plans, sections, and specifications can be seen and forms of tender obtained from F. W. J. Palmer, surveyor to the council, town hall, Herne Bay. Sealed tenders, endorsed "Paving," to be delivered not later than noon on Oct. 7, to Joseph Jubb, clerk to the council, town hall, Herne Bay.

Oct. 7. HAMMERSMITH.—Excavating, concreting, and paving with creosoted deal blocks, a portion of Fulham Palace Road, for the council, in accordance with specification, which, with form of tender, may be obtained on application to H. Mair, M.I.C.E., borough surveyor. Sealed tenders, endorsed "Tender for Wood Paving," must be delivered not later than 6 p.m. on Oct. 7, to H. Thompson, town clerk, town hall, Hammersmith.

October 10. STRETFORD. — Paving with granited rock asphalt, etc., for the U.D.C., in the following streets and passages:—(a) Bowness Street; (b) Pasages, 2—68, Bowness Street. Drawings and specification may be seen and forms of tender with schedule of quantities and other particulars obtained on application to Ernest Worrall, the council's surveyor, any day during office hours on payment by cheque of two guineas. Sealed tenders, endorsed "Private Streets Works," addressed to the chairman of highways, to be delivered at the council offices, Old Trafford, by Oct. 10.

Oct. 12. STREATHAM.—Making-up and paving that part of Chillerton Road, Streatham, which lies between Rectory Lane and the south side of Crowborough Road, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, new streets department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes and endorsed "Tender for Paving Chillerton Road," must be delivered to Henry George Hills, town clerk, council house, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on Oct. 12. If required, the contractor must provide two sureties for the due execution of the contract.

Oct. 13. FLIXTON. — Kerbing, channelling, flagging, and macadamising Alderley Road, off Flixton Road, for the Barton-upon-Irwell Rural District Council. Plans, sections, and specifications may be seen, and forms of tender and quantities obtained upon deposit of £2, from the surveyor to the council, A. H. Mountain, A.M.I.C.E., union offices, Patricroft. Tenders to be addressed not later than Oct. 13, endorsed "Tender for Street Works," to J. W. Whitworth, clerk, union offices, Patricroft.

Oct. 13. LONDON.—Supplying and delivering fine binding gravel at parks, gardens, and open spaces, for the L.C.C. Persons desiring to submit tenders may obtain the specification, form of tender, and other particulars at the Parks Department, 11, Regent Street, S.W. Each tender is to be delivered in a sealed cover, marked "Tender for Gravel, Parks and Open Spaces," by 11 a.m. Oct. 13, to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W. Fair wages clause.

MISCELLANEOUS.

Oct. 1. DONABATE (Ireland).—Erection of a partition in the free library, in accordance with plan and specification prepared by Mr. Scott, architect, which may be seen with the secretary, or at the architect's office, 49, O'Connell Street, Dublin. Tenders will be received by the secretary, Library Committee, Donabate, until Oct. 1.

Oct. 2. BEVERLEY.—Removal of turf and relaying same, also excavating, draining, banking, and levelling the racecourse; for the Beverley Race Co., Ltd. Plans, etc., may be seen at 8, St. John's Street, Beverley, and any other information obtained on application to T. Casson Beaumont, surveyor, Beverley.

Oct. 5. MILTON REGIS.—Excavating, etc., and laying gas mains in Milton Regis, for the U.D.C. Full particulars and specifications may be obtained at the gasworks, Milton Regis, on application to the manager.

Oct. 20. MARKYATE (near Luton).—Sinking new well, etc., at Markyate, near Luton, for the Hemel Hempstead Rural District Council. The well to be 6 ft. in diameter and about 180 ft. deep, in chalk, with a 4 in. boring at bottom. Specification, form of tender and full particulars may be obtained from the council's consulting engineers, Elliott and Brown, Burton Buildings, Parliament Street, Nottingham, on payment of one guinea. Sealed and endorsed tenders to be delivered by first post on Oct. 20, to Lovel Smeathman, clerk to the council, Hemel Hempstead, Herts.

No date. WOODLESFORD. — Asphalting the playgrounds at the Woodlesford council school. For specification and bill of quantities apply to Robert J. Smith, education offices, Garforth, near Leeds.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxvi.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22½) desires engagement; six years' experience; good knowledge of domestic and city warehouse work; 1st class honours construction. Student R.I.B.A.—A. T., 2, Avenue Road, Forest Gate, E. 4568

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT and surveyor's assistant (22), wide experience, working drawings, details, and full sizes; specifications, measuring and supervising, etc.; excellent refs.; salary 30s.; trial willingly. —B., 1510, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT'S Assistant, fully qualified, wide experience; excellent testimonials, desires London engagement, whole or part time. — Box 4601, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4592

ARCHITET'S and Surveyor's Assistant (21) requires engagement with good architect, 3½ years' student in architect, construction and kindred subjects, land surveying and levelling. Board of Education qualifications; prelim. R.I.B.A., refs.—Apply Box 4572, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ARCHITECT and Surveyor's Assistant (21), good draughtsman, details, perspectives, surveying, levelling, etc. Prize-winner, first class advanced building construction, and architecture certificates —S. K., Prob.R.I.B.A., first-class refs.; moderate salary.—Box 4578, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant, experienced in working drawings, details, surveys, etc.; first-class references; specimens of work; orders taken for water colours, perspectives, deed plans for conveyancing, drawings, designs, etc.—Aubrey Pritchard, Bryndenden, Rhyl. N.W 4540

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BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

BUILDER'S and decorator's clerk seeks situation, well up in all trades; ten years' experience; age 26; Midlands preferred; wages moderate.—Apply Box 4599, BUILDERS' JOURNAL Office.

BUILDER'S assistant desires change, 29, abstainer, experienced, quantities, plans, surveying, estimating, book-keeping, shorthand, typewriting, measuring, variation accounts, supervise jobs; excellent references; moderate salary.—Box 4004, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (24), seeks situation; 7½ years' London experience. P.C. jobbing, wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4608

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CONTRACTS.—Estimator, measurer, etc. (London and country experience), requires position. Successful in tendering. Can guarantee brisk business. Make most of measured accounts, and practically and efficiently help with management. Country preferred. Small salary. — Estimator, Durston House, The Grove, Deal. 4564

ENGINEER wants post, London or Provinces; 12 years' experience, calculations, quantities, designs, detail drawings, bridges, structural steelwork, prepared, reinforced concrete.—Box 4579, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

ESTATE Clerk of Works, all-round town and country experience; surveying, plans, quantities, etc.; considered good manager of men; character will bear strictest investigation.—Apply Box 4566, BUILDERS' JOURNAL Office.

GENERAL Foreman, long and varied experience in town; thoroughly practical; good at reinforced concrete work; trade joiner; moderate wages; good references.—50, Peel Road, Wembley. 4565

IMPROVER, surveyor's or builder's office (21), technical student, four years' practical knowledge, supervise, neat draughtsman; abstainer; good references.—Marfleet, Totland Bay, I.W. 4581

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

JUNIOR Assistant (22), student R.I.B.A., practical building construction, experience, details, working drawings, neat draughtsman, surveying, assist quantities; three building certificates; prizeman, good references; specimens; salary moderate.—Box 4593, BUILDERS' JOURNAL Office.

LATE Pupil (22), four years' experience, requires berth as surveyor's or architect's assistant, drawing, surveying, levelling, qualified Stage III., Building Construction and Architecture.—J. W. D., Laurelwood, Hare Lane, Godalming. 4582

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good refereuces.—H. Cruse, Boxford, Newbury, Berks. 4537

MANAGER of masonry works or general foreman, well up in management of men and machinery, London and country experience; practical in all trades. — Thomas, 38, Napier Road, Tottenham. 4602

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STUDENT R.I.B.A., 23, well trained man, desires situation as assistant; 1½ guineas. — Box 4607, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4594, BUILDERS' JOURNAL Office.

Machinery Plant &c., for Sale.

TO STONEMASONS, BUILDERS AND OTHERS.
Messrs. Hooker and Webb have received instructions from Mr. F. E. Stephens, who is taking smaller premises, to sell by auction upon the premises, 19, Brighton Road, Croydon, upon the 7th and 8th October, 1908, at one o'clock precisely each day, the surplus stock, machinery and plant of a monumental and general stonemason, comprising over 500 lots of Portland and other stones. Slate and marble, 72 monuments, 6 vans, trolleys, and stone busses, 5 stone and slate saw frames, moulding machine, rubbing table, Tangyes' 20 h.p. gas engine, etc. May be viewed and catalogues obtained of the Auctioneers, 4, High Street, Croydon. Tel. Croydon 122 Nat. 4600

FOR sale by tender, 3 ton travelling crane (Storthert and Pitt, makers), can be inspected in working order any time at Wombwell Wood Quarry. Tenders, endorsed "Crane," to be sent in before Oct. 7, addressed Alan Pye, Manager, Builders' Co., Barnsley. 4605

Miscellaneous.

BUILDERS' Books at tremendous reductions! Books on every subject and for all examinations, supplied; sent on approval. Catalogues free; state wants. Books purchased.—W. and G. Foyle, 135, Charing Cross Road. W.C.

SECOND-HAND Optical Mart.
for the Purchase and Sale of
LEVELS, THEODOLITES, DRAWING INSTRS.
—Clarkson's, 338, High Holborn, London, W.C. (Opposite Gray's Inn Road).

WANTED, to hire or purchase, by the York Corporation Distress Committee, about 800 yards of light tramway. Communications to be addressed to the Secretary, 16, Castlegate, York. 4595

MOTORS, two 7-ton steam waggons for disposal, working daily; owing to the completion of our new works at Wishaw we are now open to dispose of our waggons.—Barr, Ltd., Parkhead, Glasgow. 4597

Contracts Open.

HOLSWORTHY URBAN DISTRICT COUNCIL.
TO CONTRACTORS.

The above Council invite tenders for the Construction of an Impounding Reservoir, Service Reservoir, and Filter-Beds, and the Laying of Cast-iron Mains and other work at Holsworthy.

Plans may be seen at the office of the Engineer, Mr. J. Chadwick, Bletchley, Bucks, or at the office of the undersigned.

Copies of specification, quantities, and form of tender, may be obtained from the Engineer, on payment of £3 3s., which will be returned upon receipt of a bona fide tender.

Sealed tenders, endorsed "Holsworthy Waterworks," to be delivered to the undersigned on or before October 1st, 1908.

The Council do not bind themselves to accept the lowest or any tender.

W. C. R. Peterson, Solicitor, Clerk
Holsworthy, Devon.
August 24, 1908. 4588

Patent.

TO POTTERS, SANITARY ENGINEERS, AND OTHERS.

The Proprietors of British Patent No. 20322 of 1904, for "Sewer Traps or Valves," are desirous of entering into negotiations for the Sale of the Patent, or for the Grant of Licenses, to manufacture under Royalty.

Full particulars can be obtained from
GEORGE BARKER,
Chartered Patent Agent.
77, Colmore Row, Birmingham. 4589

October 7, 1908. Volume 28, No. 713.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Back to Back-to-back.

The defenders of back-to-back dwellings have, so to speak, put their backs up, and are fighting back-to-back. The committee of the Huddersfield Property Owners' and Ratepayers' Association have sent a letter to the local council protesting that the case against back-to-back dwellings has been greatly exaggerated. "Without entering lengthily into the questions of fresh air and sunlight," the secretary writes, "and their bearings upon the suggested substitution of small through houses for back-to-back houses, the committee more particularly wish to call your attention to the fact that the extravagant statements to which I have referred have not been supported by one tittle of reliable evidence, and are nothing more than theories and pious opinions, which, however strongly held, are not sufficient grounds for departing from a type of house which answers very well indeed, and which the committee can prove to be as healthy as any other form of dwelling of the same size." It is not clear whether the committee has adduced all its proofs in this letter, or whether it is keeping the strongest in reserve. All that is stated is that Halifax, "which has not allowed back-to-back houses for over fifteen years back," does not show a much more healthy death-rate than Leeds, which "has tens of thousands (not near so good as the Huddersfield type), and 486 in course of erection;" that though Nottingham "has had no back-to-back houses built for fifty years back" (how lovingly the secretary lingers on the seductive word "back!") it has the highest infantile mortality in the United Kingdom; that local insurance companies find absolutely no difference in death-rates between clients who have lived in through houses and those who have lived in back-to-back houses in Huddersfield; and that a census of the two kinds of houses is greatly in favour of the back-to-back dwellings. Considering that the census was taken by the Property Owners' Committee, this result is less impressive by its natural strength than by the fact that it rather discredits the evidence of the insurance companies. The case, however, is pre-eminently one in which comparative statistics can be made to prove anything. Mortality returns may possess a certain degree of significance when they have been carefully compiled and sifted, and classified and analysed, by disinterested experts; but even then they cannot be trusted as an absolutely accurate indication of the comparative healthiness of dwellings. The infant mortality, for instance, on which stress is laid, is probably due to parental ignorance, or other purely personal conditions, rather than to the absence of the notoriously salubrious back-to-back dwellings! And crudely presented mortality returns take no account of the lingering illnesses and chronic debility that must be rife where air-space and sunshine are insufficient. But it is quite unnecessary to labour the case. Be they never so salutary, back-to-back dwellings are abhorrent to healthy public sentiment, and their complete extinction is only a question of time.

Fibrous Plaster to the Fore.

It seems that the enthusiasts who have acclaimed armoured concrete as the building material of the present and of the future have reckoned without fibrous plaster—and Mr. P. H. Boekbinder. That gentleman, it is stated, has just opened a fibrous-plaster factory at Chalk Farm, which, in the circumstances, seems to be a good place to date from, and in this respect atones nobly for the alleged inappropriateness of the place-name to a source of milk supply. It seems that the dazzling glories of the Milk-White City have seized the imagination of the polylot public, who have thus become violently enamoured of fibrous plaster, and will not be happy until they "have it in their houses." Mr. Boekbinder flatters their hopes. "There is no reason at all," he says, "why a man should not erect a building in this material for his habitation," and it seems almost a pity that, in the nature of things, the sanction can hardly hold good for the flip-flap, which, doubtless, many persons of ill-balanced views would like to reproduce in their back gardens. Mr. Boekbinder is reported to have told an interviewer "that if the Exhibition buildings are occasionally given a coat of boiled oil and then painted, there is no reason why they should not last one hundred years or more." On the other hand, and on a disinterested view of the situation, there seems to be no earthly reason why their natural term should be thus unduly protracted. A fibrous-plaster city is well enough for a festal season, but to perpetuate it as "something lingering, with boiled oil in it," would be positively inhumane. But we need not be greatly apprehensive of the universal reign of fibrous plaster as a structural material. We are reassured by the revelation of its abnormal and expensive appetite for boiled oil and paint.

Unfair Competitions: Manchester Moves.

The increasing need for keeping a sharp eye on competitions has been of late repeatedly shown, and alert vigilance has been constantly urged in the columns of this journal. Apparently the advice is bearing fruit. At its first sessional meeting, to-morrow, the Manchester Society of Architects will consider the following resolution: "That the council be asked to make the following by-law, and the same be adopted as a regulation of the Society: 'A member shall be considered to have failed in the observance of a lawful regulation of the society or of a lawful regulation, by-law, or order of the Council, within the meaning of article 61 of the Society's articles of association, and shall be liable to the penalties therein stated, if he shall submit either directly or indirectly a design in any architectural competition, the conditions of which are unsatisfactory to the Council, and of which notice has been given to the members by the secretary.'" We are not acquainted with the terms of the Society's articles of association (nor, indeed, with the circumstances that have led the Manchester Society to take this step), but presume that the penalties to which reference is made are sufficiently drastic and deterrent. The pity of it is that they cannot be made to apply—except perhaps indirectly—to the persons responsible for imposing the unfair conditions that tempt the invertebrate and weak-kneed architect to disregard his own dignity, and to forget the loyalty he owes to his profession and to his society. The very mean but very natural disposition to take advantage of a period of depression by sweating the architect can only be counteracted by such steps as the Manchester Society seems able and willing to take, and by such publicity as we are always happy to afford as occasion demands.

London Street Architecture.

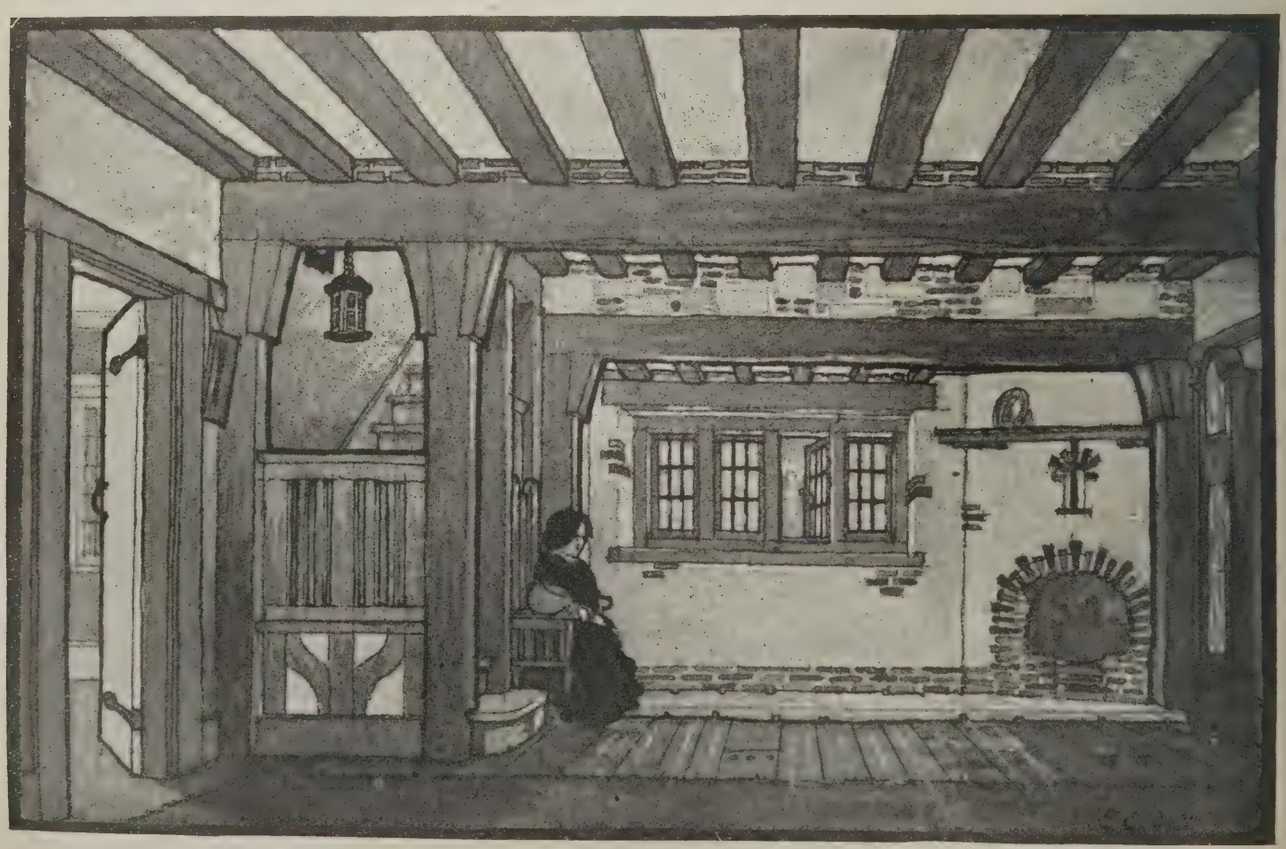
The Piccadilly Hotel—of which, by the way, an illustrated description will appear in the forthcoming issue of the "Architectural Review"—is, Mr. Leonard Stokes assured an interviewer the other day, "the admiration of all architects." He referred, of course, to the external design by Mr. Norman Shaw; for the object in seeking Mr. Stokes was to ask his opinion as to whether, in his opinion, London was improving architecturally, and was evolving a style of its own. Mr. Stokes's answers to the questions with which he

was plied were characteristically diplomatic. He could not admit that we have achieved much in street architecture. He nevertheless conceded that the city is undoubtedly being filled with fine buildings, in which beauty, as well as business utility, has been considered—for instance, the Electra building, the Institute of Chartered Accountants, the police headquarters at New Scotland Yard, and several new fire stations. The new War Office, and the new block of Government buildings in Parliament Street, he remarked, have undoubtedly suffered from the deaths of their architects before the buildings were completed, as the constant adaptations and improvements that suggest themselves as the work is in progress are necessarily missing. But our street architecture suffers from lack of corporate agreement or control. "In Paris," Mr. Stokes is reported as having said, "they have no difficulty in building streets in which the houses have cornices of the same height, and are of similar style and treatment; but when the Englishman has designed and built one house, he seems exhausted, and the next must be different. Then one man has a notion for making his building very lofty, and the next has a scheme for making his very wide; the one builds his of stone, and the other has a strange fancy for crockery, and they set them next door to one another. What are you to do?" We can at least console ourselves with the belief that this variation of style and material is a manifestation of the sturdy independence of the national character, and with Mr. Stokes's apparently rather reluctant conclusion that "as one looks round he must admit that people are beginning to care for beauty."

THE ARCHITECTURAL PROFESSION OF TO-DAY.—IV.

To-day the exigencies of fashion, or taste, demand that designs for public buildings should be more or less in keeping with the architectural school and traditions of such masters of the later Renaissance as Wren, Gibbs, and Chambers. But, as might be expected, recent successive experiments in other fields of architecture have not been conducive to the acquisition of a thorough knowledge and understanding of the now fashionable style of art, and consequently the production of good work of this type of design now in vogue is the exception rather than the rule.

It will not need much reflection on the part of our readers to make it evident to them that whilst some acquaintance with almost every phase of design is necessary for the proper training and development of the artistic instinct, yet, inasmuch as the art of architecture is long and life is short, only an exceptionally highly gifted man can reasonably expect to be a successful practical exponent of more than one style. Yet most of the older architects of our day, as we have shown, have devoted successive peroids of their lives to the practice of Gothic, "Free Classic," Jacobean, and Palladian work. The production of good architecture, in any one style, demands something more than this most uncertain method of acquiring the requisite facility, and the present day system, therefore, appears to us to be scarcely more than sufficient to meet the needs of the *dilettante*. It was the *absence* of any such arbitrary change of style that enabled the mediæval craftsmen (who were trained in accordance with an organised course of communal artistic study based upon tradition in alliance with certain very definite and invariable artistic aims and aspirations) to produce the magnificent buildings of their day, in which, however, individuality was lost and the art of the period was the joint product of many minds educated in the same school of thought. On the other hand, individuality was very pronounced among the architects of the Italian Renaissance school, the great masters of which were, perhaps almost without exception, the best scholars and most highly cultured men of their day, by whom the artistic triumphs of ancient Greece and Rome were thoroughly appreciated and closely studied and understood. But now we have neither educational communities bound by definite aspirations nor even any considerable number of cultured men working independently of each other. Consequently, our architecture is largely expressive of the *personal* taste of the practitioner, whose work, consequent upon the imperfect nature of his education, is only too often deplorably bad. We do not overlook the undoubted fact that the architectural profession contains within its ranks some highly gifted and enthusiastic workers, but, as we have said, owing in a great measure to the general want of thoroughness and definiteness in their early studies in art, they are unable to do full justice to their undoubted abilities. With the constantly increasing number of architectural failures apparent on the completion of successive public buildings is it not reasonable to



HOUSE AT HAMPTON HILL, MIDDLESEX: THE HALL. CASTLE & WARREN, ARCHITECTS. (SEE CENTRE PLATE.)

abandon the utterly fallacious and indeed mischievous idea that the architect is born and not made? Compare the practical wisdom of Sir Joshua Reynolds with the vapid utterances of the "art for art's sake" mountebank. "The artist who has his mind filled with ideas and his hand made expert by practice works with ease and readiness, whilst he who would have you believe that he is waiting for the inspiration of genius is in reality at a loss how to begin, and is at last delivered of his monsters with difficulty and pain."

Or, again, hear what the late Sir Wyke Bayliss, President of the Royal Institute of British Artists, had to say on the subject of art education: "As to the schools of the Royal Academy I would not have a student admitted to them who could not pass an examination in Homer, Virgil and Dante. Nor would I admit any one of them to honours who could not read at least one of these great poets in his own language, or who had not taken a University degree." To the obvious objection that was raised as to the students' loss of time, Sir Wyke replied that it would be no waste of time but a "time of growth," and he added the following words with which we must all agree, "The work of the artist is the expression of the mind of the artist. If his mind is ugly, his works will be ugly, and we do not desire to look into an ugly mind."

To us it seems that the whole architectural profession has long been engaged in the profitless occupation of "marking time," lest by the adoption of a progressive policy and the institution of a system of education devised upon practical lines, it should, unhappily, prematurely cut short the career of the remarkable artistic genius "unfettered by scholarship or tradition," whose advent has been so confidently predicted. But, in addition to awaiting, in a state of suppressed excitement and expectancy, for the coming of this abnormal individual, what is the profession doing for the students of to-day—the architects of to-morrow? Probably, there was never an age in which architects, so persistently and at such length, proclaimed their devotion to the art of architecture, or studied it in a more haphazard and superficial manner. For there *must be* something radically wrong in a system of education which only enables the average man to discriminate—if indeed at all—*towards the end of his career*, between what is good and lasting and what is bad and ephemeral in his art. Fortunately, we do not now hear much in this country of *L'Art Nouveau*, but a few years ago its influence was quite apparent, and those architects whose scholarship was insufficient to enable them to withstand its pernicious influence must, undoubtedly, have wasted time which might otherwise have been profitably employed in the study of the many good examples of art which have received the approval of successive generations of artists. Nothing but education of a very definite nature will enable architects to avoid similar future hindrances (which may well be of constant occurrence) to the advancement of their art. Why, for example, when the best work of the Italian Renaissance affords an object lesson in how to apply the elements of classic art in a *grammatical* and *appropriate* manner to modern requirements, do architects insist in culling from the worst period of that style, and thus produce designs in which the proportions and refined details of the inimitable art productions of ancient Greece and Rome are wantonly burlesqued and vulgarised? Surely this is due solely to that lack of discrimination and taste, which is proof positive of the inefficiency of their artistic education. Probably these men would not approve of the methods of a fourth or fifth rate *litterateur* who held Shakespeare up to ridicule by consistently burlesquing his immortal works. Yet in what respect does their own conduct differ? We have no desire to critically discuss at any length the curricula of study adopted at the existing schools of architecture throughout the country, but from the fact that they have *not* been arranged or organised in accordance with any ascertained general consensus of opinion among architects, we frankly confess we regard them with a certain amount of suspicion. Indeed, it is doubtful whether the establishment of any number of schools or teaching establishments controlled and administered by men many of whom regard architectural scholarship as of comparatively small importance, who have no fixed or very definite ideas as to what constitutes good architecture, and who do not understand or appreciate the correct principles of planning its geometrical foundation, or the essentially organic nature of correct design,—is likely to prove very beneficial to the welfare of the younger generation of architects.

In our view, steps should be taken for the institution of a national College of Architecture, subsidised and encouraged by the State, in which students could acquire a course of architectural training alike akin in the definiteness of its aims and the severity of its mental discipline to the curriculum so long successfully adopted at the Ecole des Beaux Arts, where young men are taught the *art* of architecture, not the art of qualifying, in the shortest possible time, for earning a living by the conduct of an architect's "business."

We have dwelt at some length upon the question of the architect's education, as we regard the present system, or want of system, as being the chief of the many hindrances to the advancement of his art, and consequently to his own welfare, which surround the architect of to-day. But, whilst we have endeavoured to show that an improvement in the education of architects will undoubtedly effect a corresponding improvement in the architecture of the time, because when once the correct principles of planning and design are understood by assessors, competitions will soon cease to be, as at present, mere lotteries, if not indeed occasionally something worse, yet there are other evils (according to common report, prevalent in the architectural profession) which it would be impolitic, and indeed almost cowardly, to ignore.

The course of public lectures on "Renaissance (including modern) Architecture," begun on Monday last at the University of London, Imperial Institute Road, South Kensington, S.W., by Mr. Banister Fletcher, F.R.I.B.A., will deal with the principal buildings erected in Europe from the fifteenth century to the present day. At the same place, on Tuesdays, at 3 p.m. and 8 p.m., Mr. Percival Gaskell, R.B.A., is delivering a course of twenty-four lectures on "English and French Painters." In each case the lectures are illustrated by lantern slides and otherwise.

Correspondence.

The Architectural Profession of To-day.

To the Editor of THE BUILDERS' JOURNAL

SIR,—I anticipate that your articles on the above subject will be of great interest to all thinking architects. Your correspondent, "A Struggler," suggests that the country requires a period of "increasing prosperity" before it can give adequate employment to architects and builders. Could not this "increase" be obtained by tariff reform, which would encourage the investment of capital in home industries and the building of factories and workshops, accompanied by housing accommodation for masters and men? I hope that my raising a "political cry" will not prevent the insertion of this letter.

F. J. FORSTER, A.R.I.B.A.

Wimbledon.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am glad to see in your last two issues that you have taken up seriously the state of the profession with a view to studying the cause of want of employment, etc., and I am only sorry that your articles—perhaps discreetly edited—cannot appear in a journal which is widely read by the general public. I take it in the nature of things your leaders are written from information gathered in London more especially, and I know from many friends in London that bad times are being experienced there in our profession, as in all other trades; but I think if you could make inquiries in the provinces you would find more food for reflection on the internal workings of our calling than is to be found in the metropolis. Naturally, general depression in all business must affect architects, but the curse of the profession, as a profession, is the indiscriminate taking of pupils, which leads to the production of bad work, besides the overcrowding of our ranks. I believe I am within the mark when I say that I do not believe, amongst the twenty or more architects in a town I could name, you will find a dozen paid assistants. I know of one man in particular who for some years had quite a respectable—in size—practice, who always had two or three men in his office, and who himself told me he had never had a paid assistant. In this way much mischief is done; bad work results, with its consequent reflection on the profession; and all these half-baked architects or ex-pupils are swelling the ranks of the unemployed, which, again, naturally leads to cutting prices. A drowning man catches at a straw, and a starving architect will take 4 per cent. rather than nothing, and who shall blame him? You lay great stress, and rightly, on the *well-qualified* architect. If none but such got the work there would be more than enough to go round; but whilst we are governed by such a self-satisfied body as the R.I.B.A., with its dog-in-the-manger attitude towards registration, how is such a consummation to be attained?

DEVON.

[The articles in question are written by a well-known architect, who is acquainted with brother architects in many provincial centres, and who is kept informed by them of the course of events in their respective districts. We do not know that he is particularly well informed of matters in our correspondent's county, and we are pleased, therefore, to give publicity to his experiences on this question.—ED. "B.J."]

Proposed New Works.

Barnes, Surrey. — The U.D. Council have passed plans for the following:—New infants' school, Lower Richmond Road, Messrs. Jarvis and Richards; five houses, Glendower Road, Mortlake, Messrs. C. Ellis and Co.; a lean-to, 16, Glentham Road, Messrs. Walker and Sons; addition at rear of 18, Sheen Lane, Mr. Bertram Richardson; and extension of coach-house, "Hiawatha," Castelnau, Messrs. Harrods, Ltd.

Birmingham: Aston. — The Aston Board of Guardians have had designs prepared for a new central laundry at the Workhouse.

Cambridge.—The Town Council have passed plans for the following:—Office and cart shed, Tenison Road, G. Bolton, 106, Regent Street; laundry, 86, Castle Street, Mrs. Brown, Alpha Road; three houses, St. Barnabas Road, E. Willmott, 12, Hope Street (subject to an agreement for combined drainage being executed); house and laundry, Madingley Rise, H. F. Newall, Madingley Rise; laundry, etc., Coldham's Lane, the Coldham Laundry Company, Cambridge.

Ealing.—Plans have been submitted to the Borough Council for a large roller skating rink, to be known as Walpole Hall. The building, to be of steel and brick, will be 158ft. long and 70ft. wide. The hall will also be available for Badminton, winter lawn tennis, and bowls, and for dancing. Mr. Alfred Burr, F.R.I.B.A., is the architect.

Hedon, Yorkshire.—The parish church is to be restored under the supervision of Mr. John Bilson, F.S.A., of Hull. Funds are now being collected for the purpose.

Knaresborough.—The U.D. Council contemplate erecting new offices, and are negotiating for a site.

London, S.W.—No. 38, Queen Anne's Gate, and the adjoining house, are to be demolished, and a new office block is to be erected on the site.

London: Chelsea, S.W.—Plans for artisans' dwellings to be erected at Manor Street, on a site given the Borough Council by Earl Cadogan, are to be submitted his lordship's approval. A scheme which provides for a five-storey building, with forty one-room tenements and eighty two-room tenements, at an estimated cost of £17,300, has been approved by the Public Health Committee.

London: Lewisham.—The Borough Council have passed plans for the following: J. W. Heath and Sons, Phœbeth Street, six houses; H. and G. Taylor, Caterham Road, eight houses on north side; W. J. Scudamore and Son, Chalcroft Road, five houses on north side; Willson and Deverall, Sangley Road, seven houses and shops on the north side; James Watt, Bromley Road, Southend, six double houses; Norfolk and Prior, Glenwood Road, four houses on the west side; S. J. Gerrard and Son, Algernon Road, 17 houses on the west side; W. Wilkinson, Limes Grove, four houses and a shed, north side; W. Brenton, Crofton Park and Ewhurst Roads, five houses on the north-west side and stables; J. Nicolls, Ewhurst Road, three houses and one shed; E. C. Christmas, London Road, a house in the rear of No. 94; Frazzi Fireproof Construction, Ltd., Prince's Road, a motor-house on the west side; B. G. Bateman, Trewsbury Road, motor-house at No. 30; G. Parker, Champion Park, an addition to school premises.

Manchester.—Proposals are being considered by the Corporation for alterations and extensions of the Royal Exchange, which has been suggested by the directors of that institution.

Middlesbrough.—The Free Library Committee are contemplating the erection of another library, and are looking for a site.

Natland Cumberland.—The present church, which is not interesting architecturally, is to be demolished, and a new building erected at a cost of £4,500.

Newcastle-on-Tyne.—A scheme is on foot to build a large hall, off Northumberland Street, suitable for concerts and public meetings. Mr. G. G. Laidler, of Northumberland Street, is mentioned as the originator of the scheme. The hall is to accommodate 5,000 people.

Sheffield.—The old chapel at Attercliffe is to be restored at a cost estimated by Mr. J. D. Webster, the diocesan architect, at £350 to £400. The Lord Mayor and other prominent citizens are interesting themselves in the movement.

Solihull.—The District Council are proposing to build, with the Yardley U.D. Council, a joint isolation hospital, at a total cost of £11,650, of which Solihull is to pay £6,500.

Stourbridge. — The Worcestershire County Council are about to erect a new elementary school for 250 pupils.

Buildings in Progress and Completed.

Exeter.—The ancient church of St. Laurence is being repaired and renovated under the direction of Mr. Harbottle Reed, architect, Exeter.

Haileybury College.—A new racquet court has been erected at a cost of £2,200.

Killinghall.—A new organ, the gift of Mrs. Cautley, a parishioner, has been installed at the Parish Church at a total cost of £680. It has been built by Mr. Wm. Andrews, of Bradford.

Kingston-on-Hull. — A new Sunday School for the Wycliffe Congregational Church is being erected at a cost of £2,000, defrayed by Mr. James Archibald.

Oxford.—St. Paul's Church has been re-opened after extensive alterations. In the chancel wood panelling has been substituted for the cumbersome stone casing round the walls of the sanctuary. Additional space has been obtained by the removal of the two steps inside the altar-rail, the floor of the sanctuary being now level throughout, with the exception of the dais for the altar. In the treatment of the walls, the lower cornice has been entirely removed, and the upper cornice replaced by one of bolder design, which has been extended to the eastern walls of the nave. It is supported by two pairs of pilasters on each side of the chancel and single pilasters outside, the general effect being to give greater height and dignity to this part of the church. New desks of fumed oak have been provided for the choir boys. The nave has been levelled and the seating entirely re-arranged, the chief feature being the provision of a central aisle, 5ft. 4in. in width, paved with black and white tiles, in addition to side aisles paved in a similar manner. The unsightly wooden porch inside the west door has been removed, as have also all the seats beneath the gallery, this space being left clear. The font has been moved to the north-west corner, and at the opposite corner a new door has been inserted, this being approached by an inclined path leading from the street pavement. The work has been carried out by Messrs. W. H. Wheeler and Son, the architect being Mr. F. C. Eden, of London.

Sculcoates.—A handsomely appointed new parochial hall for the parish of St. Mary's has been recently opened in Sculcoates Lane. The new premises have been erected at a cost of over £1,100. The main hall will accommodate about 300 persons, and in addition there are three commodious class-rooms, whilst communication is established with the adjoining iron mission church without its being necessary to leave enclosed premises. Mr. Dossor is the architect, the builder being Mr. F. Bilton, and the contractors for the woodwork, fittings, etc., Messrs. J. Taylor and Son.

St. Albans.—The Bishop of St. Albans opened a new girls' high school on September 21st. The buildings provide for 200 scholars, and have cost more than £7,000.

Seaham.—A new lifeboat house and slipway has been erected at the Harbour from the designs of Mr. W. T. Douglas, engineer to the National Lifeboat Institution. The cost was £3,000.

Sketty.—A new north aisle, designed by Mr. Glendinning Moxham, F.R.I.B.A., of Swansea, has been added to the parish church. Mr. Glynn Vivian has defrayed the cost.

Swannington.—A new Wesleyan Chapel is in course of erection from the design of Messrs. Withers and Meredith, architects, of London, at a cost of £1,619. The contractor is Mr. A. B. Moss, of Coalville. Externally the building will be faced with red sand-stock bricks from Measham, with stone dressings, and the roof will be covered with hand-made red tiles. The window-frames will be wood. Internally the building will be panelled all round to dado height, and the pews and pulpit will be of pitchpine. The schoolroom will be separated by a partition, which may be removed on special occasions, throwing the whole into one room capable of seating 400 people.

Thornton-le-Dale.—A new Wesleyan Church, to seat 300, and to cost £2,400, is being erected here.

Turriff.—The new Higher Grade and Junior Student School has been opened. The building, which is faced with local red freestone, comprises class-rooms, gymnasium, art and manual instruction, carpenters' shop laundry and cookery rooms, house-wifery rooms, etc. Mr. W. L. Duncan, Turriff, was the architect; and the following were the contractors:—Mason, Mr. James Robb; carpenter, Mr. W. H. Skene; slater, Mr. James Gillespie; plasterer, Mr. James Clark; plumber, Messrs. Charles Duthie and Sons; and painter, Mr. James D. Watson all of Turriff. The fittings were executed by Messrs. D. Macandrew and Co., Aberdeen; and the gymnastic fittings by Messrs. Spencer, Heath, and George, Ltd., London. The total cost, including fittings and architect's fees, will amount to between £3,600 and £3,700.

Wirksworth.—The opening of the new Grammar School, which has cost £4,500, took place on September 9th. The new school is on the land facing the Hannedges, and occupies a prominent position. It has accommodation for 90 students, and girls as well as boys are now included in the curriculum. The architect was Mr. Widdowes, of Derby, and the contractors were Messrs. G. W. Walker, of Wirksworth.

LIBRARY
OF THE



HOUSE AT HAMPTON HILL, MIDDLESEX.

CASTLE



EN, ARCHITECTS

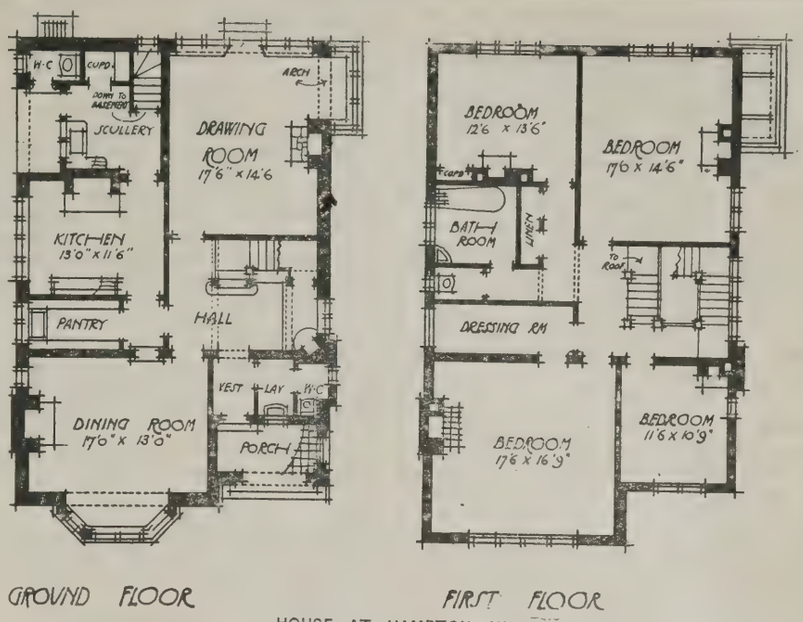
HOUSE AT EAST. MOLESEY, SURREY.

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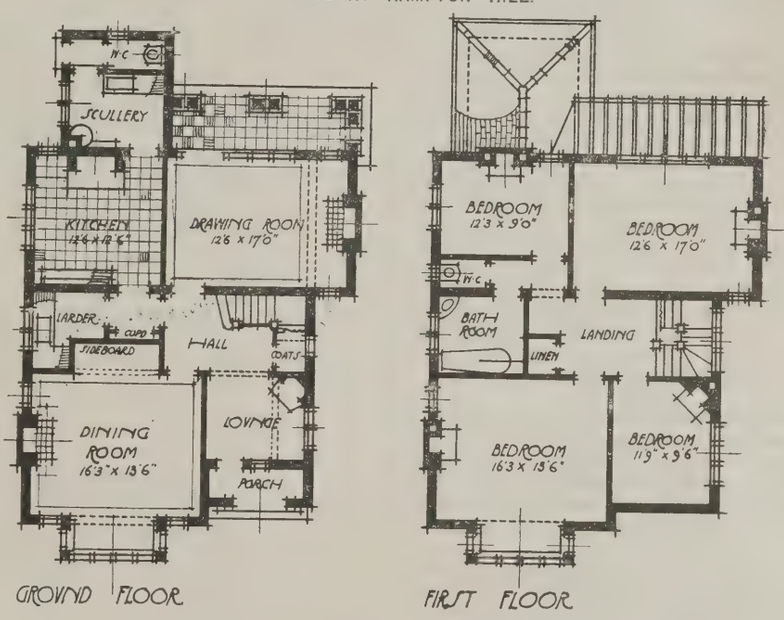
Our Plates.

The two houses we illustrate have recently been completed from the designs of Messrs. Castle and Warren, of London. The house in Park Road, Hampton Hill, has the exterior treated with oak timber-work left its natural colour, with all junction pins left projecting. The walls, where the timber-work does not occur, are faced with soft red mottled bricks, and the roofs are covered with sand-faced red roofing tiles, and the ridges formed with half-round tiles in cement with wide joints. The interiors are treated with some regard to the feeling suggested externally, and the hall is treated with oak beams and joists revealed and ceiled in between. The dining room is panelled out in oak. There are two bedrooms in the roof, extra to those shown on the plans. Mr. J. Curtis, of Gloucester Road, Teddington, was the builder.

The walls of the house in St. Mary's Road, Molesey, are externally covered with white rough-cast, with soft red mottled bricks at base, and the roofs are covered with red weathering tiles. The window frames are painted white, and the porch posts and beam are in oak. Internally, the rooms are treated quietly, with due regard to economy, a feature being made of a verandah overlooking the garden from the drawing-room. The builder was Mr W. H. Ladbrook, of Kew.



HOUSE AT HAMPTON HILL.



HOUSE AT EAST MOLESEY. CASTLE AND WARREN, ARCHITECTS. *(See Centre Plate.)*

Notes and News.

The rebuilding of Buckingham Palace, is suggested by Mr. William Woodard, F.R.I.B.A., should be in accordance with a somewhat severe type of Renaissance. The whole of the exterior, he thinks, should be of Portland stone, and a minimum amount of carving should be employed, as he thinks florid carving is entirely unsuited to the London atmosphere, whereas Portland stone is well known to be the only material which will last in the metropolis. We have good examples of it in St. Paul's Cathedral, the Horse Guards, and the Admiralty. If Buckingham Palace had been built of Portland stone, perhaps the effect might have been better, even the result of age, but inasmuch as, for cheapness sake, it was built of Bath stone—a material well known to decay rapidly in the London atmosphere—it has been painted over as a preservative preparation, and this has added to the mean appearance of the structure.

* * *

The inelegant name of a mighty trafficker in London house-property is rescued from oblivion by a writer in a recent issue of the "Daily Chronicle," who avers that every day in London thousands of persons are inhabiting, trafficking in, or passing through, the structures and streets erected by Dr. Barnardo. He began life as a doctor, having graduated M.D. at Utrecht, and become an honorary fellow of the College of Surgeons. But "that trade failing," as Roger North says of him, "he fell into that of building, and the Fire of London gave him means of doing and knowing much of that kind." He built Essex Street, in the Strand, and its purlieus, pulling down the great house of the Earl of that name to do it; he built the courts of the Inner Temple after the fire in 1681; he built the Six Clerks' Offices in Chancery Lane; he laid out and built a good part of the houses and streets about Red Lion Square, in Holborn, with the Bedford and Rugby Trust streets which adjoin them, and provide the chief revenues of the Bedford and Rugby schools. He built himself a house at the end of Crane Court, later the home of the Royal Society, and only in recent years replaced by modern offices. He also bought Sir William Gresham's old house at Osterley Park, Middlesex.

* * *

News of the abandonment of the scheme for restoring Hales Owen Abbey "will have been received regretfully," says a Midland contemporary, "by local antiquarians familiar with the remains of the only monastery of the Premonstratensian order in Worcestershire." Antiquarians who are not local will share the regret: they lose so fine an opportunity of accusing the restorers of vandalism! But there are substantial reasons for regretting that no immediate steps are to be taken for the preservation of so interesting a relic. Apparently the building was begun in 1218. At the time of the dissolution, much of the stonework was broken up for use in mending the roads, and to-day the abbey is a mere wreck.

* * *

Mr. F. E. P. Edwards, the retiring city architect for Bradford, entertained the staff of his department to a farewell supper at the Union Club, Bradford, last Friday. Hearty congratulations were offered to Mr. Edwards on his appointment as city architect of Sheffield, and the staff presented him with a small desk clock.

* * *

An addition to the fire station is being made at Windsor Castle. The fire-resisting floors that have been adopted are on the "Fawcett" system.

* * *

For the extensive stores, stables, and offices for Messrs. Greenall, Whitley and Co., Ltd., Foregate Street, Chester, which are now nearing completion, the constructional steelwork, fire-resisting floors, and finishes throughout have been supplied by Messrs. Homan and Rodgers, Manchester. Messrs. J. H. Davies and Sons, Chester, are the architects.

The Architectural Association of Ireland has issued a provisional programme of meetings for the forthcoming session, which begins on October 13th, when the annual meeting will be held, and the president, Mr. Edwin Bradbury, M.R.I.A.I., will deliver the inaugural address. The arrangements include the following papers and discussions: November 24th, Dr. MacDowell Cosgrave on "Georgian Work in Dublin"; December 8th, Mr. H. Crawforth Smith on "Gardens"; December 22nd, discussion "Which past style of architecture is most suitable for modern domestic work?" On January 12th, 1909, Sir Aston Webb, F.R.I.B.A., will deliver "A Talk to Students."

* * *

With reference to the description of Portsmouth Technical College, on 212 of our issue of September 16, we are asked to mention that the whole of the constructional iron and steelwork in fireproof floors, roofs, girderwork, stanchions, staircases, and metal ceiling for plasterwork, costing in all about £6,000, was designed and carried out by Messrs. Peirson and Co., 17 and 18, St. Dunstan's Hill, Great Tower Street, E.C.

* * *

"Romanos," in the Strand, London, is now undergoing new and very effective decorative treatment. The ornamentation on the walls of the large central hall is being relieved with a back-ground of "Coatostone" in light colour, a preparation which gives the effect of a natural stone. The patentee of this material is Mr. A. W. Neal, of the Coatostone Decoration Co., 77, Mortimer Street, Regent Street, W. The Coatostone Decoration Co. have now opened a branch office at Milton Chambers, Weston Road, Southend-on-Sea, where they are carrying out a large amount of work both to interiors and exteriors.

* * *

We understand that a large order for plastering and reinforced concrete work, on an extensive and important London contract that is being speedily completed, has been secured by a well-known Liverpool firm of plasterers.

* * *

The Westminster City Council proposes to take the opinion of the rated occupiers of the buildings which extend from the statue of Charles I. at Charing Cross to Parliament Square, on the desirability of the entire street being known as "Whitehall." The Local Government Board has asked the council not to affix a "Parliament Street" nameplate to its new building, as it wishes its address to be "Whitehall."

* * *

Cornish Granite for the Government Works at Portsmouth.—How the Government had been persuaded to accept the tender of Cornish merchants for the supply of granite for the new works at Portsmouth was told by Mr. Hay Morgan, M.P. for the Truro-Helston division, at a meeting of his constituents on September 24th. In the spring of the present year, he said, a conference was called of representatives of the granite industry from all parts of the kingdom, who discussed the granite industry in all its bearings. In the result, it was decided to ask Mr. McKenna and Dr. Macnamara to receive a deputation. Mr. McKenna complied with the request, and, as a result of the representations made by the deputation, the Government had decided to pay a higher price for the Cornish product, rather than import Norwegian stone for the works at Portsmouth.

* * *

Dumbarton Castle, which is about to be transferred from the custody of the War Office to that of H.M. Office of Works, will, it is anticipated, be carefully restored in the historic portions, while the anachronisms in point of architectural style (their existence will be understood when it is recalled that the castle has been used as a sort of barracks) will no doubt be cleared away.

* * *

Nantwich by-laws are undergoing revision. At present there are two sets in force, and the want of uniformity gives rise to many anomalies and much inconvenience; both sets, for instance, may be in force in the same street, while several parishes do not come under the by-laws at all.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Oct. 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct. 31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos. Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
No Date.	CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50 £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council. Bodmin. Deposit, £1 1s.

* *This competition has been unfavourably reported upon by a Correspondent.*

Ilford Emergency Hospital.—The competitive designs for the above will be exhibited in the Reading Room, High Road, Ilford, on Thursday, October 8th, from 10 a.m. to 7 p.m., and on Friday, October 9th, from 10 a.m. to 10 p.m.

* * *

War Office Buildings, Vienna.—Sixty-six competitive designs were submitted for the above. The first place is given to Mr. L. Baumann, of Vienna; the second to Messrs. L. Sommerlatte and J. Marschall, of Vienna; and the third to Messrs. M. Komor and Deczo Jakab, of Budapest.

* * *

New Secondary School for Cleckheaton.—The assessor, Mr. Vickers Edwards, of Wakefield, has delivered his report upon the designs submitted by competing architects for the above. Prizes of £50, £30, and £20, respectively, were offered, and the awards were made as follows:—Mr. William H. Thorp, F.R.I.B.A., Leeds; 2, Mr. W. S. Braithwaite, Leeds; 3, Mr. R. Fielding Farrar, A.R.I.B.A., Leeds.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

Cement Roughcast.

SHEFFIELD.—ENQUIRER writes: "In your issue of August 19th, you give an article on rough-casting, which deals with lime rough-cast only. Would not Portland cement make a much more durable and weather-proof job? Is there any drawback to the use of Portland cement in this connection, besides the greater cost involved? Please state the usual proportions for mixing when Portland cement is used, and if the hints given for lime rough-cast require any modification for Portland cement.

Portland cement would undoubtedly make a much more durable and weather-proof job than ordinary lime rough cast, but as a rule, if a person is able to get a passable job done, more especially if assured of good workmanship, he is more inclined to accept this than a more expensive method, and to put the extra cost into something that can be seen, either in external or internal decoration. This is more especially the case in villas. A good proportion for use with Portland cement and washed sand is one to two, and the finishing coat should be of clean, sharp shingle, and washed sand in similar proportion. Sometimes, however, if desirable, the first coat may contain a slightly larger proportion of of sand. It must be borne in mind that Portland cement has slightly different properties to lime, due to its fast drying nature, more especially if very new. As a matter of fact, if used in this state, the probability will be that expansion will naturally take place when wet, with the result that in setting it will contract and burst.

RALPH STONE.

Repair of Faulty Drains.

STAPLEHURST.—F.B. writes: "I am working for a gentleman who has been advised by an architect (as a friend) to have the drains of his house opened and tested, and if they are found to be faulty or leaky, to repair them by means of cement and compressed air. I have not heard of this method before. Will you explain the working, and also the probable cost for the necessary plant, and where it is obtainable?"

Cement grout, forced in by means of compressed air, has been found very useful for filling up cracks and spaces which could not otherwise be dealt with. For instance, the cracks and fissures in the walls of Winchester Cathedral are being treated thus with complete success. We cannot, however, understand a competent architect suggesting such a treatment for faulty drains. It might be useful for repairing and filling up the joints of an old brick sewer, where the brickwork was crumbling or porous; but this would only be possible where the sewer was large enough for workmen to enter. Drains should be of iron or stonework pipes, and in the case of the latter, it would be impossible to grout with compressed air without opening down and uncovering the pipes. If the pipes are uncovered, it is obviously better, easier, and cheaper, to make fresh cement joints and reinstate any broken pipes. The most usual fault in drains is a stoppage due to a subsidence, or of the true gradient, or disturb-

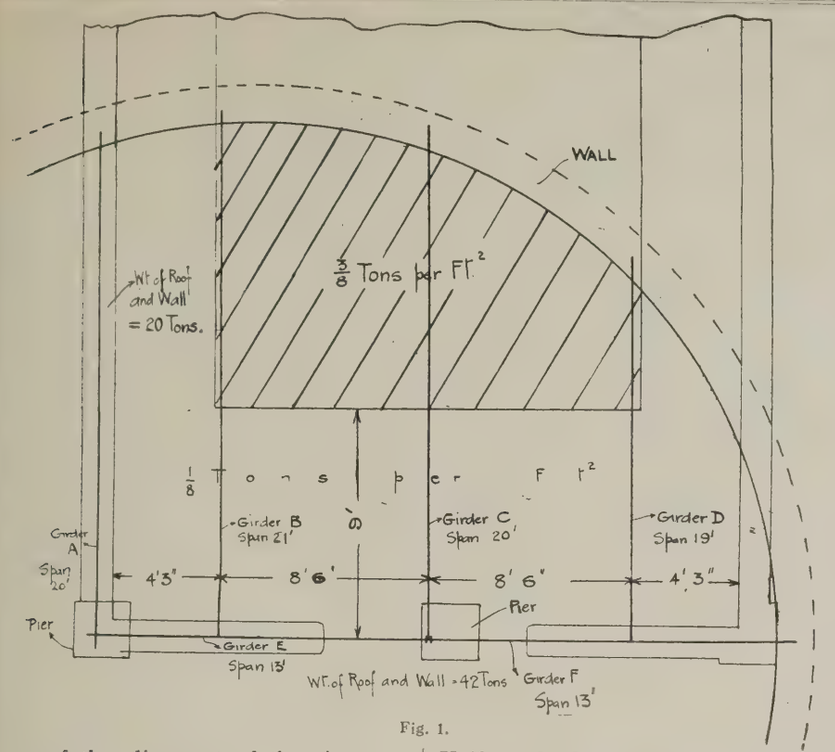


Fig. 1.

ance of the alignment of the pipes, or to their being crushed or broken. This cannot be remedied by grouting. The idea seems to us to be rather absurd.

Girders for a Building.

BARNSTAPLE.—S.E. DEVON writes: I should be glad if you would kindly favour me with the sizes, and the calculations to find same, for the six broad flange beams in the positions, and to carry the weights shown. A portion of a building I have to erect extends over some made ground (which made ground is enclosed by a wall, as shown on plan herewith). I have built piers, from rock foundation under, at the two points indicated to carry the girders, the other extremities of which will rest on the circular enclosing wall. The weights are figured, as also the clear spans between bearings. The girders carrying the front of the building will, of course, support the ends of the cross girders where shown.

Fig. 1 shows the plan of the building redrawn so as to give the effective spans of the six girders. The suitable sizes of the various girders are then found in the following manner:—Fig. 2 shows the Bending Moment diagrams.

Girder A. Load uniformly distributed = 20 tons from wall + $20{\cdot}5 \times \frac{4{\cdot}25}{2} \times \frac{1}{8}$ tons from the floor = 25·4 tons = W. $\therefore$ Max. B.M. $= \frac{WL}{8} = \frac{25{\cdot}4 \times 20 \times 12}{8}$ = 762 in tons. According to the theory of beams B.M. = f.Z, $\therefore$ taking f = 7 tons per sq. in. the necessary modulus $Z = \frac{762}{7}$ = 109 inch units. From the tables we see that one 12″ × 12″ or two 10″ × 10″ broad flange beams would be satisfactory; the latter will probably be preferable and give Z = 117·6; for the former Z = 103; for a 14″ × 12″ beam, Z = 144.

Girder B. The load consists of ⅛ ton per sq. ft. over an area $21 \times \left(\frac{4{\cdot}25}{2} + \frac{8{\cdot}5}{2}\right)$ sq. ft. + a load of $12 \times \frac{1}{4} \times \frac{8{\cdot}5}{2}$ over 12 ft. Uniform load over whole span = 16·6 tons $\therefore$ M $= \frac{16{\cdot}6 \times 21 \times 12}{8}$ = 522 in tons.

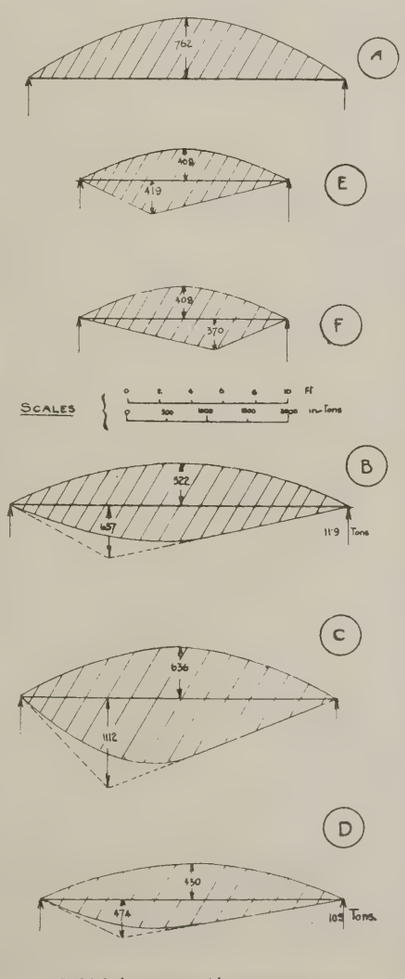


Fig. 2.

Uniform load over 12 ft. = 12.7 tons, for which the B.M. diagram is as indicated in Fig. 2. The max. combined B.M. = 900 in tons, $\therefore$ $Z = \frac{900}{7}$ = 129 inch units. Two 10″ × 10″ beams might be used for this although the Z is somewhat less or one 14″ × 12″ would be quite satisfactory. The reaction at the end resting on the girder E is equal to $\frac{16{\cdot}6}{2} + \frac{12{\cdot}7 \times 6}{21}$ = 11·9 tons.

Girder C. The uniform load over whole span = 21·2 tons and that over 11 ft. = 23·3. The diagram is similar to that of Girder B. Max. B. M. comes about 1420 in lbs. $\therefore$ $Z = \frac{1420}{7}$ = 203 $\therefore$ Two 12″ × 12″ or one 18″ × 12″ would do.

Girder D. The uniform load over whole span = 15·1 tons. The uniform load over 10 ft. = 10·7 tons. Max. B.M. = 780 $\therefore$ Z = 111. $\therefore$ Same sizes as for girder A will do.

Reaction at the end resting on girder F is equal to $\frac{15{\cdot}1}{2} + \frac{10{\cdot}7 \times 5}{19}$ = 10·47 tons.

Girder E. Take the weight from the wall as uniformly distributed over whole length, this being very nearly true, the max. B.M. due to this load = $\frac{21 \times 13 \times 12}{8}$ = 409 in tons. It also carries the reaction from girder B = 11.9 tons. Max. B.M. due to this = $\frac{11{\cdot}9 \times 4{\cdot}5 \times 8{\cdot}5 \times 12}{13}$ = 419. Max. combined B.M. = 780 in tons, nearly $\therefore$ $Z = \frac{780}{7}$ = 111. $\therefore$ Same sizes as for girder A will do.

Girder F. Uniform load is the same as in Girder E. $\therefore$ Max. B.M. due to it = 409 in tons. Reaction from girder D = 10·5 tons. $\therefore$ B.M. due to this = $\frac{419 \times 10{\cdot}5}{11{\cdot}9}$ = 370 in tons. Max. combined B.M. = 730. $\therefore$ $Z = \frac{730}{7}$ = 104 inch units, so that the same sizes as for girder A will do.

The Architectural and Topographical Society.

SILLOTH.—QUIZ 'EM writes: "Is the Architectural and Topographical Society of any help and benefit to a young architect? Where is the office of the society, and who is their secretary?"

The society you mention should be of particular value to young architects; but, having been started only this year, it has yet to make its influence felt. It has a very talented and influential advisory committee. Write to the hon. sec., Mr. Wilfred Travers, at 33, Old Queen Street, Westminster, S.W.

Sewerage Systems.

TAUNTON. — LEARNER writes: "Could you give me the address of publisher of a book on drainage for large areas; are there any books showing the size of sewer required per 1,000 of population?"

One of the most complete works on the subject is "Sanitary Engineering," by Colonel E. S. C. Moore, 32s. Others that may be recommended are: "Sanitary Engineering," by F. Wood, 8s. 6d. nett; "Designing, Construction, and Maintenance of Sewerage Systems," by A. Prescott Folwell, 12s. 6d. nett; and "Main Sewer Construction," by William H. Maxwell, 1s. All these can be obtained from this office, post free, at the prices mentioned. There are no rule-of-thumb methods to calculate size of sewers per 1,000 of the population.

Architectural Modelling.

HUDDERSFIELD.—H.F. writes: "Have you had any articles in previous volumes of THE BUILDERS' JOURNAL dealing with the making of architectural models in cardboard, clay, and plaster? Is it your intention to insert in your paper any such articles? Can you give me the titles of any good works on architectural modelling, and the prices of same?"

No, we have not published any such articles, and the work is not one that can well be learned from books. There is a book on "Architectural Modelling in Paper," by T. A. Richardson, which can be obtained for 1s. 6d., post free, from this office.

Books for Students of Architecture.

BIRMINGHAM.—A. M. B. H. writes: "It is inconvenient to attend the local classes in architecture, and I am desirous of passing the Board of Education Examination, and of eventually qualifying for Honours Certificate. I have already obtained a 1st in Stage II. Building Construction. Will you please say what books I should study?"

The enquiry is not worded quite explicitly, but we assume that the only subject in which A. M. H. B. wishes to prepare himself is Architecture. For this subject no books or drawings can take the place of personal study from the actual buildings, or, where these are not available, from remains and casts in the museums. He should certainly study whatever good Gothic and Renaissance examples his district affords, as well as such neighbouring places as Lichfield, Worcester, Warwick, and Coventry. Several carefully measured sketches should be prepared, preferably plotted on the spot, and pieces of enrichment should be drawn to a large scale. Mouldings, again, cannot be properly understood otherwise than by taking their profile carefully from the work itself, and noting the relation of one set to another, as, for instance, pier and arch moulds, mullion and jamb moulds, subsidiary and main vaulting ribs. Next in importance is the scale drawing from book illustrations of details. For this the Greek and Roman Order section, Mauch's 'Order Book," is perhaps the best; but Spiers's "Orders," supplemented by Mitchell's "Sheets of the Orders," will be found useful, if the first-mentioned book is not available. In the English Gothic section, Colling's books are undoubtedly the best, and should be supplemented by Jobbing and Dolman's "Analysis of Ancient Domestic Architecture in Great Britain." Alternatives to these are Brandon's "Analysis" and Pugin's "Examples." For the English Renaissance section, Gotch's plates on the early work, and Belcher and Macartney's on the later, are undoubtedly the best. Triggs and Tanner's books on the work of Inigo Jones, and on interior woodwork, are also very useful. The above are chiefly large books, but can probably be obtained temporarily for reference. The querist should certainly also be on the look-out for plates of measured drawings appearing in this journal from time to time. For general reading contemporaneously with the drawing, we would recommend the following as a useful series: Anderson and Spiers's "Architecture of Greece and Rome," Smith and Slater's "Classic and Early Christian Architecture," Smith and Poynter's "Gothic and Renaissance Architecture," Parker's "Introduction to the Study of Gothic Architecture" and "Glossary of Architectural Terms," and Blomfield's "History of Renaissance Architecture in England." Should A. M. B. H. require to prepare for Architectural Design as well, the basis of his study would be the above history, taken in conjunction with the Building Construction, which he has evidently already studied to some extent, and amplified by works on the principles of architectural designs. B. AND B.

Party Wall Question.

LONDON, E. W. N. A. writes: "A, the owner of five houses, has, without notice to B, pulled down his property, thereby making B's party wall an external wall. A has no intention of rebuilding. B has called upon A to make good the old party wall, to make it weather-proof, but A declines, and asserts that there is no law to compel him to do so. The property is in the East-end of London."

A appears to have demolished his own property merely and not to have in any way interfered with the party wall; nor does it appear that he has jeopardised the stability of B's property by his action. I am of opinion that, in these circumstances, B has no right of legal action against A, although it is quite true that he has exposed the party wall to the weather.

F. S. I.

Fitting a Fumigating Room.

TUNBRIDGE WELLS.—SAXON writes: "We shall be glad if you can inform us the best way to make and fix up a fumigating room for oak. We have a large shop, a portion of which, say, 22ft. by 10ft. by 9ft. pitch, we could partition off and make air-tight for the purpose. At present one end has a large window in it; would this have to be sealed up, or would it be sufficient to make it air-tight? We presume it would be possible and advisable to have a piece or two of clear glass in the partition through which we could see how much the oak work was fumigated.

The space you mention is unusually large for a fumigating room, and unless you have a very large amount of work to do, one-half the size would probably answer better, as it would save ammonia, which is, as you are doubtless aware, the fumigating agent. The great thing to see to in constructing the room is that it is quite air tight. Folding doors will probably be most convenient, and, if necessary, brown paper can be pasted over the cracks every time the room is used. The window will not affect the work, provided that it is rendered quite air-tight. You can, of course, put in a couple of "observation windows," if you wish, but you will find that the best plan of ascertaining how the work is proceeding is to bore holes in one or two places far apart, and to place in these plugs made from the same wood as that used in the article which is being fumigated, and a good deal longer than the casing through which they pass. These plugs will thus project into the room, and will be acted upon by the ammonia exactly the same as the article under treatment, and they can be withdrawn and examined from time to time and progress noted.

Success in fumigating depends upon three important points—(1) Subjecting the article to the fumes of strong ammonia for exactly the right time to produce the required depth of colour. This depends upon the strength of the ammonia, the size of the room, and the variety of wood, as some oaks are more susceptible to the fumes than others. (2) Absolute freedom from grease, such as might arise from touching the work with dirty hands; and (3) A careful stopping of nail holes and defects, not with ordinary putty, but with a mixture of oak sawdust, and a little glue, to which is added a drop of ammonia to bring it to the colour of the remainder of the work. If ordinary putty were used, it would be unaffected with the fumes, and every nail hole and defect stopped would show up and spoil the job. In a large fumigating room it is advisable to have two or even four saucers containing the ammonia distributed at equal intervals. J.

Practical Experience in Municipal Engineering.

BELFAST.—L.D.S. writes: "Can you give me any advice as to the steps I should take to obtain good practical experience in county and municipal works or waterworks engineering? I have graduated in the Royal University of Ireland in engineering with considerable distinction, being an exhibitioner and honoursman right through my course. I have held first place in every engineering examination in my college during the three years' course. I specialize in county and municipal work and waterworks engineering, and I should like to get practical experience in either of these branches. I should be glad if you could give me any advice as to what steps to take in order to obtain same."

Practical experience can only be gained by entering the offices of a municipal engineer, and great care and foresight is required to be exercised in the selection of the town. It is usual for the student to be articled to the engineer or the Council for from three to five years. This is rather a costly but more satisfactory method of gaining all-round experience. A progressive and rapidly growing town is the best to select, as there is always plenty of work in the Engineers' and Surveyors' Department, consisting chiefly of the inspection of new streets and buildings during construction, electric lighting and tramways, waterworks, and gasworks, street widenings, improvements, and making-up in accordance with the Public Health Acts, etc., etc. The examinations of the Institution of Municipal and County Engineers and the Royal Sanitary Institute should be passed by the candidate for a borough engineer's appointment in England. It is as well for the pupil to join the local fire-brigade so as to get a thorough knowledge of its administration and working, as it often occurs that the municipal engineer has supreme or executive control of this useful institution, and it is better that he should be competent to take the position of its captain. A study of architecture and mechanical engineering will always be found of use, and he should be conversant with the Public Health Acts, Highways Acts, Towns Clauses Acts, etc. All public meetings of the Council should be attended by the pupil, so as to gain an insight into the procedure adopted. If the student does not wish to be articled, he can offer his services as an improver at a small salary, but this is never so satisfactory as going through the regular routine of pupilage. Advertising in the technical journals for a pupil's or improver's position is generally resorted to with satisfactory results. The meetings of the Institution of Municipal and County Engineers, and their visits to various towns, should be regularly attended, as valuable information is gained thereby.

ASSOC. M. INST. C.E.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Theory and Experiment.

Although we have a well-defined and elaborate working theory of the distribution of stresses in materials and structural elements, it is nevertheless unwise to accept the theory as adequately established and fixed for all time. Multitudes of students, however, year after year, follow along the beaten tracks, and an army of practitioners are using the formulæ without apparently any cause to doubt its sufficiency. Occasionally collapses and accidents (like the Quebec Bridge disaster) occur to startle the architectural and engineering professions, but usually explanations are offered of ordinary precautions as to factors of safety having been reduced, or else the contractors are blamed for bad workmanship, and all goes on as before, without any material recasting of theory. Figuratively speaking, elaborate edifices are erected upon very questionable foundations, but the fact is not generally realised. The band of thinkers who enquire into essentials and foundational principles is small. In chemistry and physics there is not nearly so much stagnation in this respect as in engineering and applied mechanics, and in the former sciences we constantly hear of accepted theories being entirely superseded by others that are more accurate. As knowledge increases, earlier ideas of the nature of matter and force are constantly being abandoned for closer approximations to the truth. It takes years, however, before these world-shaking theories have any effect upon the architectural-engineering world. The explanation of why changes in theory in the abstract sciences take place so readily is that constant resort is had to experiment to verify a theory. We put it to the test. But in ordinary building construction and civil engineering, we seldom test anything. The theory of stresses in structures that we are working upon is based on the results of a few experiments conducted generally many years ago, made with apparatus not nearly delicate enough, and inadequately observed and recorded. The chief element of doubt is in the nature of internal stress in materials; but, even in respect to statics, there is room for close enquiry, for certain lines of enquiry have raised doubts. There is a *prima-facie* case for close investigation into everything afresh; for in all other directions of science theory has undergone radical changes. Study of many books on applied mechanics and engineering has convinced us that their authors, through want of practical acquaintance with the problems they treat, omit to realise points of difficulty, while other authors consciously evade them. The majority of authors are inadequately supplied with experimental data, and they follow each other as sheep follow the bell-wether. Few have ever experimented for themselves. Undoubtedly one of the great obstacles is that insufficient means are provided for experimental investigation; but, unfortunately, we do not make the most of what we have. Several engineering colleges possess means to conduct tests in respect to structural design, but the professors are mechanical or electrical engineers, and do not find interest in such problems. But we think if only they were approached by representatives of the architectural and civil engineering professions, and instructed in what to look for, they would assist to the best of their ability. Also the college authorities might be induced to lend their laboratories and appliances to be operated by civil engineer students. A few engineering colleges in the United States, Germany, and France are apparently all we have to rely upon for the meagre data they dole out from time to time, but the results are often only applicable to local practice. Steelwork and reinforced concrete are particularly in need of experimental study, as affecting both pure theory and practice. We may as well point out a few of the lines upon which we should like to see investigation. First, we would like to know the distribution of internal stresses from point to point in test specimens of varying ratio of length to diameter, and of various sections and at varying stages of loading in compression, tension, bending and torsion acting singly and combined in various homogeneous and composite materials. The nature of shearing force or diagonal tension and compression should be cleared up. Then we would like to have experimental investigation conducted to show whether we require to modify our statics as regards moment and ellipse of inertia, radius of gyration, and moments of resistance. The real position of the neutral surface in homogeneous and composite beams of various shaped sections, and of materials having the same and different moduli of elasticity, and the distribution of stresses above and below it, is much in doubt; *i.e.*, we want to know the shape of stress figures and the lever arm, and loadings should be concentrated, distributed and vibrating. Horizontal diagonal and vertical shear in beams requires investigation. Then the position of the pressure curve in arches, and the distribution of internal stresses is not well known, stresses in members sustaining combined tension and bending, compression and bending, and tension and torsion, compression and torsion, and bending and torsion, are likewise questionable. Stresses in struts are not nearly determinate at present. Stresses in flat and buckled plates and slabs and in domes have received little attention. The analysis of what are termed indeterminate structures such as some roof trusses, continuous elastic arches, etc., has proceeded in recent years on very inadequate data. Stresses in chimneys, with and without joints, poles, piles, pipes, retaining walls, all should be tested and undergo close analysis. Tests should be conducted both on a laboratory scale and on a large practical scale. Stresses in large members may be very different from those in small; for some conditions that are negligible in miniature become all-important when greatly magnified. If this enumeration of some of the more important lines of investigation seems extensive, it only shows how much we are in ignorance in dealing with engineering problems, and the great need there is for elightenment in even what appear to be simple problems. To realise the inadequacy of experimental investigation, and the indifference displayed, is annoying to the architect or engineer who understands something more than the rudiments of the subject, and appreciates the real difficulties of the problems of construction. With the majority of the professional public ignorance is bliss, and we can only expect an advance when our professors and teachers stop pretending they know all about the subject, and show students the difficulties of the subject in the absence of proper experimental investigation. Those in the position to do so should be urged to get together funds to undertake such work. Architectural and civil engineering are not less important than chemistry, electrical and mechanical engineering, medicine and other sciences, and therefore should be equally well supplied with testing laboratories and professors and staffs of assistants. It will require a good deal of money when so much is waiting to be done; but if other professions can solve the problem, why should not ours?

Reinforced Concrete Bridges in Italy.—On September 2nd the new bridge at Carate Brianza over the River Lambro was opened to traffic. This bridge is one of the largest and most interesting pieces of engineering work as yet constructed of reinforced concrete in Italy. It consists of two spans, of 188.5ft. each, and its total length is 459ft., its width 27ft., and it stands over 147ft. above the water. The work was started in December, 1905, and the first tests as to the reliability of the structure were conducted in August, 1907, when the bridge was loaded with ballast to the amount of about 250lb. per square foot, or double the weight for which it had been constructed. The results of the test were most satisfactory, as the deflection under the strain was found to be very small. The tests were subsequently continued with two and four wheeled vehicles, at various speeds, these including 20-ton road rollers, 10-ton road locomotives, and 6-ton wagons. The works were carried under contract by the Societa Italiana Costruzioni e Cementi Armati, who have been executing some very important works in reinforced concrete in Italy.

* * *

Another bridge of reinforced concrete, spanning the River Magra at Costigliole, on the new road from Caprigliola to Spezzia, has been opened to traffic. The bridge is 984ft. long, 24ft. wide, and it stands about 33ft. in the clear above the normal water level. It consists of five spans, or arches, each with a chord of 166ft., and the deck is supported by 400 pillars of reinforced concrete.

* * *

The Perfector Bar Reinforced Concrete Co. report that they have in hand the following important contracts:—A large seven-storey factory building; a fireproof warehouse, 120ft. by 190ft., with subways; a large waterside warehouse; and more than two acres of roofs: in all about £140,000 worth of work. This company, we are informed, is in a position to roll bars 80ft. in length, and they claim that their plant is the finest in Europe.

FORMS FOR REINFORCED CONCRETE.—III.

(*Continued from p.* 183, *No.* 709.)

In Part II. of this article, we passed in review various forms of centering for reinforced concrete floors in which the main and secondary beams were of steel, and began to deal with floors that are completely constructed of reinforced concrete, including the beams. We shall now conclude our description of centering for such floors, and proceed to other details of construction; but, as a preliminary, we reproduce Fig. 19, which was omitted from the second article of this series. This illustration applies to the division of the subject relating to floors having steel beams, and the form of centering shown is of the suspended type, but differs considerably from the ordinary method of hanging the centering from the steel. We are indebted to the Patent Indented Steel Bar Co., Ltd., of Queen Anne's Chambers, Westminster, for this illustration, the floor in question being in the Albert Mills, South Reddish, near Manchester (Messrs. Potts, Son and Hennings, architects). The floors and roof throughout were reinforced with indented bars, and the contractor for the concreting was Mr. B. Morton. It will be seen that the floor is not divided into panels, but into long bays of more than customary span. The centering boards consequently needed a supporting deal or batten which, in the ordinary way, would have been propped from under; but the method adopted by the contractor eliminated such an obstruction to the clear space below. The support at the centre of the span was given by suspending the bearers by rods passing through the floor and hung from a kind of shear-legs construction overhead.

We will now resume the consideration of forms for floors with beams of reinforced concrete. At the end of Part II. we referred to the "core-box" type of form, but only had space to deal with the "panel" construction. We now proceed to describe and illustrate the "core-box" construction. The beams in the panel type are formed by boxes, but, instead of supporting bearers and boards upon these beam boxes, in the core-box type the concrete for the floor slabs between beams is applied to the top of an inverted box, and the sides of the latter form the sides of the beams, only a bottom board being necessary to support the soffit of the beam in moulding. Such a method of construction is only economical where the lay-out of the beams is regular and uniform, so as to permit of the use of the core-boxes repeatedly without alteration. Such a method of centering, where possible of adoption, has the advantage of great rapidity in construction, for the boxes can be re-erected in a very short time after striking, and is economical of labour and materials.

Figs. 28 and 29 show the core box type of form. It will be seen how in this type a box is made out the size of the sides of the beams combining the sides of the girders with the floor panel. On the sides of the box a stringer supports the bottom board of the beam. The ends of such boxes are, as a rule, supported on a fully-shaped girder trough.

Fig. 28 is a form employed by the Pacific Borax Company's Works, Constable Hook, N.J., belonging to the box type. The bottom of the beams was formed by boards (C) resting upon cleats (D) to facilitate removal. The boxes were cut in halves along the plane (AB), the two halves being clamped together by the slotted plates (E), which, when loosened, allowed the two parts to slide, and so partly collapse the mould. A somewhat similar type of form is shown in Fig. 29, but here the arrangement for collapsing the mould consists of a longitudinal hinged joint in the top sheeting, the two halves falling together when the cross pieces at the bottom are removed.



FIG 19. SUSPENDED CENTERING FOR REINFORCED CONCRETE FLOOR.

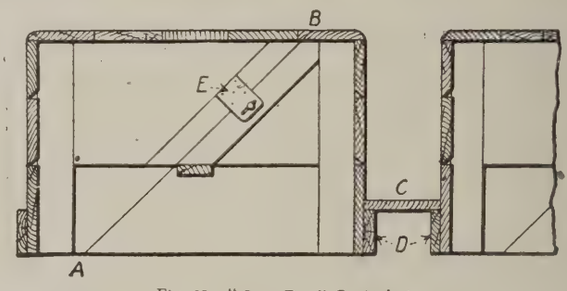


Fig. 28. "Core Box" Centering.

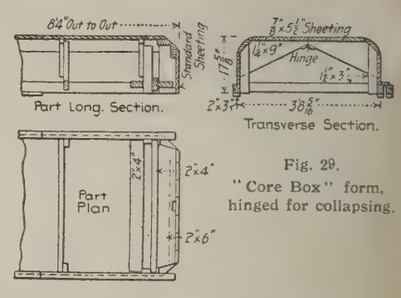


Fig. 29. "Core Box" form, hinged for collapsing.

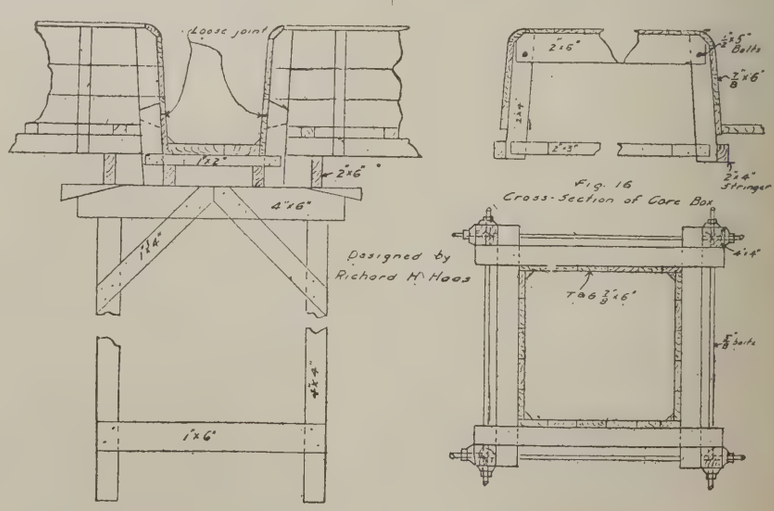


Fig. 30. A "Core Box" form.

Fig. 30 shows a detail of similar construction adopted in the erection of a building in Jersey City, U.S.A., which was practically the same as used for the construction of the American Tobacco Company's premises in Montreal, Canada. It is interesting to note in connection with this building that the plant for the carpenters consisted of a carpenters' shop, in which was installed a circular saw, a boring machine, a bolt-threading machine, and a grinding stone. The carpenters were all divided into different gangs under sub-foremen, and each gang had only one particular part of the whole of the form construction to do, the idea being that in this way one gang was continually pushing the other. In wrecking these forms the supports of the 2in. by 6in. bearers were removed first, which was easily done by simply loosening the wedges. The men then worked from movable platforms, pulling the boxes away by jarring them, and as quickly as the forms were removed they were repaired when necessary and hoisted into a fresh position. The following figures were noted by the superintendent on this building, and afford useful data in connection with other work, if we note that the carpenters were paid at the rate of 35 cents per hour, and the labourers at 17½ cents per hour.

Labour on Construction.

Columns	.4½	cents per sq. ft.
All forms	.07	do. ,, ,, ,,
Supports	.65	do. ,, ,, ,,

Labour on Erection.

Columns	.03	cents per sq. ft.
All forms	.033	do. ,, ,, ,,
Wrecking	.008	do. ,, ,, ,,

In a general way the supports are independent and sometimes wedged from the bottom of the posts, but there are disadvantages in this method, and the plan shown in Fig. 30 is a good one. The supports in this case are framed and made of correct height, and the frames are simply set at regular required distances from each other in a straight line, and braced horizontally one way. Upon these 2in. by 6in. or 2in. by 9in. joists are placed, and wedged up as shown. The wedges are driven up so as to get the forms exactly level.

In core-box construction, when beams are nearly uniform in width and the building is of same magnitude, the sides of beams may be given a slope of ¾in. in 12ins.

Fig. 31 shows an economical method of designing forms. The bottoms of the beams, it will be noticed, are supported on the horizontal clamps of the column forms, while the beam forms are supported on the bottom of the girders; thus all the forms for a floor may be erected before any struts are put in. After the beams are in place the struts or posts may be put in at any time and wedged up without any lateral pressing whatever, and by this method time and labour are saved. If 2in. timber is used for the beams they must be at least 2in. shallower than the girders, in order that the forms may rest on the girder bottoms. In the section BB the wedge-shaped pieces are keys inserted to facilitate removal of the forms. The floor slab, in this case, it will be seen, is designed to be retained by a panel and not by a box. The panel form, it may be here noted, has the advantage of taking up any slight errors in line at the junction between the panel and the side of the beam, and a slight variation in this dimension is not conspicuous. In removing such a form the column forms are first taken away without disturbing the beams and girder forms. Next the posts are taken from under the girders, which allows the bottom of the latter to drop. The posts are then immediately replaced, the nails are drawn from the key, which is only nailed to the side of the girder form, the key is knocked out, the posts are taken from under the beam, the so-called "spreaders" are knocked from under the slab panel, and the beam form comes down in one piece. The sides of the girder forms, which are bevelled at the ends, come out easily, as also does the slab panel, which is bevelled on all four edges.

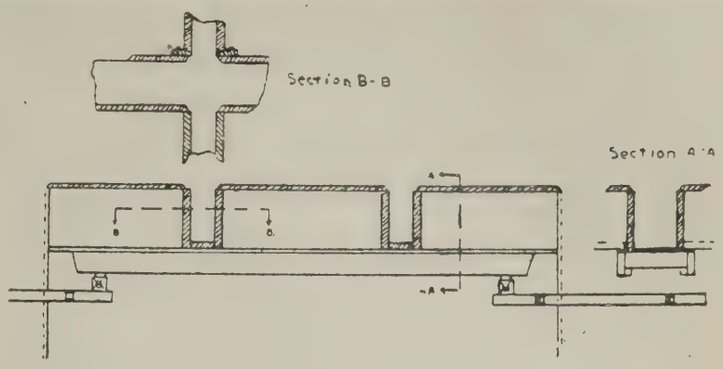


Fig 31. An economical form.

In removing or striking forms generally it may be noted that the columns should always be wrecked first, as in this way any defects can be discovered and remedied before the removal of the supports. Core boxes come away easily by jarring, and panels come away easily by springing.

Fig. 32 shows a design by Mr. R. W. Maxton, an American engineer, for beam and floor forms. Sometimes the beam and girder forms are made 1in. wider at the top than at the bottom, so as to help in taking down. As regards the cross section, attention is directed to the bevelled board provided at the centre of each span. After the removable board is down, this bevelled board is taken down and removed through the gap shown. After one board is removed, the rest of the flooring is easily taken down. After all the flooring is removed, and the clamps have been taken down, the sides of the beam are spread apart and the beam form is taken down. Mr. Maxton, we may here mention, advocated the placing of 6in. by 6in. props (when required) under all girders and beams, with their lower ends resting *in all cases* at the base of the columns, converging at the top towards the centre of the girders, where they are united by a cross-piece forming a head about 4ft. across. In this way the entire load of the floor under construction is carried at the columns, and not super-imposed upon the floor panel below. Forms from any one floor can thus be taken down without jeopardising the floors below.

Column moulds.

Forms for square posts or columns are made, as a rule, with one side left open, this fourth side being brought up as the concrete is deposited. Occasionally, however, all four sides are brought up as the concrete is being applied, and in some cases they are all formed to the full height, and the concrete is poured in at the top. If all four sides were constructed completely to start with, and the concrete were poured in from the top, it would be difficult to ram, and would therefore have to be made very wet; even then it would not give sufficient density.

Another method is to use four sides completely erected, but only in short lengths. Where three sides only are put in position at first, they are formed by placing boards vertically and held by horizontal cross-pieces nailed thereto. The fourth side is then brought up with boards placed horizontally, as shown in Fig. 33. In the case of forms that are brought up all four sides together bit by bit, horizontal boards are used throughout, held in position by four battens at the angles.

The edges of the columns are chamfered, as it is difficult to keep sharp arrises when removing the forms. These are formed by placing angular strips in the inside corners of the forms.

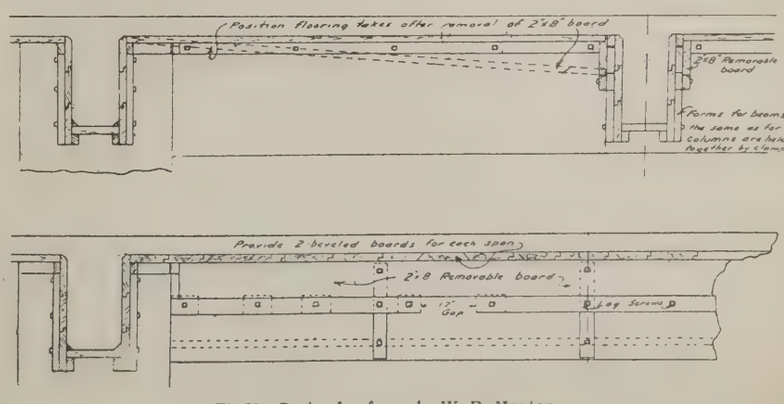


Fig 32. Design for forms by W. R. Maxton.

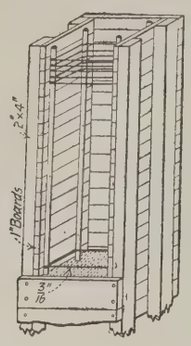


Fig. 33. Column form.

For round columns, as a rule, drums built in two halves are usually employed, one or both of which may be brought up in short sections as the concrete is packed therein.

Exterior columns are usually made square for architectural reasons, but the interior columns are often octagonal, partly for the sake of appearance, and partly to save concrete; this being due to the fact that in a column reinforced spirally the concrete outside the spiral is not considered as adding to the compressive strength of the column, so that if it is square the concrete in the four corners is wasted. The elaboration that this entails in the form work involves additional expense, and it is questionable whether the saving in the concrete offsets the extra labour. As a rule, however, the two items about counterbalance each other, so that the appearance may be studied without being influenced by considerations of economy.

The sides of column forms are in some cases made up of narrow strips, which arrangement is advisable, as it facilitates the reduction of the size of the columns from floor to floor. In the ordinary way, it is not necessary to have more column forms than a complete set for one storey of a building, unless this one storey is being erected every five or six days. Therefore, as the column forms are used again and again, it is economical to reduce the diameter of the column by means of ripping off these narrow strips of timber, and it is much cheaper to have these cut beforehand than to have a carpenter saw off a strip for each successive storey. Often the outside and inside of the exterior column forms need not be made of narrow strips, because the exterior columns are of the same width the whole way up the building; the reduction in the section is effected by reducing the thickness only.

We may first consider in detail a column form constructed with four sides raised all together, but in sections—to enable proper homogeneity to be secured in the concrete. Fig. 34 shows a section of a column made by nailing boards placed upright to vertical battens. The four battens are braced with cleats horizontally, the projecting ends of these cleats being notched to provide for tie-rods with screw-nuts, which tighten and clamp the form together. The tops of the vertical battens are also notched to provide for stringers stretching from column to column to carry the floor forms. The third and fourth sides are formed by dropping short lengths of boards in between the other sides, which are nailed to the battens, the length of these short lengths being arranged so that the joints come behind the cleats. If the

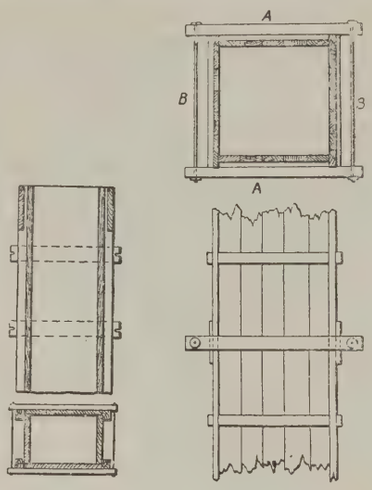


Fig. 34. Column form.

Fig. 37. Column form with vertical boarding.

battens were first erected, the whole four sides could be brought up gradually in short lengths, so as to leave all sides open for concreting. Such a form is simple, but it is not applicable to all circumstances.

Fig. 35 shows a similar type of form, with vertical boarding. The clamps are of different shape, however, and two boards are used on each face, united by cleats, and vertical battens are done away with. Fig. 36 shows the same job with several column moulds and beam forms in position. The work shown in course of construction in these two views appertains to a warehouse at Leeds, erected for Messrs. Peter Laycock, Ltd., of Perseverance Mills, Leeds. This warehouse is used for a cloth store, and is two storeys high. The building measures about 136ft. by 38ft. The first floor, and beams and columns supporting same, are formed of reinforced concrete, and the ground floor is of ordinary plain concrete. All the floors are finished with a topping of Granolithic concrete. The roof is carried by iron columns, and covered with Vulcanite. As regards the reinforced concrete work, the form of reinforcement



Fig. 35. Column mould in use in a Leeds warehouse.

throughout is that of indented steel bars, supplied by the Patent Indented Steel Bar Co., Ltd. The architect for the work is Mr. Ascough Chapman, A.R.I.B.A., of Prudential Buildings, Park Row, Leeds, while the clerk of the works was Mr. John Park. The contractors for the reinforced concrete work were Messrs. A. Walker and Sons.

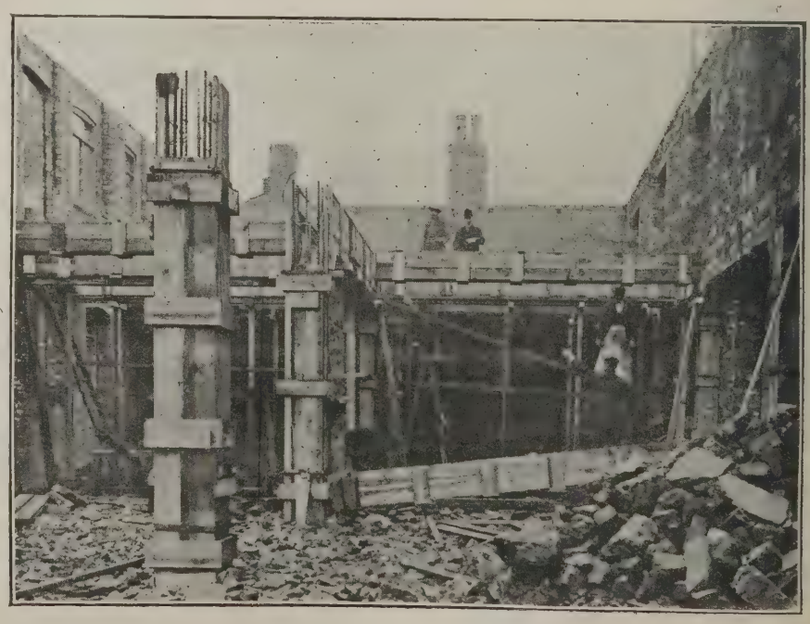


Fig. 36. Column moulds and beam forms erected at a Leeds Warehouse

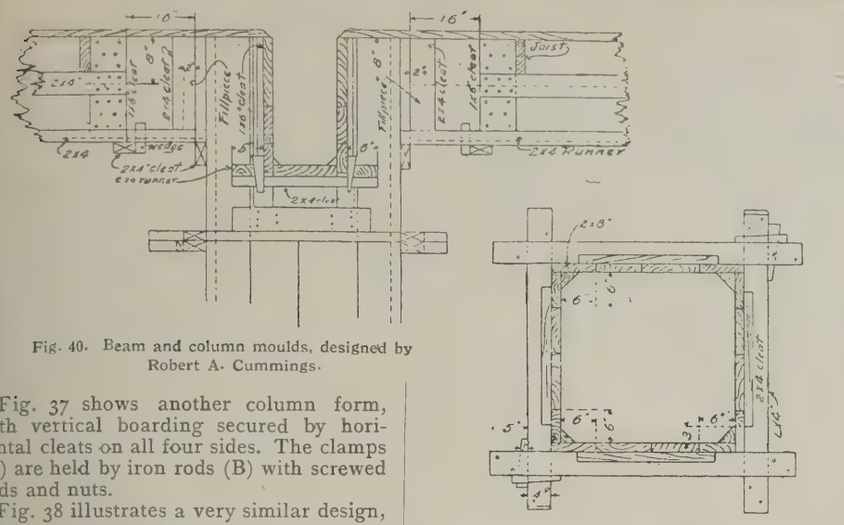

Joist
2x4 Runner
2x4 clear
2x4 clear
2x4 clear

Fig. 40 shows beam and column moulds designed by Mr. Robert A. Cummings. Their construction is shown by the illustrations, but we may note that the column mould is made in eight separate parts, which consist of four corner moulds and four intermediate sides; while, in order to hold the sides of the beam forms against the bottom board, a 2in. by 4in. runner with wedges against it is used.

Fig. 41 shows a very usual type where three sides of the column form are completely erected with vertical boards, and the fourth is brought up with horizontal boards. Its construction is clearly shown in the diagram, A, B, and C being the vertical sides, D a clamp for holding them in position, and E the horizontally boarded side.

Fig. 42 shows a similar form, arranged for moulding an octagonal column. This is built with four separate side pieces of 5½in. by ⅞in. planed boards having one bevelled edge and one square edge. On two opposite sides the boards are vertical, and are nailed to the edges of horizontal cleats; the other two sides are made of horizontal boards nailed to a pair of outside vertical cleats. The horizontal cleats project beyond the sides of the mould, and are slotted to receive the tie-rods that clamp the four sides of the mould together. The topmost cleats project about 2ft. beyond the sides of the mould, and are made heavy enough to carry the main beam forms as shown in the figure. Vertical struts reaching to the floor below support the ends of these long cleats.

Fig. 33 shows a form in which all four sides were made with horizontal boards, which could, if desired, have been raised gradually all at the same time as the concreting was done. The view shows three sides completed, however, and the fourth only being brought up with the concrete. It shows also how the horizontal reinforcements were all assembled temporarily before beginning the concreting, at the top; the ties could thus be slid down into position without delay.

Figs. 43 and 44 show forms for more elaborate columns. The former was made of wooden staves, dowelled together and hooped with adjustable iron straps. The other, for a fluted column, was formed of 24 laggings dowelled together and hooped round with adjustable wooden bands. The flutes were formed by plaster of Paris moulds attached to the inside by screws. In removing, these screws were first drawn and then the staves taken away; the plaster flutes remaining as a protection to the column until the building was practically finished.

(To be continued.)

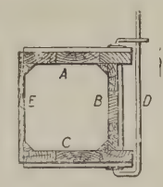




Fig. 41. Column form with one side horizontally boarded.

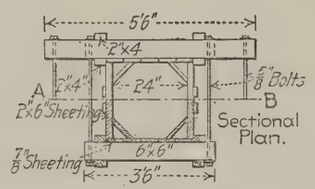
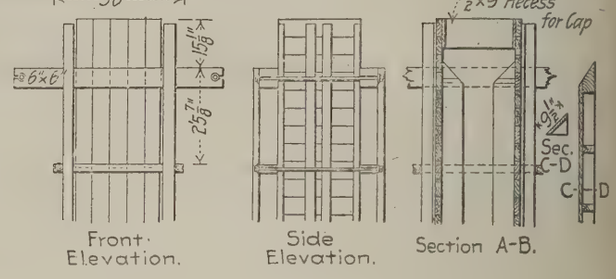


Fig. 42. Column form with two sides horizontally boarded.



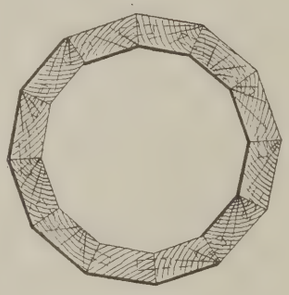


Fig. 43. Form for a 12-sided column.

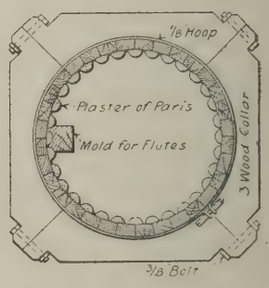


Fig. 44. Form for a fluted column.

REINFORCED CONCRETE IN COLLIERY WORK.—The Londonderry Collieries, Ltd., have recently adopted reinforced concrete on the Kahn system for the heapstead and screening-house floors at their new colliery at Dawdon, Seaham Harbour, the total area covered being about 2,500 square yards. The main girders consist of rolled steel joists of 35ft. span, spaced 11ft. to 14ft. between centres. Between these the Kahn secondary beams, 16in. by 8in., are placed at about 6ft. centres, and over these is a 4in. thick Kahn floor. The floor was designed for a safe live load of 184lb. per sq. ft. This is probably one of the first applications of reinforced concrete for pit-bank buildings; and its further use for these erections may be confidently expected.

Views and Reviews.

Calculations for Reinforced Concrete.

M. Nivet is a manufacturer of hydraulic limes, and in the course of his daily work has had to conduct many tests on the resistance of concretes, limes, and cements. He was thus led in 1889 to construct a testing machine, with which he has conducted tests for bending, tension, shearing, and crushing on specimens having the dimensions 2 cm. by 2 cm. by 11 cm. The results obtained with the same measuring instrument are comparable, and have led M. Nivet to discover a law regarding the bending strength of materials which he communicated to the French Association for the Advancement of Science at the Congress at Cherbourg in August, 1905. He has examined from this point of view the results of tests and investigations recorded by the French Ministerial Commission on Reinforced Concrete, and thinks they confirm his theory. He has therefore written this treatise, in which he develops methods of calculating the resistance of reinforced concrete, based upon his conclusions. The basis of his theory is as follows:—

Testing a series of prisms of lime and cement 11 cm. long by 2 cm. square, resting on two supports distant 10 cm. apart, by applying a breaking load at the centre, the average load-producing rupture was found to be:—

$$= 19{\cdot}5 \text{ kg.}$$

Similar prisms, when tested for tension, gave the following average result:

$$T = 16{\cdot}79 \text{ kg.}$$

and for crushing:

$$C = 169{\cdot}25 \text{ kg.}$$

Calling the span of the prism, between the supports, $l = 10$, $a = 2$ its sectional width, and $H = 2$ its sectional depth, the theoretical formula for plane bending gives (calling R the resistance of a solid per sq. m., both for tension and compression) in the case of a solid loaded with a weight P applied at the middle of the span,

$$R = \frac{3\,Pl}{2a\,H^2} \quad \ldots\ldots\ldots\ldots (1)$$

This formula is based equally upon the hypothesis that the fibres situated on the side where the weight P is applied are compressed down to the middle of the depth of the prism and those of the second half are in tension, the plane of the fibres which are neither in compression nor in tension, which is called the neutral surface, being found at the middle of the prism.

In order to apply formula (1) to the test prisms it is necessary to replace R by T and C, that is to say, by two quantities very different, because C is generally, for concretes, equal to T × 10, as we see above.

The theoretical formula for the bending plane is therefore not applicable to the case of concretes. However, introducing into formula (1) the quantity C we find a value of H, which we may call H_c; we shall have:

$$C = \frac{3\,Pl}{2a\,H_c^2} \quad \ldots\ldots\ldots\ldots (2)$$

Making a similar calculation by replacing R by T and making H_t the corresponding depth we shall have:

$$T = \frac{3\,P}{2a\,H_t^2} \quad \ldots\ldots\ldots\ldots (3)$$

If we put in formulæ (2) and (3) the values C, T, P, l and a found above we shall have:

$$H_c = \cdot 092158 \text{ cm.}$$
$$H_t = 3\cdot 0764 \text{ cm.}$$

Formula (2) determines the height H_c of a hypothetical prism of which the resistances to crushing and tension will be equal to each other and equal to C, the axis of the neutral fibres being situated at the middle, at the distance $\frac{H_c}{2}$ from the top and bottom.

Similarly, formula (3) gives the depth H_t of a hypothetical prism of which the resistances to tension and crushing will be equal to each other and equal to T; in this prism the plane of the neutral fibres will be situated at the distance $\frac{H}{2}$ from the top and bottom.

If we combine the compressed half of the prism H_c with the extended half of the prism H_t, we shall have a solid which ought to have the same resistance as the hypothetical prisms H_c and H_t, and as the experimental prisms, and breaking under the same load P.

This is confirmed by experiment, because the solid so formed is no other than the prism which has served for the conduct of the tests.

In short, if we add $\frac{H_c}{2}$ and $\frac{H_t}{2}$, we shall have a depth nearly approaching H:

$$\frac{H_c}{2} = \cdot 46079_{cm} \qquad \frac{H_c}{2} + \frac{H_t}{2} = H \ldots . (4)$$
$$\frac{H_t}{2} = 1\cdot 5382$$
$$\text{Total } 1\cdot 99899 = 2_{cm}$$

In the solid so formed by the half of the prism H_c and the half of the prism H_t united by the plane of their neutral fibres, this common plane will divide the depth H in the ratio $\frac{H_c}{H_t}$

Also, if we divide formulæ (2) and (3) which have served to calculate H_c and H_t the one by the other we obtain:—

$$\frac{H_c}{H_t} = \sqrt{\frac{T}{C}} ,$$

that is to say, *the plane of the neutral fibres* (neutral axis or neutral surface) *divides the depth of the prism in the inverse ratio of the square roots of the coefficients of tension and compression.*

This is the law for concretes subjected to bending, at the moment preceding rupture, in a prismatic piece which M. Nivet enumerates. This same law appears to hold good for all homogeneous bodies not of a laminated structure, the ratio only altering, and this ratio is a characteristic of matter.

We have already noted that in concretes the coefficient of compression is equal to ten times that of tension:

$$C = 10\ T.$$

The proportion therefore becomes:—

$$\frac{H_t}{H_c} = \sqrt{10} = 3\cdot 162 \ldots \ldots \ldots (5)$$

We are able, then, by the aid of formulæ (4) and (5) to calculate H_t and H_c, and putting these values in the equations (2) and (3) to obtain the quantities T and C when experiment has given P, that is to say, to determine, without direct testing, these two coefficients.

We are so enabled to find, by a simple calculation, for each experiment, the loads which produce fracture in tension and compression of a test piece of lime or cement, when we only know the force which produces rupture by bending, and rarely is the method in error if the test piece does not present some defect in homogeneity.

Observations have been made on prisms of ice at—7°, and on various metals and alloys. In each case the ratio $\frac{H_t}{H_c}$ alters, but it appears to be fixed for each kind of body between certain limits; this must be a characteristic of all matter.

For ice at —7° we have $\frac{H_t}{H_c} = 1\cdot 829$

For steel ..... $\frac{H_t}{H_c} = 1\cdot 13$

The method of making calculations for reinforced concrete developed by the author in this book conforms to the requirement of the French Commission on Reinforced Concrete that any system of calculations adopted for designing shall be based on theory. M. Nivet's system of calculations is based on defining the position of the neutral surface by the above method, considering the concrete alone and then calculating the steel as stressed to the full at whatever depth remains, but he disregards the fact that the position of the neutral axis depends upon the proportion of steel. He gives an example of how he would calculate a floor measuring 14.1 metres by 7.1 metres, and compares his solution to the dimensions of the various parts adopted by one of the Hennebique licensees for a floor of exactly similar span. It seems to be the custom in France for authors of theories of reinforced concrete to compare their methods with the Hennebique method, which has been so extensively applied that it affords the proof of practical experience. M. Nivet's method of calculation, when compared with the Hennebique solution for this typical floor, shows that he requires considerable increase of material in every direction, namely, in weight about 16 per cent. more concrete and 30 per cent. more steel, or 13.4 per cent. extra total weight of materials per square metre. His method, however, in our opinion, errs in theory in respect to estimating the same parts to be stressed to the full at several stages: thus, first, he calculates the floor slab to resist full stresses as the table of the main T beams; he then requires the floor slab to serve as the table to the secondary T beams; and finally considers it as a floor slab simple in beam action between the beams. He thus calls upon the floor slab to sustain the limit of stress on three different occasions, and though there are certain factors which tend to correct this, it is obvious that the system cannot be called a truly analytical one, and it would not be safe to rely upon it for all circumstances, or even for the majority of cases that arise in practice.

The book contains 75 pages of numerical tables which should be of considerable service to many persons who employ reinforced concrete. The work is a valuable contribution to the theory of applied mechanics

"Méthode de Calcul du Béton Armé, avec barèmes pour en déterminer les dimensions." Par A. Nivet, ingenieur, E.C.P. (1863), manufacturer of hydraulic limes. Paris: H. Dunod et E. Pinat, éditeurs. 49 Quai des Grands-Augustins. Price: 7 francs, in paper covers.

STRESSES IN ROOF TRUSSES.

BY MAX AM ENDE.

In an article on "The Disposal of Horizontal Forces on Iron Roofs," published in THE BUILDERS' JOURNAL for January 2nd, 1907, where roof trusses without redundant members, *i.e.*, statically determinate systems, were discussed, it was stated that no stress calculation could be made without having previously determined the reactions of the supports or abutments, as otherwise the forces acting on the system would be incomplete. It is now intended to show how the stresses in the redundant bars of *indeterminate systems* can be calculated, and how the abutment reactions can be found in those cases where they are affected by such stresses. But before doing so it will be expedient to explain briefly the method or methods of calculating the stresses in systems *without* redundant members, *i.e.*, statically determinate systems, all forces and reactions being known.

We have a graphical and a calculative method, the former being based upon the theorem of the parallelogram (or polygon) of forces, and the latter on the theorem of moments, according to which *the sum of the moments of all forces on a system or part of a system in equilibrium, taken on any chosen fulcrum, must be nil.*

Using the graphical method, we express the amount and direction of a force by a line of a measured length, and obtain by the side of the drawing of the system those attractive reciprocal figures on which the stresses are measured by a given scale. In the calculative method we can generally find the stress in any one member or bar, without having previously determined the stress in any other. This renders the calculative method more suitable in most cases, and especially here, where brevity is desirable.

The calculative method is also called the *section method.*

When all the outer forces, including the abutment reactions, are given, as in the truss Fig. 1, we imagine the system to be cut in two where the stresses are to be calculated. Such cut, for example the cut *aa*, Fig. 1a, will, as a rule, go through three bars, namely 3, 8 and 14. Then each of the two parts will be in equilibrium if we impart to the three cut bars the stresses which were in them, and, regarding them as outer forces, we have these now complete for each part, although three of them, S_3, S_{14}, and S_8 are yet unknown in respect of magnitude and direction. Assuming the latter as indicated by the arrows, and considering that the sum of the *moments of all forces upon any assumed point as a fulcrum must be nil,* we could set up any number of equations with three unknown quantities for each of the two parts. Assuming, then, as fulcrum, the intersections of two of the bars 3, 14, 8, we have only one unknown quantity in the equation, and the stress in the third bar can be found. If the result is positive, the force would be in the assumed direction of the arrow, and the stress therefore tensile; if negative, it would be in the opposite direction, and the stress compressive. The other part, not shown in Fig 1A, if treated in the same way would give the same result. Regarding moments turning *with* the hand of the clock as *positive* and those turning against it as negative we have as follows:—

Bar 3: $0 = +9{\cdot}8\ S_3 + 30\ V - (10+20)\ F$
Bar 8: $0 = -8{\cdot}7\ S_8 + 20\ V - 10\ F$
Bar 14: $0 = +43{\cdot}5\ S_{14} - 27\ V + (37+47)\ F$, and using the cut b-b
Bar 15: $0 = -36{\cdot}5\ S_{15} - 6{\cdot}5\ V + (16{\cdot}5 + 26{\cdot}5)\ F$ (1)

F and H are given, say $F = 1{\cdot}4^t$ and $H = 3^t$. Then $V = 5{\cdot}5^t$. Putting this into the above equations, we find :—

$$S_3 + - 12{\cdot}5^t;\ S_8 = + 11{\cdot}2;\ S_{14} = + 0{\cdot}7^t;\ S_{15} = + 0{\cdot}67^t.$$

If the fulcrum falls outside the drawing, a diagram can be made to a smaller scale. This is done for the diagonal 18 in Fig. 1a, the scale being one quarter of that of the drawing. We have :—

$$0 = + 215\ S_{18} - 243V + (253 + 263 + 273 + 283)\ F$$

and with $F = 1{\cdot}4^t$ and $V = 5{\cdot}5^t$

$$0 = 215 S_{18} - 1336{\cdot}5 + 1500{\cdot}8$$
$$S_{18} = - 0{\cdot}79^t.$$

If, in order to dispense with the small scale diagram, we regarded 5 and 6 as parallel, and resolved the forces into the directions of 5 or 6 and 18, we should find $S_{18} = - 0{\cdot}12^t$, which is hardly correct enough.

The section for finding the stresses S_1 and S_{10} cuts only two bars, and the fulcrum for 10 is then assumed in any point of 1, or *vice versa*. Both stresses can also be found by the parallelogram of forces.

The statically determinate system, Fig. 2 is one of the exceptions to the rule that a section should not cut through more than three bars. For example, in order to calculate S_3, the section a—a is made, cutting through four bars. But S_{14} can first be found with the section c—c, and then S_3 with a—a and fulcrum f_3, or S_{12} may be found direct by the parallelogram of forces, as it is independent of all forces except F_3. The rule, therefore, is not an unfailing test for distinguishing determinate from indeterminate systems.

The proper test is that the number of bars (including the three bars V, V', and H, Fig. 1, required to support the system) should be double the number of junction points, or, if n is the number of bars without the supporting bars, and p the number of junction points

$$n + 3 = 2p \quad (2)$$

This test applies to systems in a plane. For systems in space the number of bars is threefold the number of junction points, or, as six supporting bars are required : $n + 6 = 3p$.

If the number of bars $n < 2p - 3$, the system would collapse, assuming, as we do throughout the present discussion, that the bars are connected at their ends by means of hinges. On the contrary, if $n > 2p - 3$, the system is one *with redundant bars*.

For example, a straight tie connecting points A and B, Fig. 1, would be a redundant bar, and a counter diagonal in the panel 5, 17, 6, 19, would be a second redundant bar. The effect of the presence of such bars upon the stresses calculated above depends upon their sectional area, a, the modulus of the elasticity of the material E, and the dimensions of the n bars of the structure, as also upon the process of erection. The effect of the bar AB must be different whether it is fixed while the structure is completely supported on scaffolding, and therefore without stress, or whether it is fixed after removal of the supports, or after, in some artificial way, or otherwise, initial stresses have been imparted to it. In any case, it is impossible to know what the stresses actually are in the complete

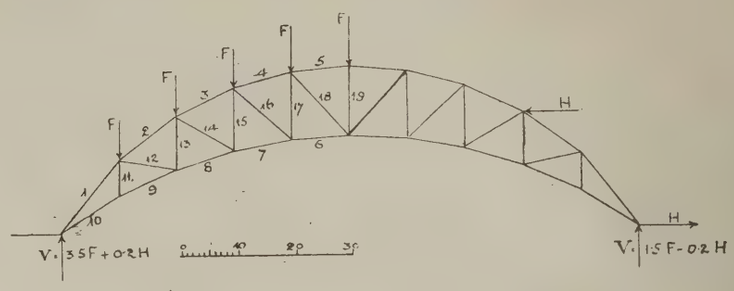


Fig. 1.

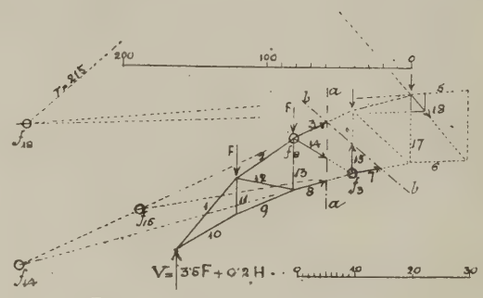


Fig. 1 A.

structure unless the process of erection has been properly controlled and recorded. With some engineers this has always been one reason to avoid redundant bars in structures, besides the other reason, in early times, that no method was known how to calculate the stresses in them. And it is curious to note that, since the latter objection has been removed and the effects of redundant parts are more accurately appreciated, the reluctance to employ such structures has generally increased. But they cannot always be avoided, and a method for their calculation is therefore indispensable.

The beam continuous over several supports and the curved beam or arch fixed at both ends can be regarded as structures with redundant parts. In the former case these are the intermediate supports, while in the latter case they are represented by the superabundant means of supporting the ends, which amount to three additional supports.

Methods for calculating the stresses in these solid structures and their deflections from the elastic deformation of their elements have been in use for a long time, but these older methods are not directly applicable to systems of bars. The latter could not be calculated until the principle of virtual displacements of the junction points, together with the principle of work or of the conservation of energy, was applied to them.

The principle of work is this : *the work of the forces acting upon a system of interdependent points* (produce of pressure and stroke) *is equal to the work of the resistances in the system.*

Applied to elastic systems of bars it is : *The virtual work of the outer forces* (as the system yields under them) *is equal to the work of the stresses causing the virtual changes of length of the bars.*

The invention of a practical method of calculation based upon this principle may be regarded as the solution of almost all stress problems of systems consisting of elastic parts.

Let, Fig. 3 :

n be the number of bars in the determinate system A....N.

S_x the stress from all forces in one of the n bars.

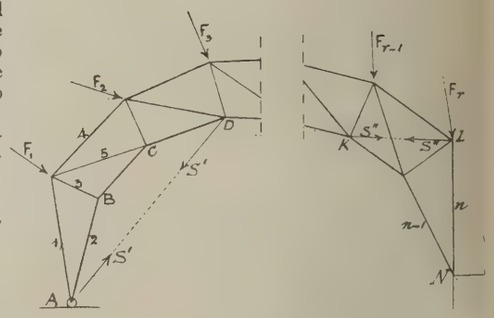


Fig. 3.

Δl_x the elastic extension of the same bar, whose length is l_x.

$m_x = \frac{l_x}{a_x E}$ (where a_x is the sectional area and E the modulus of elasticity of the material) the extensibility, so that $\Delta l_x = S_x m_x$.

$F_1, F_2, F_3 \ldots F_r$ outer forces, F_u one their number r.

$\sigma_1, \sigma_2, \sigma_3 \ldots \sigma_r$ the stresses in any one of the n bars due to the unit of F; therefore $\sigma_u F_u$ the stress from F_u,

$d_1, d_2, d_3 \ldots d_r$ the small movements of the points of application of the forces in the direction of the forces. During the movement d the force increases from nil to F and $\frac{Fd}{2}$ is the mechanical work performed.

$\Sigma^n{}_0$ the symbol of a sum consisting of n parts.

Then, as the total work of the forces is equal to that of the stresses :

$$2W = \Sigma^n{}_0\ S_x\ \Delta l_x = \Sigma^r_0\ Fd \quad (3)$$

Here : $S_x = \sigma_1 F_1 + \sigma_2 F_2 + \sigma_3 F_3 + \ldots . \sigma_r F_r$ (4)

and $\Delta l_x = S_x m_x$ (5)

Then (1) will be :

$$2W = \Sigma^n{}_0\ (\sigma_1 F_1 + \sigma_2 F_2 + \ldots . \sigma_r F_r)^2 m_x = \Sigma^r{}_0 F d \quad (3a)$$

This work, resolved into its parts, is as follows :

$$\left.\begin{array}{l}\Sigma^{n}_{0}\,\sigma_1 F_1\,(\sigma_1 F_1+\sigma_2 F_2\\ \quad +\ldots,\sigma_r F_r)\,m_x\\ +\Sigma^{n}_{0}\sigma_2 F_2\,(\sigma_1 F_1+\sigma_2 F_2\\ \quad +\ldots\sigma_r F_r)\,m_x\\ +\ \ldots\ldots\ldots\ldots\\ +\Sigma^{n}_{0}\sigma_r F_r\,(\sigma_1 F_1+\sigma_2 F_2\\ \quad +\ldots\sigma_r F_r)\,m_x\end{array}\right\}=\left\{\begin{array}{l}+F_1 d_1\\ \\ +F_2 d_2\\ +\ \ldots\\ \\ +F_r d_r\end{array}\right\}\quad(3b)$$

The first line of this expression represents that part of the work which is done by F_1, the second line that done by F_2, etc., and each line is an equation by itself, *i.e.*, generally:

$$\Sigma^{n}_{0}\sigma_u F_u\,(\sigma_1 F_1+\sigma_2 F_2+\ldots+\sigma_u F_u+\ldots\ldots+\sigma_r F_r)m_x=F_u d_u\quad(3c)$$

Dividing by F_u we have:

$$d_u=\Sigma^{n}_{0}\,\sigma_u\,(\sigma_1 F_1+\sigma_2 F_2+\ldots\ldots\sigma_u F_u+\sigma_r F_r)\,m_x\quad(6)$$

As all the quantities in the sum are known, the movement d_u, *i.e.*, the deflection under F_u can be calculated.

(To be concluded.)

A CATALOGUE OF CONCRETE AND STEEL.

That well-known firm of engineers and contractors, Messrs. D. G. Somerville and Co., 72, Victoria Street, S.W., specialists in reinforced concrete and steel construction, have just issued a revised edition of their catalogue. In former editions this catalogue was always worthy of note as a useful little treatise on both commercial and scientific aspects of those two very important branches of modern construction—reinforced concrete and steelwork. But this present edition is a great improvement on former editions, and now serves as a really valuable aid-book on the subjects with which it deals; indeed, it may be considered in part a text-book worthy of study by all those interested in the science of building construction.

In the early days of reinforced concrete construction in this country, when contractors who specialised in reinforced concrete were few and far between, Messrs. D. G. Somerville and Co. recognised the possibilities of the new system, which were bound to cause its progress by leaps and bounds, and the demand that would ensue for reliable contractors who not only knew how to execute such work, but possessed the staff and organisation to execute it satisfactorily. Reinforced concrete is a delicate system that requires careful and honest workmanship, and is hazardous if done in a slipshod fashion. Experienced superintendents and workmen, selected for their care and attention, and properly trained, are vitally necessary to secure efficient work, and therefore specialist contractors for the work are necessary. Messrs. Somerville, recognising the great opening, spared no pains to fit themselves for it, and their enterprise has been rewarded by the placing in their hands of many large contracts for execution. Their record has been a uniformly successful one, and everywhere their work has given satisfaction. They are prepared to guarantee all the work they undertake, whether on their own systems or on other well-known ones. This is a safeguard that will appeal to architects and engineers, and any business man.

This catalogue, the result of extensive experience, and issued by a firm of such eminence, is worthy of careful perusal, and we note that Messrs. Somerville understand what was expected of them in a catalogue, and have provided some useful memoranda and sober trustworthy information that should appeal to all those who have used or are contemplating using reinforced concrete in their structures.

In this new edition, they have made no attempt to show a complete collection of works executed by the firm in reinforced concrete, or in constructional steel, but endeavour rather to indicate by means of photographs and sketches of actual works the application of these methods of construction. The various notes and tables are intended for reference in ordinary cases only, but at the same time it is hoped they may also serve to explain the principles underlying the designing of such structures to those who have not already taken up the subject. Though this firm have their own systems of fire and sound-resisting flooring, they are prepared to execute work on almost any system on the market, and they place their staff of engineers and their advice and services at the entire disposal of clients.

After some preliminary remarks on reinforced concrete construction, the catalogue proceeds to give practical notes and data on the subject, followed by information on the materials and a standard specification for reinforced concrete; then a brief account of an approximate method of calculating dimensions of beams and columns; next a chapter on the practical applications, describing in turn, with diagrams, foundations, retaining walls, wharves and piers, culverts and sewers, factory buildings and water towers, bridges, and fireproof flooring and floors on various systems, followed by illustrations of a few of the works executed by Messrs. Somerville, from which we borrow the view reproduced on this page, showing one of the latest works carried out by the firm, namely, Messrs. McVitie and Price's Biscuit Works at the Franco-British Exhibition, to be afterwards re-erected at Willesden, entirely constructed of reinforced concrete. (Mr. T. Duncan Rhind, A.R.I.B.A., was the architect.)

The constructional steelwork section of the catalogue provides notes on the properties of rolled steel joists and steel stanchions, tables of strengths, practical notes on girders and stanchions, standard roof principals and steel roofing, followed by tables of weights of materials and loads, weights of flat and round steel, and angles and tees, tables of proportions and strengths of cast-iron columns, and finally views of steelwork in buildings supplied and erected by the firm.

We strongly advise all readers particularly interested in the subject of steel and reinforced concrete to write for a copy for reference. The address of Messrs. D. G. Somerville and Co. is 72, Victoria Street, Westminster, S.W.



McVITIE & PRICE'S BAKERY AT THE FRANCO-BRITISH EXHIBITION. ERECTED BY D. G SOMERVILLE AND CO.

THE ARMOURED TUBULAR FLOOR.

An interesting and useful illustrated pamphlet descriptive of the Armoured Tubular Flooring Company's system of constructing reinforced concrete floors, which were some time ago described in detail in these columns, has just been issued, from which we reproduce four views. The pamphlet contains a general description of this ingenious and economical system of fireproof flooring, together with notes on the theory of the subject and typical calculations. The pamphlet is very well got up, and will repay perusal. Fig. 1 shows an "Armoured Tubular" floor in course of construction at the Albert Foundry, Belfast, for Messrs. Jas. Mackie and Sons, Ltd., in which the spans between the main steel beams are 20ft. The floor, it will be clearly seen from this view, consists of webs or beams of reinforced concrete, with hollow concrete tubes placed between, and a top layer of concrete applied over all.

Fig. 2 shows the underside of such a floor—in this particular case a hospital ward of 30ft. span—from which it will be seen the soffit of the armoured tubular floor between walls or main beams is level. The hollow spaces render the floor sound-resisting. It is obvious that the system does not require centering, and permits of extremely rapid construction, besides having other advantages. Fig. 3 shows the manufacture of reinforced concrete webs on benches. The fact that they are made in a factory ensures proper and exact placing of the reinforcement, and regularity and uniformity of production. The fresh webs remain on the forming boards for three days, and are then turned up and left in the yard to harden. Fig. 4 shows a patent hand-press for the manufacture of the tubes, in which four tubes are turned out at a time.

The address of the Armoured Tubular Flooring Co., Ltd., is 53, Victoria Street, Westminster, S.W.

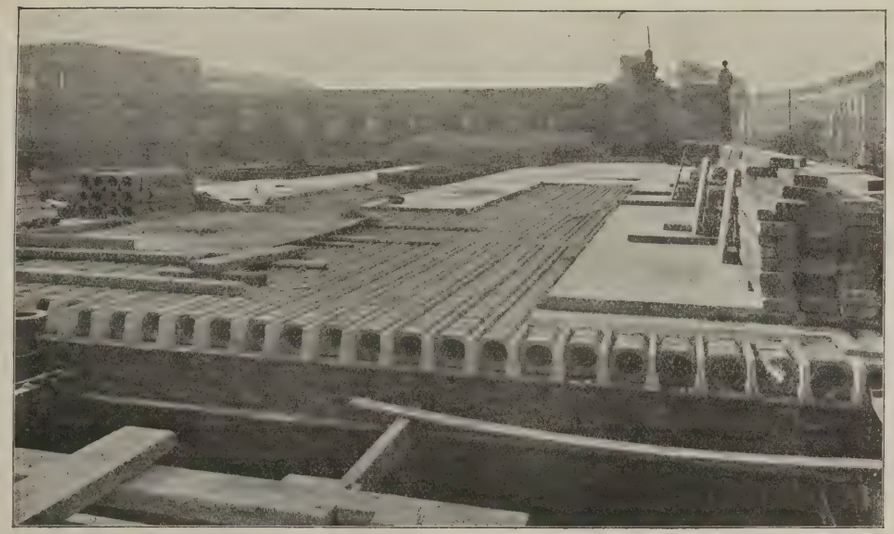


FIG. 1.—ALBERT FOUNDRY, BELFAST (MESSRS. JAS. MACKIE & SONS, LTD.). SPANS 20 FEET.

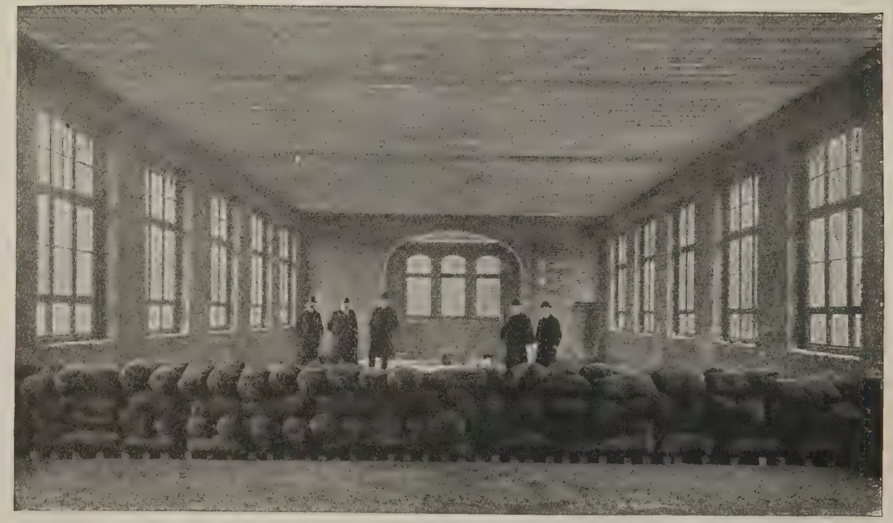


FIG. 2.—VIEW SHOWING SOFFIT OF A 30-FT. SPAN BEFORE PLASTERING. ALSO SHOWING CONTRACTOR'S LOADING TEST. HOSPITAL WARD.

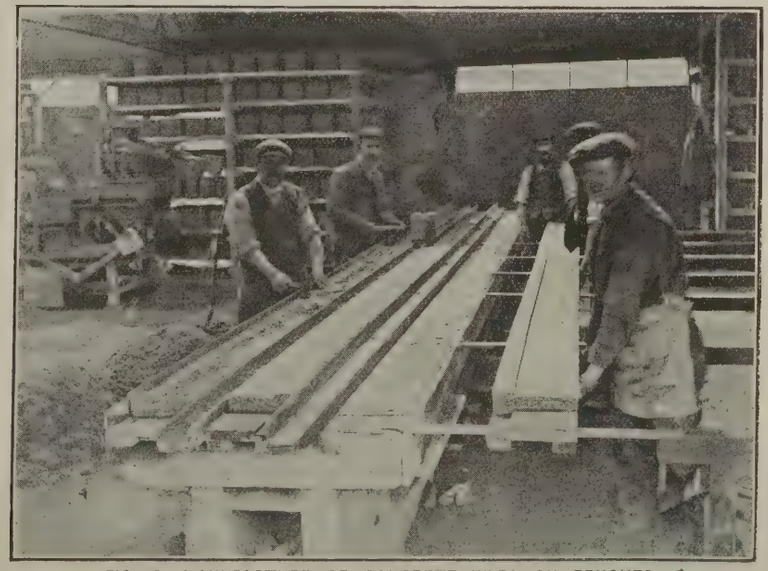


FIG. 3.—MANUFACTURE OF CONCRETE WEBS ON BENCHES.
By this method the vital point of reinforced concrete construction—the proper and exact placing of the reinforcement—is fully ensured. The fresh webs remain on the forming boards for three days, and are then turned up and left in the yard to set.



FIG. 4.—PATENT TUBE PRESS.
For the manufacture of the tubes, hand presses turning out four tubes at a time are used.

ARMOURED TUBULAR FLOORING IN COURSE OF CONSTRUCTION AND MANUFACTURE.

BUILDING MONOLITHIC CONCRETE WALLS.

At the Franco-British Exhibition at Shepherd's Bush, W., the Monocrete Construction Company, of Cheltenham, have a stand where they are showing their new "Monocrete" machines in operation, and examples of their work. Monolithic solid and hollow concrete walls for houses, built *in situ* between a wooden shuttering, have been constructed for very many years, and a long time ago considerable attention was attracted to the subject by the efforts of a number of inventors who brought out appliances in the shape of adjustable forms for raising concrete walls rapidly and economically. These pioneers mostly had only a short period of prosperity, as their claims were extravagant, and in those early days concrete was not so well understood as to-day. Many cottages, and even mansions, have been built with monolithic concrete walls, however, and the experience of years has proved them to be healthy and advantageous, although naturally there have been examples to show that no system of construction is proof against the failures due to ignorance, carelessness, and scamping. The moulding of walls *in situ* has not made much progress since the days of these early inventors, and of late years we have seen arise a plentiful crop of advocates for the hollow concrete block. Concrete blocks can be economically and satisfactorily manufactured, and can be used with advantage and economy, though they are also very open to failure through ignorance and scamping. A hollow concrete block needs to be properly made with plenty of cement, well cured, and bedded in plenty of good mortar. So many failures have resulted that some persons have condemned them entirely, which is foolish, and asserted that hollow block walls never resisted heat, cold and damp, and therefore were not healthful. It has been proposed as an alternative to employ thin solid blocks and erect two skins with a hollow space between, tying them together by the same means as a cavity brick wall.

Mr. R. Bowen, of Cheltenham, however, comes forward with another solution. He reverts to the solid or hollow monolithic concrete moulded *in situ*, but his invention is considerably different in principle and detail from the early method of construction. The old-time method has been to leave the shuttering in position till the concrete had set, which entailed loss of time, besides considerable expense. Mr. Bowen moulds his concrete fairly dry, so that he can remove the mould immediately it has been well tamped therein. Then, again, metal-faced moulds were seldom or never used, and the shuttering, when arranged to be moved along or up the wall, as in some designs, required adjustment at each operation to ensure its being level and upright. The "Monocrete" machine is a light metal-lined mould, which can be moved along the wall and up the wall without requiring levelling either horizontally or vertically. This is obtained by making the machine overlap the work at the side and below, and sliding it on bearers in the wall. As soon as the mould has been filled with concrete, it is unclamped, the sides swinging open on hinges, and moved along two, three, or more feet, and the concrete again filled in, thus uniting with the previous section of the work, which is still soft. The machine travels in this way round the walls of a building upon the completed wall below, the top of the wall being always left level by striking off the concrete from the top of the mould, so that the wall rises in exactly even regular layers. These layers unite thoroughly well with each other horizontally, but, if desired, special means may be taken to ensure it.

Figs. 1 and 2 clearly show the "Monocrete" wall-building machine. It consists of two sides of wood lined with a non-corroding alloy of magnesium and aluminium, which is very light, and an end of the same material, the latter having a roller wheel attached to run along the wall below, and pivots upon which the sides are hinged. Fig. 2 shows clearly how the mould grips the completed portion below and at the other end. The sides are held together by a top clamp, and also by flat metal blades laid on the wall below and passing through a long slot in the sides of the mould, and holed at the ends to receive wedges for tightening, as seen in the view. Metal core-boxes are placed in the mould if desired to form cavities, or places for resting ends of joists. Vertical reinforcements may be easily passed up through it, and horizontal reinforcement can be laid horizontal between the layers, or even closer, by passing it through holes in the metal end. The concrete having been well rammed in, the top clamp and the side wedges are removed, the blade furthest from the metal end is pulled out, and the sides are swung out on the hinges and slid along on the blade left in position until the required position for the next length is arrived at.

The work is easily, rapidly, and efficiently done by unskilled labour. The metal faces to the moulds leave a smooth face on the concrete; but, as this is still soft when the moulds is taken away, it is an easy matter to strike imitation joints upon it, scabble its face like hammer dressing, dash pebbles on it to make rough cast, or otherwise ornament it. Walls are smooth enough to leave without internal plastering, though we should advise it to prevent condensation of moisture. The same principle of mould construction has been applied to the building of columns, corners, kerb, and channel combined, either *in situ* or on the bench.



FIG. 1. VIEW OF MONOCRETE MACHINE IN POSITION, SHOWING FIRST LENGTH OF WORK.



FIG. 2. MONOCRETE MACHINE IN POSITION, MAKING SUCCEEDING LENGTHS OF WORK.

"Monocrete" wall-building machines are made of various standard sizes, called "outfits," which cost but a small outlay, and which, while a complete plant in themselves, will work with larger outfits, so that a constructor's plant can be augmented gradually if so desired. It is asserted that with a small staff of four ordinary labourers and one man with a general knowledge of building, an amount equal to at least 2,500 to 3,500 bricks in contents can be made and laid daily as finished work, at a labour cost of not exceeding 10s. per 1,000 bricks capacity, and in many cases considerably less.

The "Monocrete" system of building monolithic concrete walls *in situ* seems to have a great future before it, and certainly has been well thought out, and the plant carefully and skilfully devised.

Trade and Craft.

Illuminating the White City.

Everyone who has visited the Franco-British Exhibition is agreed on the point that the illumination of the various buildings, which are outlined with hundreds of thousands of incandescent electric lamps, is one of the most striking and attractive features of the White City. The scene every evening, when the current is switched on, is one of extreme beauty; there is nothing glaring or garish to offend the most sensitive taste. On the contrary, the strikingly artistic affect has been produced by exercising the greatest care, not only in the positions, but in the quality of the lamps used. All the lamps used by the authorities for outlining the buildings are the well-known "Royal Ediswan," made by the original patentees of the electric lamp, who hold the honour of appointment to H.M. the King, and H.R.H. the Prince of Wales. This firm are showing, in the Machinery Hall, specimens of "Royal Ediswan" lamps in the various processes of manufacture, as well as numerous other electric appliances of interest.

Federation News.

Northern Counties Federation of Building Trade Employers.

William H. Hope, Solicitor, Secretary, Post Office Chambers, Norfolk Street, Sunderland.

A special general meeting of all the members of the Federation was held at Sunderland on Tuesday, the 29th September, 1908. The principal business of the meeting was with respect to the conditions of tendering and contracting for work for public authorities, and particularly for the Durham County Council. The two important question at issue are the principle of settlement of disputes by an independent arbitrator, and that the bill of quantities shall be part of the contract. Representations have been made to the Council, but without avail so far as these two matters are concerned. The president (Councillor Stephen Easten, Newcastle-on-Tyne) pointed out that these conditions, which are embodied in the National Form of Contract, have been accepted by the Royal Institute of British Architects, and various Government departments who carry out public works. Public authorities have usually, agreements drawn up by their own architects, which are entirely in the interests of the authorities, and being drawn by their officials, have in view the protection of the officials themselves. The conditions thus make the builder responsible for any errors or omissions that may occur in the bills of quantities, or otherwise. Although the architect is the servant of the council, he is the arbitrator of any disputes that may arise, either between the council and the builder or the architect himself and the builder. This Federation has obtained concessions on other matters from the Council, but these two very important grievances remain unremedied. Some little time back, after a great deal of correspondence between this Federation and the Education Committee, a meeting was arranged between the Committee and a deputation consisting of himself and the Secretary. They were at the Council's offices at the appointed time, but owing to the Council not having finished the transaction of its usual business, they had to wait in the corridor for half an hour, and a further half an hour in the waiting-room, when as there appeared to be no probability of the meeting taking place, they left in disgust. Had the Operatives' Unions or Societies been treated in such a manner there would have been trouble. In fact, they might do worse than follow the Operatives' tactics in a similar manner. They must adopt some measures to put a stop to, or, at least, get their grievances modified, and this meeting had been called to arrive at a satisfactory solution. There were several courses open: to approach the Board of Education and the Local Government Board and lay the facts before them, or to refuse to tender until their grievances were modified. After a great deal of discussion upon the matter, on the proposition of Mr. A. Ross (South Shields), seconded by Mr. H. McNaughton (Middlesbrough), it was unanimously resolved:—"That a deputation be appointed from this Federation to meet the Education Buildings Committee at their next meeting, to go fully into the two important questions at issue, and that failing to secure a modification of the conditions of contracting, that the members of this Federation pledge themselves to refuse to tender, and that the deputation consist of Messrs. Stephen Easten, Geo. Gradon, J. Davison, J. W. White, A. Ross, A. T. Weir, and the Secretary, with power to appoint a substitute if necessary, and that all members of the Buildings Committee be written fully explaining the grievances of this Federation."

Bankruptcies.

SHEPPARD, JOHN THOMAS, builder, Mill Street, Evesham, and Cornwall villa, Honeybourne (trading as J. T. Sheppard and Co.). Gross liabilities, £1,824 19s. 6d.; £1,637 15s. expected to rank; assets £939 2s. 11d.

HART, CHARLES, builder, residing and carrying on business at Laurel Cottage, Hemyock, Devon. Gross liabilities £92 18s. 10d.; assets, £20.



COURT OF HONOUR AT THE WHITE CITY, ILLUMINATED BY "ROYAL EDISWAN" LAMPS.

Coming Events.

Wednesday, October 7.
INSTITUTE OF SANITARY ENGINEERS.—Mr. Harold G. Turner (Gold Medallist), on "Municipal Detail," 8 p.m.

Thursday, October 8.
MANCHESTER SOCIETY OF ARCHITECTS.—First Sessional Meeting. Presidential Address, by Mr. Paul Ogden, F.R.I.B.A., 6.30 p.m.

Friday, October 9.
ARCHITECTURAL ASSOCIATION.—Annual General Meeting. Presidential Address, by Mr. Walter Cave, F.R.I.B.A., and Distribution of Prizes, 7.30 p.m.

Saturday, October 10.
ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Last day for applications for the Final and Special Examinations.

Monday, October 12.
LIVERPOOL ARCHITECTURAL SOCIETY.—Meeting, to elect Representative Committee, 5.30 p.m.

Monday, October 12, to Wednesday, October 21.
MIDLAND COUNTIES BUILDING TRADES EXHIBITION, Bingley Hall, Birmingham.

Tuesday, October 13.
SOCIETY OF ARCHITECTS.—Annual General Meeting, 8 p.m.
ARCHITECTURAL ASSOCIATION OF IRELAND.—Annual meeting.
UNIVERSITY OF LONDON (Extension Lectures).—Second of a Course of twenty-four lectures, by Mr. Percival Gaskell, R.B.A., on "English and French Painters," 3 p.m. and 8 p.m.

Tuesday, October 13.
SCHOOL OF ARCHITECTURE, UNIVERSITY COLLEGE, LONDON.—First Lecture of a Course on "French Mediæval Architecture," by Prof. F. M. Simpson, 7.30.

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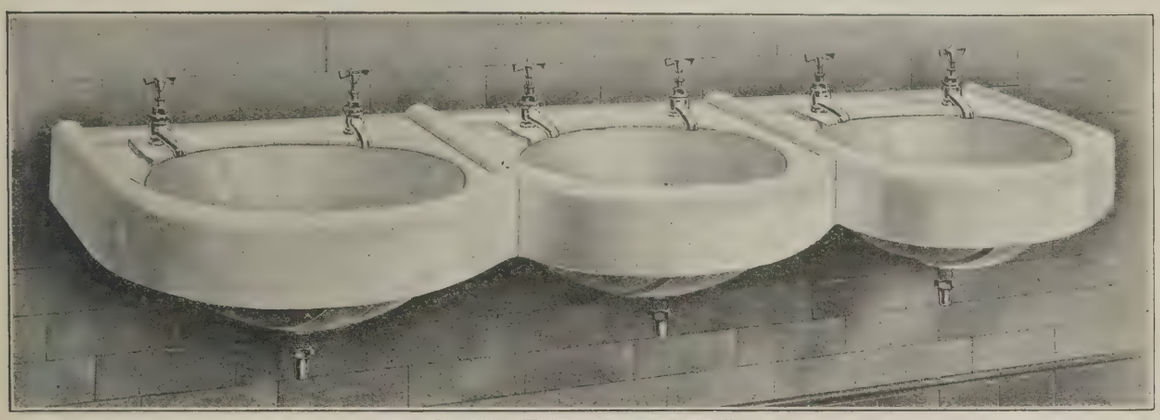


Fig. 923.—THE "BRADFORD."

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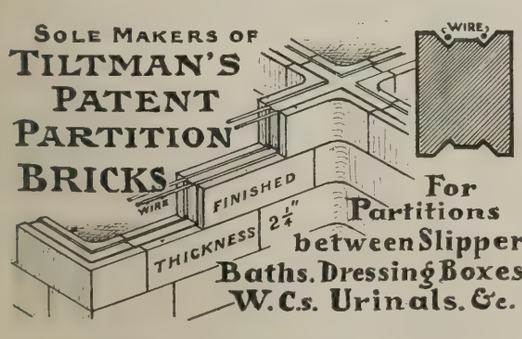
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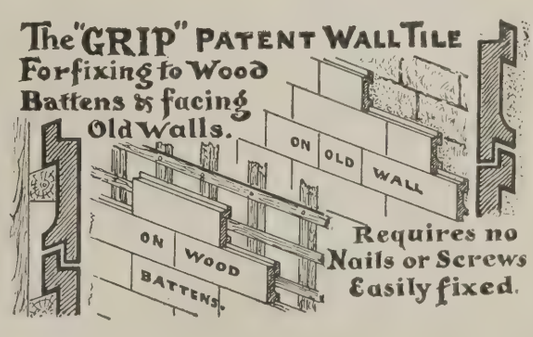
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Publisher's Notices.

Offices: Advertisement and Editorial—Caxton House, Westminster. Counting House and Publishing—6, Great New Street. Fetter Lane, E.C.
Telegraphic Address: "Buildable, London."
Telephones: Advertisement and Editorial—364, Westminster. Counting House and Publishing—2200 Holborn (six lines).
Date of Publication: The Builders' Journal and Architectural Engineer is published every Wednesday, price 2d.
A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.
The Subscription Rates per annum are as follows:—

	s.	d.
At all newsagents and bookstalls - -	8	8
By post in the United Kingdom - -	10	10
By post to Canada - - - - - - -	13	0
By post elsewhere abroad - - - - -	17	4

The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.
Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.
Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.
Rates for Serial Advertisements, Special positions etc., sent upon application.

Situations Wanted, Situations Vacant.
4 lines (about 28 words), one insertion - 1s. 6d.
Each additional line - - - - - 6d.
Three insertions* - - - - - 3s. 0d.
This includes 6 weeks under Employment Register.
Miscellaneous, Drawings and Tracings, Educational, Competitions Open, Partnerships etc. 6d. per line.
The above must be prepaid.

Property and Land Sales, Legal Notices, etc., 9d. per line
Advertisements for the above can be received up till 10 o'clock on Tuesday at
CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Avebury (Wilts). — For new dwelling-house, for Mr. George Brown. Mr. Harold Brakspear, F.S.A., architect, Corsham:—
Chancellor and Sons £2,690
R. Rudman,* Chippenham 2,570
*Accepted.

Boxmoor (Herts.).—For erection of a house for Mr. H. Smith, M.A. Mr. Albert Bullock, A.R.I.B.A., 43, Chancery Lane, W.C.:—
Wilmott and Son £2,944
Darvell and Sons... 2,790
H. Brown 2,426
Roberston 2,283
Wright 2,197
Clark Bros.,* Watford 2,136
*Provisionally accepted.

Carshalton (Surrey).—For joinery fittings at the Southern Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell and Martin, architects, 29a, Charing Cross Road, W.C.:—

I. Ward and Son	£2,750	0	0
Holland and Sons†	2,370	0	0
Summerscales	2,350	0	0
J. and C. Bowyer, Ltd.	2,125	0	0
F. G. Minter	1,952	0	0
Stephens, Bastow and Co., Ltd.	1,932	0	0
F. W. Honour	1,926	3	6
F. W. Boorman	1,916	14	0
J. Longley and Co.	1,889	0	0
Treasure and Son	1,879	0	0
Rowe and Co., Ltd.	1,860	0	0
Perry and Co.	1,859	0	0
W. King and Son	1,824	0	0
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Carter and Wright	1,792	15	2
Lole and Co....	1,784	10	0
Kirk and Randall	1,740	0	0
W. H. Lascelles and Co.	1,728	0	0
H. King and Son	1,684	0	0
J. Willmott and Sons	1,669	13	11
F. and H. F. Higgs	1,535	0	0
G. E. Wallis and Sons, Ltd.	1,477	0	0
J. Garvie and Sons,* 301, Oxford Street, W., and 55, Rose Street, Aberdeen	1,348	0	0

†Amended to £2,357 13s. 8d.
*Accepted.

Cledford (Middlewich).—For new branch and cottage at Cledford, for the Winsford Industrial Co-operative Society, Ltd.:—

Dolan and Son	£1,470	0	0
J. Smallwood	1,388	0	0
J. Wilson	1,350	0	0
Birchall Bros.,* Darlington Street, Middlewich	1,200	0	0
Dickenson and Noden ...	1,015	10	0

*Accepted.

Bromley (Kent).—For erection of the children's home on the ground at the back of the workhouse, for the Guardians:—

Lonsdale, Swanley	£8,308
Blay, Dartford	8,287
J. and C. Bowyer, Norwood	8,189
Strange and Son, Tonbridge	8,150
E. E. Skinner, Chatham	8,146
Durrant and Son, Rotherhithe ...	8,138
G. Parker, Peckham	8,110
Hyde and Co., Norwood	8,004
R. A. Lowe, Chislehurst	7,974
Martin and Co., Tonbridge	7,885
A. and D. Taylor, Lewisham ...	7,845
Crossley and Son, Bromley	7,776
Webster and Sons, E. Dulwich ...	7,774
Podger and Sons, Bromley	7,679
Pattinson and Sons, Westminster...	7,661
Moss and Son,* Loughborough ...	7,244

*Accepted.

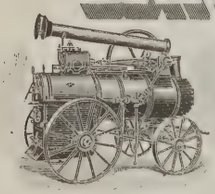
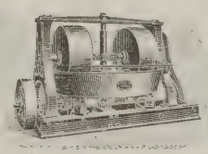
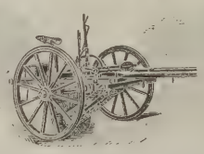
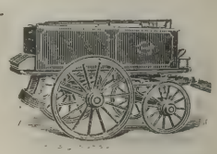
Dudley.—For erecting new classrooms at Grammar School, for the Governors. Mr. Thomas Grazebrook, architect, Stourbridge:—

Dallow and Sons	£2,750	0	0
Harris and Son	2,740	0	0
J. Guest and Son	2,550	0	0
H. Dorse and Son	2,525	0	0
M. Round and Sons	2,508	0	0
W. Deeley	2,490	0	0
Oakley and Coulson	2,487	15	0
A. H. Guest,*	2,479	0	0

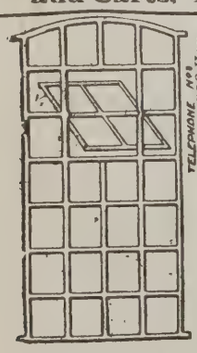
*Accepted subject to approval of Board of Education.

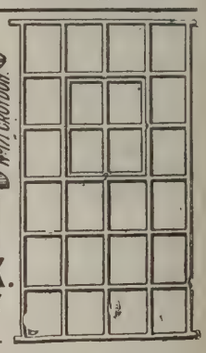
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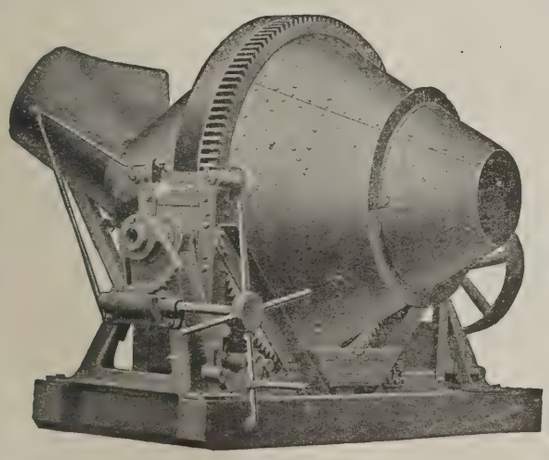


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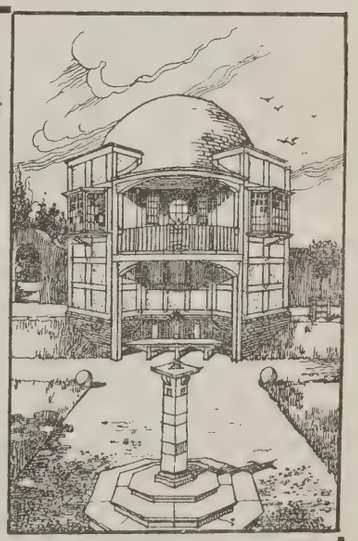
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(Tenders continued from page vi.)

Lydbrook (Glos.).—For the erection of a public elementary school at Lydbrook, near Ross, for the Gloucestershire Education Committee. Mr. M. H. Medland, architect, 15, Clarence-street, Gloucester. Quantities by Mr. E. A. Pryer, surveyor, 15, Clarence Street, Gloucester

T. Mackie and Co., Monmouth	£4,054 10 4
F. Beech and Co., Ross	4,531 10 0
A. J. Colborne, Swindon	4,059 19 0
J. Long and Sons, Ltd., Bath	3,993 16 0
Estcourt and Sons, Gloucester	3,989 5 0
W. Bowers and Co., Hereford	3,856 16 0
Wm. Jones, Gloucester	3,735 0 0
E. J. Flewelling, Lydbrook	3,735 0 0
H. Ash, Devizes	3,710 14 0
A. S. Cooke, Stroud	3,691 12 3
Dimery and Sons, Berkeley	3,656 3 3
E. W. Wilks and Sons, Hereford	3,648 0 0
Wm. Crane, Ltd.,* Forest Road, Nottingham	3,430 19 5

*Accepted.

March (Cambs.).—For erection of girls' high school at March, for the Isle of Ely Education Committee. Mr. R. S. W. Perkins, Ely county surveyor, architect to the Education Committee:—

H. G. Papworth, March	£5,025 0 0
Coulson and Lofts, Cambridge	4,990 0 0
J. Guttridge and Sons, Peterborough	4,950 0 0
G. Henson and Son, Welling-Cross	4,924 0 0
J. Bridgefoot, Peterborough	4,910 11 0
Lawrence and Son, Waltham	
W. Crane, Ltd., Nottingham	4,909 0 0
O. P. Drever, Kettering	4,880 0 0
J. Cracknell, Peterborough	4,875 0 0
Vail and Shore, St. Albans	4,851 0 0
borough	4,785 0 0
Thackray and Co., Huntingdon	4,760 0 0
Spencer, Santo and Co., London	4,650 0 0
A. Spragg, March	4,620 0 0
Elworthy and Co., Upwell	4,553 0 0
Wilmott and Sons, Cambridge	4,495 0 0
Hacksley Bros., Wellingborough	4,359 0 0
A. Christmas, March	4,354 0 0
G. W. Heath, March	3,940 0 0
R. Shanus, Chatteris	3,935 0 0
J. Lucas, Peterborough	3,780 0 0

County Surveyor's estimate, £4,080.

Milton Regis (Kent).—For enlargement of Council school, Upton-lane, for Kent Education Committee. Mr. Wilfrid H. Robinson, architects:—

		Credits.
Treasure Bros.	£3,209 0 0	£30 0 0
Johnson and Co.	2,975 0 0	60 0 0
Spencer, Santo & Co.	2,908 0 0	21 10 0
Jones and Andrews	2,899 0 0	6 0 0
Abbott and Charlton	2,879 0 0	11 15 6
J. Wilford	2,820 0 0	40 0 0
C. Skinner	2,810 0 0	67 0 0
West Bros.	2,739 0 0	27 0 0
C. B. Benfield	2,737 0 0	47 0 0
Pavey and Sons	2,688 0 0	33 0 0
Sturry Building Co.	2,627 0 0	87 10 0
Amos and Foad	2,625 0 0	45 0 0
L. Seager	2,613 0 0	50 0 0
H. J. Tidy	2,604 0 0	65 0 0
Bowes Bros.	2,599 10 0	54 0 0
T. Monk	2,572 0 0	85 0 0
Bishop and Sons,* Sittingbourne	2,505 0 0	42 0 0

*Recommended for acceptance.

Rotherham.—For alterations and extensions at the Grammar School, for the Governors. Mr. J. E. Knight, College Street, Rotherham, architect:—

W. H. Treherne	£6,700 0 0
Chadwick and Co.	6,524 0 0
T. Roper and Sons	6,242 0 0
Nicholson and Son	6,012 10 3
Gill and Son	5,777 0 0
W. M. Beeden	5,569 4 5
R. Snell	5,556 0 0
Fidler and Co.,* Sheffield	5,120 0 0

*Accepted.

Stoke-on-Trent.—For the erection of cottage homes for the Stoke-upon-Trent Board of Guardians:—

T. C. Chatfield, Hanley	£4,800
Geo. Ellis, Hanley	4,450
Tompkinson and Bettelley, Longton	4,427
Colley and Lindop, Hanley	4,261
T. Godwin, Hanley	4,160
T. R. Yoxall, Stoke	4,110
W. Mould, Trentham	4,067
James Grant, Cobridge	3,998
S. Wilton, jun., Newcastle	3,990
P. Bennion, Longton	3,897
Stephen Heath, Basford	3,879
Ball and Robinson, Stoke	3,846
Meiklejohn and Son,* Stoke	3,448

*Accepted

Tipton.—For alterations and extension of the public offices, Owen Street, Tipton, for the Urban District Council. Mr. Wm. H. Jukes, M.E., engineer and surveyor:—

H. Smith and Son, West Bromwich	£1,189 0 0
Oakley and Coulson, Dudley	1,130 0 0
H. Dorse and Co., Cradley Heath	1,060 0 0
W. Castles and Sons, Oldbury	1,030 0 0
J. Sisman, Tipton	985 0 0
J. Edwards, Dudley	948 15 0
H. Smart, Netherton	875 0 0
W. A. Kendrick,* Dudley Road, Tipton	875 0 0

Surveyor's estimate, £1,015 1s.

*Accepted.

Uppingham.—For erecting six cottages for Mr. T. H. Sargent. Mr. W. J. Smith, architect, Market Harborough:—

Dalby, Uppingham	£1,125
Dorman, Uppingham	1,076
Hufford, Harborough	1,025
Jarman, Harborough	970
Marlow, Hallaton	966
Ball and Palmer, Harborough	948
Brown, Harborough	933
Read,* Rothwell	917

*Accepted.

Winsford (Cheshire).—For erecting a shop in Ways Green, for the Industrial Co-operative Society, Ltd. Mr. Thomas Dutton, architect, Ways Green, Winsford:—

J. Fowles and Son	£1,150 0 0
Sergeant Bros.	1,045 0 0
E. Curzon	1,007 10 0
A. Court	965 0 0
Birchall Bros.	958 0 0
Dickenson and Noden	932 0 0
J. Wilson,* Ways Green, Winsford	838 10 0

*Accepted.

Gravesend.—For additions to St. John's Schools, Milton Road. Mr. George Clay, A.R.I.B.A., 27, King Street, Gravesend:—

J. B. Lingham	£1,162 0 0
A. J. Wood	1,150 9 0
Multon and Wallis	1,130 0 0
W. E. Thomas	1,096 0 0
W. and F. Tuffee	1,067 0 0
A. E. Long	1,057 0 0
W. H. Archer and Son,* The Grove, Gravesend	1,050 0 0

*Accepted.

Leicester. — For the erection, completion, and maintenance for nine months after completion, of extensions to the Municipal Technical and Art Schools, The Newarke, Leicester, for the Education Committee. Messrs. Everard, Son, and Pick, architects, 6, Millstone Lane, Leicester:—

James Chapman, Leicester	£11,765 0 0
Haskard, Rudkin, and Beck, Leicester	11,600 0 0
F. J. Bradford, Leicester	11,597 0 0
H. D. Smith, Wigston, Leicester	11,550 0 0
Edwin Fox, Leicester	11,500 0 0
A. and W. Chambers, Leicester	11,475 0 0
J. C. Kellett and Son, Leicester	11,290 0 0
Clark and Garrett, Leicester	11,200 0 0
J. E. Johnson and Sons, Leicester	11,195 0 0
Bradshaw Brothers, Leicester	11,164 11 0
Henry Herbert and Sons, Leicester	11,150 0 0
Bowles and Son, Leicester	11,100 0 0
Thomas Herbert,* Leicester	11,090 0 0

*Accepted.

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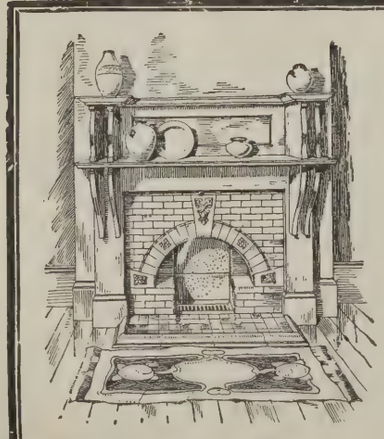
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Oct. 7. WALLS (Shetland).—Construction of a steamboat pier at Walls, Shetland. Plans and specification may be inspected at, and schedules of quantities obtained from Sievwright and MacGregor, solicitors, Lerwick; Scottish office, engineering dept., 122, George Street, Edinburgh; and from G. Woulfe Brenan, M.I.C.E., Albany Street, Oban.

Oct. 7. BURTON-UPON-TRENT.—Erection of a new Police Station, Superintendent's House and Court House, in the borough, for the Corporation. Drawings, specifications, and conditions of contract may be seen, and bill of quantities and form of tender obtained at the office of Henry Beck, architect, 10, High Street, Burton-upon-Trent, on and after Sept. 23, upon the deposit of a cheque or post-office order for £3 3s. Tenders, endorsed "New Police Station, etc.," must be delivered, not later than 10 a.m. on October 7, to T. N. Whitehead, town clerk, town hall, Burton-upon-Trent. Fair wages clause.

Oct. 7. BRIDGEND.—Erection of blocks of conveniences in Airing Court and additions, etc., to laundry at Angelton Asylum, Bridgend. Repairs to attendants' messroom, etc., at Parc Gwyllt Asylum for the committee of visitors of the Glamorgan county asylum. Specifications, bills of quantities, and forms of tender may be obtained from the clerk, and the drawings may be seen either at the office of the architect, R. S. Griffiths, Tonypandy, Rhondda Valley, or at Angelton asylum, Bridgend. Separate sealed tenders, marked outside "Tender for Laundry and Conveniences, Angelton," or "Repairs to Floors, Parc Gwylt," must be received not later than noon on October 7th, to W. E. Allen, clerk to the committee of visitors, Glamorgan county council offices, Westgate Street, Cardiff.

Oct. 7. SOUTH DUBLIN.—Erection of 206 labourers' cottages, under 46 contracts for the R.D.C. The works are to be completed under a penalty for delay. Plans, specifications and schedules may be inspected, and tender forms obtained at the offices of the rural district council; tenders are to be lodged not later than 11 a.m. on October 7, with T. J. Byrne, clerk of the council, 1, James Street, Dublin. Tenders must contain the names and addresses of two solvent persons willing to join the person tendering in a bond for the execution of the work of an amount equal to that of the tender.

Oct. 8. METHLICK.—Carpenter, slater, plaster, plumber, heating, and painter and glazier works, for the trustees of the Beaton Public Hall. Plans and specifications may be seen with and schedule of quantities obtained from James Cobban, architect, Haddo House, who will receive tenders up to 10 o'clock on Oct. 8.

Oct. 8. BALLYMACREEVAN.—Repairs to chimneys of labourers' cottages at Ballymacreevan, for the Antrim R.D.C., in accordance with specification, to be seen on application to James Frazer, or A. J. Caldwell, Crumlin, and at office of J. Clark, clerk of council, Antrim.

Oct. 9. ELGIN.—Mason, carpenter, plumber, slater, plaster, and painter works of additions and alterations on property at Moss Street, Elgin. Plans and specifications may be seen with John Wittet, architect, Elgin.

Oct. 9. BRIGH, STEWARTSTOWN (Ireland).—Erection of a new Presbyterian Church, at Brigh, Stewartstown. Schedule of quantities and conditions of tender can be obtained from Acheson Ferguson, 2, Wellington Place, on a deposit of two guineas. Plans and specification may be seen at the office of Young and Mackenzie. Sealed and endorsed tenders, addressed to the Rev. William M'Elhatton, B.A., to be lodged by October 9th with Young and Mackenzie, Scottish Provident Buildings, Belfast.

Oct. 10. ILSINGTON (Devon).—Restoration of the tower and other repairs to St. Michael's Church, Ilsington, Devon, for the vicar and churchwardens. Persons desirous of tendering may see the specifications at the offices of the architects. Tenders to be delivered by Oct. 10 to E. H. Harbottle and Son, architects, County Chambers, Exeter.

Oct. 10. STRAWBERRY BEDS (Co. Dublin).—Erection of a national schoolhouse at Lower Road, Strawberry Beds, Co. Dublin. Plans and specification can be seen with S. Fennelly, P.P., Parochial House, Blanchardstown.

Oct. 10. BANGOR-ISYCOED.—Restoration of the upper portion of Bangor Isycoed church tower, specifications of which may be had on application to W. J. Mackenzie, Oak Lodge, Cross Lanes, near Wrexham. Tenders must be sent, endorsed "Tender for Church Tower," by Oct. 10.

Oct. 10. CLOS-DU-VALLE, GUERNSEY.—Construction of a new school for the joint education committee. Contractors on receiving plans and specifications must deposit £5 at the education office. Applications for forms of tender should be made to the president of the states committee, education office.

Oct. 10. STANTON-UNDER-BARDON (Leics.).—Erection of a new elementary school, at Stanton-under-Bardon, to accommodate 150 children, together with out-offices, drainage, and other works connected therewith, for the education committee of the Leicestershire county council. Conditions of contract, quantities and forms of tender may be obtained from the architects, Harding and Topott, Hotel Street, Leicester, on payment of two guineas. Sealed tenders, upon the forms supplied, to be sent in the envelopes provided, to the county education office, 33, Bowling Green Street, Leicester, by noon on October 10th. The successful contractor must find two sureties in a sum amounting to 20 per cent. of the total amount of the contract.

Oct. 10. LOW WESTWOOD, EBCHESTER.—Erection of a house at Low Westwood, Ebchester. Separate tenders may be given for each class of work, viz., mason, plastering, joinering, plating, etc.; or for the whole of the work. Plans and specifications can be seen at R. Fenwick's, Earsdon House, Ebchester, co. Durham, to whom all tenders must be sent by Oct. 10.

Oct. 10. WESTMORLAND.—Extensions and other work to Warcop Hall, Westmorland, for J. A. Wild. Plans and specifications can be seen and bills of quantities obtained upon application at the architect's office, up till Oct. 10, upon which day sealed and endorsed tenders are to be sent to Stephen Shaw, F.R.I.B.A., architect, Kendal.

Oct. 10. DERBY.—Extension of the Barlborough Council School and master's house, for the education committee. Persons desirous of tendering may see drawings, specification, agreement, etc., at the office of the architect to the committee, between 10 a.m. and 4 p.m., Saturdays 10 a.m. to noon. Bill of quantities, specification, conditions of contract, and form of tender can be obtained at the architect's office upon payment of one guinea. Sealed tenders in envelopes provided endorsed "Tender for Alterations, Barlborough Council School," must be delivered not later than 5 p.m. on Oct. 10 to George H. Widdows, A.R.I.B.A., architect to the committee, county education office, St. Mary's Gate, Derby. Two approved securities as security for the due and proper performance of the contract will be required.

Oct. 12. SEDGEFIELD.—Alterations and additions to two houses in Front Street, Sedgefield. Plans may be seen and specifications obtained between 5.15 and 6.15, Saturday afternoon after 1.30 p.m., on depsiting cheque for 10s. Sealed tenders, endorsed "Builder," to be delivered before noon on Oct. 12, to T. W. Thubron, Front Street, Sedgefield.

Oct. 12. HULL.—Erection of an infants' school, Craven Street, for the education committee of the corporation. Drawings and specifications may be seen with Joseph H. Hirst, city architect town Tall, Hull, and quantities obtained upon a deposit of two guineas. Remittances to be made payable to the city treasurer. Tenders, sealed and endorsed "Tender for School, Craven Street," to be addressed to the secretary of education, and delivered at the education offices, Hull, by 10 a.m. on Oct. 12.

Oct. 13. WITHINGTON.—Plastering the walls of the cottage hospital at the Withington workhouse, for the guardians of the poor. Specifications may may be obtained at the offices of Charles Clegg and Son, architects, 31, Spring Gardens, Manchester, upon payment of £1 1s. Sealed tenders must be delivered by 5 p.m. on Oct. 13, to David S. Bloomfield, clerk to the guardians, union offices, All Saints', Manchester,

Oct. 14. CHORLTON-CUM-HARDY.—Erection of a twelve-stalled stable loft, cart sheds, outbuildings, and boundary wall, at the refuse destructor, Nell Lane, Chorlton-cum-Hardy, for the corporation of Manchester. Drawings, specifications, and conditions of contract may be seen and bill of quantities and form of tender obtained at the office of the surveyor to the committee, town hall, West Didsbury, on deposit of £1. Tenders, endorsed "Tender for Stabling," to be forwarded in official envelope to the chairman of the Withington committee, town hall, West Didsbury, by Oct. 14.

Oct. 14. WIGAN.—Erection of sanitary conveniences and weighing machine office, near the Market Hall, for the Corporation. Plan, specification, and other particulars can be obtained at the office of the borough engineer, King Street, West. Sealed tenders, endorsed "Sanitary Conveniences," to be delivered to Harold Jevons, town clerk, town clerk's office, Wigan, by Oct. 14.

Oct. 14. FRIMLEY.—Erection of a cottage hospital, for the committee. Bill of quantities, plans, specifications, and further particulars, can be obtained at the office of the architects, H. R. and B. A. Poulter, London Road, Camberley, between 10 a.m. and 5 p.m. Sealed tenders to be sent to the honorary secretary, E. G. Stone, Reading Bank, Yorktown, marked on the outside "Hospital," by noon on Oct. 14. Local builders are invited to tender.

Oct. 15. WAKEFIELD.—Execution of the following works for the West Riding County Council:—Thorpe Salvin Provided School, via Worksop—Alterations and addition. Builder, painter, joiner, slater, plumber, plasterer, asphalter. Catcliffe Provided School, via Sheffield—Repairs and improvements. Joiner and plumber. Woodsetts Provided School, via Rotherham—Alterations, etc. Builder, joiner, slater, plumber, painter, asphalter. Treeton Provided School, via Rotherham—New heating chambers. Builder, joiner, painter, slater, plumber. No heating engineer. Plans may be seen and bills of quantity obtained on application to the country architect. A deposit of £1 is required in each case. Deposits must be posted to the West Riding treasurer, County Hall, Wakefield. A separate letter must be sent to the West Riding architect asking for quantities. Sealed tenders properly endorsed to be forwarded by 10.30 a.m. on October 15th to J. Vickers Edwards, county architect, Wakefield,

Oct. 16. BUSHEY.—Alterations and additions to the Merry Hill county council school at Bushey, for the Hertfordshire County Council. Persons desirous of tendering may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between 10 a.m. and 4 p.m., Saturday, from 10 a.m. till noon. A copy of the schedule of works (quantities) and form of tender can be obtained at the county surveyor's office upon deposit of 2 guineas. Sealed tenders, endorsed "Tender for Merry Hill School, Bushey," must be delivered not later than 5 p.m. on Oct. 16, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Security for the due erection of the works must be given by the contractor.

Oct. 17. PLYMOUTH.—Erection and completion of a horse slaughter-house at Prince Rock. Plans and specifications can be seen, and forms of tender and bills of quantities obtained, on deposit of £1 in cash with James Paton, borough engineer and surveyor, municipal offices, Plymouth, where conditions may be seen.

Oct. 20. DURHAM.—Alterations and improvements at Flint Hill, Marley Hill Colliery, Croxdale, and Hetton girls' and infants' council schools, for the county council. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained for Flint Hill and Marley Hill Colliery council schools only at the office of F. E. Coates, A.R.I.B.A., Shire Hall, Durham. Sealed tenders, endorsed with name of school, to be sent to A. T. Dawson, clerk to the education committee, shire hall, Durham, not later than Oct. 20.

Oct. 26. WILMSLOW (Cheshire).—Erection of new council schools, to accommodate 700 scholars, at Wilmslow, Cheshire, for the Knutsford and Wilmslow administrative sub-district committee. Plans, specifications, etc., prepared by Herbert H. Brown, architect, may be inspected at his offices, 17, Dickinson Street, Manchester. Persons desirous of tendering must send their names to the architect, accompanied by a deposit of two guineas, before Oct. 9. Tenders, enclosed in sealed en-

uelopes, endorsed "Tender for Council Schools at Wilmslow," must be delivered by 10 a.m. on Oct. 26, to George Leigh, clerk, union offices, Knutsford, Cheshire.

Oct. 29. SCUNTHORPE.—Erection of a fire station, highways depot, cart sheds, and public convenience at the corner of Mary Street, E., and Cole Street; for the U.D.C. Plans, sections, and details may be seen, and any further information given upon application to Walter F. Bickford, engineer and surveyor, Engineer's and Surveyor's Office, Home Street, Scunthorpe. Form of tender, general conditions, specifications, and bill of quantities may be obtained upon payment of two guineas. Tenders, sealed and endorsed "Tender for Fire Station, Buildings, etc.," to be addressed to F. C. Hett, clerk, 2, Trafford Street, Scunthorpe, and delivered by noon on Oct. 22.

No date. BRIXWORTH (Northants).—Erection of a bakery at Brixworth, for the Provident Co-operative Society, Ltd. Bills of quantities will be posted to contractors on application to A. H. Walsingham, architect, or C. E. Roberts and Co., bakery engineers, 62, Market Street, Manchester. Drawings may be seen at the Society's office.

No date. OLDHAM.—Erection of thirty-eight houses on the Hollin Hall Estate, Oldham, for the Oldham Equitable Co-operative Society, Ltd. Specifications, etc., may be obtained of the Society's architect, F. Thorpe, 7, Clegg Street, Oldham, on deposit of £2 2s.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. WEST LYNN.—Alterations to cottages at West Lynn, for Wm. Wing. For bill of quantities and all information apply to Walker and Walker, architects and surveyors, Wisbech and Terrington.

ENGINEERING.

Oct. 7. LONDON.—Supply and erection of a steel-wire rope suspension bridge to span the boating lake at Victoria Park, for the L.C.C. Persons desiring to tender may obtain sketch, plan, specification, form of tender and other particulars at the Parks Department, 11, Regent Street, S.W. Each tender is to be delivered at the county hall in a sealed cover addressed to G. L. Gomme, clerk of the London county council, county hall, Spring Gardens, S.W., and marked "Tender for Bridge, Victoria Park." No tender received after 11 a.m., on October 7, will be considered. Tenders must be upon the official forms, and the instructions contained therein must be strictly complied with. Fair wages clause. (See also "Plumbing and Sanitary.")

Oct. 8. HOLSWORTHY.—Construction of an impounding reservoir, service reservoir, and filter beds, and the laying cast iron mains and other work at Holsworthy, for the U.D.C. Palns may be seen at the office of the engineer, I. Chadwick, Bletchley, Bucks, or at the office of the clerk. Copies of specification, quantities, and form of tender may be obtained from the engineer on payment of £3 3s. Sealed tenders, endorsed "Holsworthy Waterworks," to be delivered by Oct. 8, to W. C. R. Peterson, solicitor, clerk, Holsworthy, Devon.

Oct. 10. EASTON.—Reconstructing the substructure of Easton Bridge, for the Winchester R.D.C. Copies of the plans, etc., and all other necessary information, can be obtained on application at the office of Geo. E. Carter, surveyor, 2, St. James's Street, Winchester, between 9 a.m. and 5 p.m. (Thursdays to 1 p.m.). A deposit of £2 2s. will be required for each set of documents, which must be made by cheque, payable to the Winchester R.D.C., and crossed London and County Bank.

Oct. 13. FULHAM.—Reconstructing and widening Stanley Bridge, carrying King's Road, Fulham, over the West London Extension Railway, for the L.C.C. Persons desiring to tender may inspect the drawings and obtain the specifications, bills of quantities, form of tender, and other particulars on application to the chief engineer of the council, Maurice Fitzmaurice, C.M.G., at the county hall, Spring Gardens, S.W., upon payment to the cashier of the council of £3. Tenders are to be delivered, sealed, and marked "Tender for Reconstruction of Stanley Bridge," King's Road, Fulham, by 11 a.m. on Oct. 13, to G. L. Gomme, clerk of the London County Council, county hall, Spring Gardens, S.W Fair wages clause.

Oct. 13. LONDON.—(a) Supply, delivery, and erection of six fuel economisers, each with 320 tubes, with driving gear, etc.; (b) supply, delivery, and erection of three electrically-driven feed pumps for 9,000 gallons an hour each; and (c) supply, delivery, and erection of two 5,000 k.w. horizontal steam turbo-generators at a speed of 750 revolutions a minute, for the L.C.C. Persons desiring to tender may inspect the drawings and obtain specifications, bills of quantities, form of tender, and other particulars at the department of the clerk of the council, upon payment to the cashier of the council of £2. Full particulars of the work may be obtained on application at the county hall before payment. Tenders to be delivered at the county hall in a sealed cover, addressed to the clerk of the London County Council, Spring Gardens, S.W., by 11 a.m. on Oct. 13, marked "Tender for Fuel Economisers," "Feed Pumps," or "Turbo-Generators," as the case may be. Fair wages clause.

Oct. 14. THIRSK.—Providing and laying about 2,400 lineal yds. 4 in. and 3 in. cast-iron pipes, together with the necessary valves, hydrants, and standposts, etc., also the construction of a small covered service reservoir and collecting chamber, with all contingent works, for the R.D.C. Plans and specifications may be inspected at the office of the engineers, Spinks and Pilling, 20, Park Row, Leeds, from whom bills of quantities and form of tender may be obtained on deposit of £2 2s. Sealed tenders, endorsed "Sutton Water Supply," must be delivered by 10 a.m. on Oct. 14, to William Swarbreck, clerk to the council, council offices, Finkle Street, Thirsk. The engineers will arrange with contractors who have obtained quantities to attend at Sutton with plans and specification and walk over the proposed line of pipes.

Oct. 17. CARDIFF.—Providing a steam radiator, etc., at the Cardiff Workhouse, in accordance with specification prepared by S. W. Allen, M.I.M.E. Form of tender to be obtained from the clerk, and returned not later than 10 a.m. on Oct. 17, to Arthur J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff.

Oct. 22. GOOLE.—Constructing and sinking in the bed of the river Ouse a cast-iron casing cylinder (about 55 tons), for a new accumulator, and construction of an accumulator house, etc., at Goole swing bridge, for the North Eastern Railway. Plans may be seen, and specification, detailed quantities, and form of tender obtained on personal application at the office of W. J. Cudworth, the company's engineer at York. Sealed tenders, marked "Tender for Cast Iron Casing Cylinder, etc., at Goole Swing Bridge," to be addressed to R. F. Dunnell, secretary, and delivered at his office at York by Oct. 22.

IRON AND STEEL.

Oct. 9. CHADDERTON. — Construction of twenty-three Bacterial Filters, storm filters, sedimentation tanks, etc., for the U.D.C. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind Hill Street, Heywood. and 14, Victoria Street, Westminster, S.W., on deposit of two pounds. Tenders, endorsed "Tender for Bacterial Filters, etc., Contract No. 20," to be delivered by noon on October 9, to Henry Hoyle, clerk of the council, town hall, Chadderton.

Oct. 12. SOWERBY.—Supplying about 3,000 yds. of iron pipes and special castings for the U.D.C. Persons desirous of tendering should send their names to the engineers, Utley, Hebblethwaite, and Utley, 10, Waterhouse Street, Halifax, by Oct. 12. A deposit of £2 2s., prior to bills of quantities being furnished, must be paid to Edgar Booth, clerk to the council, Harrison Road, Halifax.

Oct. 12. CUDWORTH (near Barnsley).—Supplying (1) 6-inch by 9ft. by 2cwt. coated cast iron socketted pipes and specials. The length will be about 4,700 yards. (2) Cast-iron lamp columns, 10ft. out of ground, with foot for fixing. (3) 14in. copper lamps, with bottom flap lighting door, for torch, together with wrought-iron cradle, complete, for the U.D.C. All to be delivered at Cudworth Midland station. Tenders to be delivered to W. E. Raley, clerk, Regent Street, Barnsley, by October 12th.

Oct. 13. MORTLAKE.—Construction of a pump well, engine foundations, outfall to river, and other works in the parish of Mortlake, for the Richmond main sewerage board. Specification and drawings may be inspected at the office of William Fairley, civil engineer, 69, Victoria Street, Westminster; also at the main drainage works, West Hall Road, Kew Gardens. A copy of the bill of quantities and form of tender may be obtained on deposit of a crossed cheque for two guineas, made payable to the board. Sealed tenders on forms provided must be delivered by October 13, to J. Leslie G. Powell, clerk to the board, Sessions House, Richmond, Surrey. Security for the due fulfilment of the contract will be required in accordance with the provisions of the Public Health Act, 1875.

Oct. 13. ASHTON-UNDER-LYNE.—Supplying about 30 tons of cast-iron segments, together with bolts, nuts, and washers for same, for the Ashton-under-Lyne, Stalybridge, and Dukinfield (district) waterworks, Chew reservoir. Drawing may be seen and copy of specification obtained at the offices of G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster. A limited number of copies of the drawing are available, and will be lent to persons tendering, in priority of application, on payment of half-a-guinea, which will not be returned. Sealed tenders, endorsed "Tender for Cast-iron Segments, Chew Reservoir," must be forwarded to the secretary of the joint committee, town hall chambers, Ashton-under-Lyne, by October 13th.

Oct. 13. WHITEHALL.—Supplying 1, rails and fishplates; 2, bearing plates; 3, coach screws, for the Secretary of State for India. Conditions of contract may be obtained on application to E. Grant Burls, director-general of stores, India Office, Whitehall, S.W. Tenders to be delivered at that office by 2 p.m. on Oct. 13.

Oct. 14. PLYMOUTH.—Supply and delivery of about 600 yards of 9 in., 1,000 yards of 6 in., and 3,000 yards of 4 in. cast iron pipes, for the Corporation. Specification and form of tender and other information may be obtained at the office of the water engineer. Tenders enclosed in envelopes provided, to be delivered by noon on Oct. 14, to Frank Howarth, M.Inst.C.E., water engineer, municipal buildings, Plymouth.

PAINTING.

Oct. 10. RISCA (Mon.).—Painting the exterior of master's house and boundary railings at the Danygraig council schools, Risca, for the managers of the Abercarn, Risca, and Rogerstone group. Specification may be seen at the schools at any time during school hours. Sealed tenders endorsed "Danygraig School Tender," to be in the hands of T. S. Edwards, clerk to the managers, 24, Stow Hill, Newport, Mon., by October 10th.

Nov. 4. HAMPSTEAD.—Painting and cleaning work to be done to the interior of the workhouse premises situate at New End, Hampstead, for the guardians. A copy of the specification can be obtained upon application and payment of one guinea, to the clerk. The premises can be viewed by making an appointment for the purpose with the Master of the Workhouse. Tenders, marked "Tender for Interior Work," must be sent in not later than 4 p.m. on November 4th, to H. Westbury Preston, clerk to the guardians, guardians' offices, New End, Hampstead.

PLUMBING & SANITARY

Oct. 10. EAST LOOE.—Construction of public conveniences at Church End, East Looe. Plans and specifications may be seen on application to the surveyor, Cyril Martin, Looe.

Oct. 12. ARDWICK.—Construction of a public urinal in Ogden Street, Ardwick, for the Manchester Corporation. Drawings may be seen and specification and form of tender obtained on application at the city surveyor's office, town hall, Manchester, on payment to the city treasurer of one guinea. Cheques or postal orders to be made payable to the order of the Corporation of Manchester. Tenders, enclosed in the official envelope, and addressed to the chairman of the lavatories sub-committee, to be delivered at the city surveyor's office not later than noon on Oct. 12.

Oct. 12. SOWERBY. — Execution of about 5,000 yds. of main sewer in the bed of the river Ryburn, Lumb Clough, and along the turnpike road at Triangle, for the U.D.C. Persons desirous of tendering should send their names to the engineers, Utley, Hebblethwaite, and Utley, 10, Waterhouse Street, Halifax, by Oct. 12. Prior to bills of quantities being furnished, a deposit of two guineas is required to be paid to Edgar Booth, clerk to the council, Harrison Road, Halifax.

Oct. 13. ARTINGTON.—Sewering the remainder of the parish of Artington, for the Corporation of Guildford. The approximate length of sewers is as follows: — 500 yds. lineal 9 in. cast iron pipes; 234 yds. lineal 6 in. cast iron pipes; 950 yds. lineal 9 in. stoneware pipes, with the necessary manholes and screening chamber. Plans may be seen and specification and bill of quantities obtained on application to C. G. Mason, Assoc.M. Inst.C.E., borough engineer and surveyor, at his office in Tun's Gate. Tenders, endorsed "Sewerage of Artington," are to be delivered by noon on Oct. 13, to F. S. Miller, town clerk, Bridge Street, Guildford.

Oct. 13. WATERLOO (near Liverpool). — Supplying 380 yds. of stoneware or fireclay sewer pipes, 2 ft. 3 in. diameter, with spigot and socket joints, for the U.D.C. Specifications and further particulars may be obtained on application to F. Spencer Yates, Assoc.M.Inst.C.E., surveyor to the council, at the town hall, Waterloo. Sealed tenders, addressed to the chairman of the health committee, endorsed "Tender for stoneware pipes," to be delivered at the town hall, Waterloo, by Oct. 13.

Oct. 19. SHARDLOW.—Providing, laying and jointing about 1,750 lineal yds. of 9-in. and 12-in. stoneware pipe drains, together with manholes and other incidental works, in accordance with the drawings and specification prepared by the engineers, for the R.D.C. Drawing and specification may be seen, and bills of quantities and form of tender obtained at the offices of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of three guineas. Sealed tenders, in envelopes supplied, endorsed "New Sawley Surface-Water Drainage—Contract No. 3," to be delivered by noon on Oct. 19, to J. W. Newbold, clerk to the Shardlow rural district council, Becket Street, Derby.

Oct. 21. CHORLTON.—Work in connection with laying drains for the purpose of diverting the rain water from main drains at the Styal cottage homes, Cheshire, for the guardians of the union. Plans may be seen at the office of J. W. Beaumont and Son, architects, 10, St. James's Square, Manchester, from whom specifications and plans may be obtained on and after Oct. 1, on deposit of £1 1s. Sealed tenders, endorsed "Tender for Drainage at Styal Homes," are to be delivered not later than Oct. 21, to David S. Bloomfield, clerk to the guardians, union offices, All Saints, Manchester.

Oct. 24. DORKING.—Construction of an extension sewer in St. Paul's Road, Dorking, about 311 yds. of 9 in. stoneware pipes, manholes, and flushing tank, etc., for the U.D.C. Plan, section, specification, and form of tender may be seen at the town surveyor's office, 64, South Street. Sealed tenders, endorsed "Sewer," to be delivered by noon on Oct. 24, to W. J. Hodges, clerk, council offices, 64, South Street, Dorking.

Oct. 28. WEM.—Installation of a new drainage system at the union workhouse, for the Guardians. Plans, specifications, etc., may be seen at the office of the clerk, upon deposit of £3 3s. Tenders must be delivered by 4 p.m. on Oct. 28, to W. F. Tait, clerk to the guardians, Noble Street, Wem.

Oct. 30. HALTON (Chester).—Construction of new Sewerage Works in the parish of Halton, Chester, for the Runcorn R.D.C. The works will comprise about 2½ miles of 6in. to 12in. earthenware pipe sewers, together with all manholes, lampholes, and other appurtenances. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind-hill-street, Heywood, or at the office of the clerk, on payment of two pounds. Sealed tenders endorsed "Tender for Halton Sewerage Works" to be sent by October 30th, to Geo. F. Ashton, clerk to the council, 71, High Street, Runcorn.

ROADS AND CARTAGE.

Oct. 7. CLACTON.—Making-up Watson Road and Avondale Road within the district, for the U.D.C. Drawings, specifications and conditions may be seen, and copies of quantities obtained, upon application to A. R. Robinson, surveyor, town hall buildings, Clacton-on-Sea. £1 1s. will be charged for the quantities.

Oct. 7. HERNE BAY.—Paving, etc., the following streets for the U.D.C.:—Grand Drive, Sea View Road, Section III., under the Private Streets Works Act, 1892. Plans, sections, and specifications can be seen and forms of tender obtained from F. W. J. Palmer, surveyor to the council, town hall, Herne Bay. Sealed tenders, endorsed "Paving," to be delivered not later than noon on Oct. 7, to Joseph Jubb, clerk to the council, town hall, Herne Bay.

Oct. 7. HAMMERSMITH.—Excavating, concreting, and paving with creosoted deal blocks, a portion of Fulham Palace Road, for the council, in accordance with specification, which, with form of tender, may be obtained on application to H. Mair, M.I.C.E., borough surveyor. Sealed tenders, endorsed "Tender for Wood Paving," must be delivered not later than 6 p.m. on Oct. 7, to H. Thompson, town clerk, town hall, Hammersmith.

Oct. 8. UPPER CLAPTON.—Kerbing, channelling, paving, making-up, etc., Moresby Road, Upper Clapton, for the Metropolitan Borough of Hackney. General conditions of contract, specifications, and plans and sections may be inspected, and copies of the bill of quantities and form of tender obtained, on application to Norman Scorgie, M.Inst.C.E., borough engineer and surveyor, on payment of one guinea. Tenders, sealed and endorsed "New Street Works at Moresby Road," must be delivered personally, or by an authorised representative, at the meeting of the borough council to be held on Oct. 8, at seven p.m., at the Town Hall, Hackney.

October 10. STRETFORD.—Paving with granited rock asphalt, etc., for the U.D.C., in the following streets and passages:—(a) Bowness Street; (b) Passages, 2—68, Bowness Street. Drawings and specification may be seen and forms of tender with schedule of quantities and other particulars obtained on application to Ernest Worrall, the council's surveyor, any day during office hours on payment by cheque of two guineas. Sealed tenders, endorsed "Private Streets Works," addressed to the chairman of highways, to be delivered at the council offices, Old Trafford, by Oct. 10.

Oct. 12. BROADSTAIRS AND ST. PETER'S.—Supplying (a) 400 tons of granite macadam, hand broken to a 1¾ in. gauge, delivered within the district as required. (b) 2,000 cubic yards of pit flints, with the option of a further 300 cubic yds., if required, delivered to Broadstairs Station (S. E. and C. R.), as the town surveyor may direct. (c) 850 cubic yds. of fine pit gravel, delivered to Broadstairs Station (S. E. and C. R.), as the town surveyor may direct. (d) 1,500 16-in. by 9-in. by 4-in. blue Staffordshire kerbs, delivered to South Cliff Parade, Broadstairs, as required, all for the U.D.C. Persons tendering must forward carriage paid, to Broadstairs railway station, a sample truck of materials, as follows: Item (b) 5-ton truck; item (c) 4-ton truck, which will be paid for at the rate of the accepted tender. Sealed tenders, endorsed "Tender for ——," (as the case may be), to be delivered by noon on Oct. 12, to Lionel A. Skinner, clerk to the council, council offices, Broadstairs. Forms can be obtained of H. Hurd, C.E., town surveyor.

Oct. 12. LEEDS.—Paving and flagging the following streets, for the highways committee:—Nowell Walk, Nowell Parade (part), Nowell Avenue, Nowell Grove, Nowell Terrace, Grange Crescent, Marley Place, Marley Street, Hope Crescent, and Hope View. Drawings may be seen at the city engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained, and copies of documents forming the contract inspected, at the highways office, 155, Kirkstall Road. Sealed tenders, endorsed "Tender for Private Street Works," and addressed to the highways committee, must be delivered at the town clerk's office, town hall, Leeds, by 10 a.m. on Oct. 12.

Oct. 12. SHEERNESS.—Supplying 60 tons of Norwegian granite setts, 4 in. wide, 6 in. deep, in random lengths, and 200 yards 5 in. by 12 in. Norwegian granite channel in lengths not less than 3 ft., for the U.D.C. The whole to be delivered in barges alongside the wharf at Sheerness pier at contractor's cost. The council will unload and cart and pay pier dues. Samples of the materials must be sent to the surveyor to the council, Thos. F. Berry. Sealed tenders (on forms which may be obtained from the clerk), stating price per ton or yard as the case may be, endorsed outside "Tender for Setts and (or) Channel," must be delivered before noon on Oct. 12, to Vincent H. Stallon, clerk of the council, Council Offices, Trinity Road, Sheerness. Materials to be delivered within one month of date of order.

Oct. 12. SHEERNESS.—Supplying 1, 400 tons of Rhenish basalt or Guernsey blue granite broken to pass through a 2 in. ring; 2, 200 tons of Rhenish basalt or Guernsey blue granite broken to pass through a 1½ in. ring; 3, 50 tons of Rhenish basalt or Guernsey blue granite broken to pass through a ¾ in. ring; 4, 80 tons of basalt or Guernsey granite chippings free from dust; 5, 250 yards of good clean dry hoggin, free from clay, for binding purposes, for the U.D.C. The whole to be delivered in barges alongside the pier at Sheerness at contractor's cost. The council will unload and cart and pay pier dues. Samples of the materials must be sent to the surveyor to the council, Thos. F. Berry. Sealed tenders (on forms which may be obtained from the clerk), stating price per ton (or per yard in the case of hoggin), endorsed outside "Tender for Road Material," must be delivered before noon on Oct. 12, to Vincent H. Stallon, clerk of the council, Council Offices, Trinity Road, Sheerness. Materials to be delivered on the order of the surveyor before Nov. 30.

Oct. 12. NEW WORTLEY.—Paving about 650 square yards of roadway in the cemetery, for the burial board. Specifications can be seen, and all particulars obtained, from H. Williams, clerk and superintendent, any day during office hours. Tenders, endorsed paving, and addressed to the chairman of the board, should be sent by Oct. 12.

Oct. 12. STREATHAM.—Making-up and paving that part of Chillerton Road, Streatham, which lies between Rectory Lane and the south side of Crowborough Road, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, new streets department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes and endorsed "Tender for Paving Chillerton Road," must be delivered to Henry George Hills, town clerk, council house, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 p.m. on Oct. 12. If required, the contractor must provide two sureties for the due execution of the contract.

Oct. 13. FLIXTON.—Kerbing, channelling, flagging, and macadamising Alderley Road, off Flixton Road, for the Barton-upon-Irwell Rural District Council. Plans, sections, and specifications may be seen, and forms of tender and quantities obtained upon deposit of £2, from the surveyor to the council, A. H. Mountain, A.M.I.C.E., union offices, Patricroft. Tenders to be addressed not later than Oct. 13, endorsed "Tender for Street Works," to J. W. Whitworth, clerk, union offices, Patricroft.

Oct. 13. LEEDS.—Excavating, concreting, and paving about four miles of double tramway track in the urban districts of Horsforth, Rawdon, Yeadon, and Guiseley, for the tramways committee. Specification and forms of tender may be obtained on application at the tramways office after Oct. 7. Tenders to be delivered by 10 a.m. on Oct. 13, to J. B. Hamilton, general manager, City Square, Leeds.

Oct. 13. LEE.—Kerbing, channelling, and metalling roadways, and paving footpaths with artificial stone (in separate contracts), Kellerton Road, Lee, for the Corporation of Lewisham. Plans and specifications may be seen, and forms of tender obtained at the Town Hall, Catford (surveyor's department). Copies of the specification may be had on payment of five shillings in each case, which will not be returned. Tenders, on forms issued, enclosed in an envelope, sealed and endorsed "Tender for Paving Kellerton Road," must be delivered by 4 p.m., on Oct. 13, at the town hall, and placed in the box provided for the purpose. The contractor must employ local labour as far as practicable. Fair wages clause.

Oct. 13. MERTON.—Making up the undermentioned private streets in the urban district of Merton, viz., Adela Avenue, Douglas Avenue, Estella Avenue, Seaforth Avenue. Plans, sections and specifications may be seen and forms of tender obtained (on payment of £2) on application to G. Jerram, surveyor, council offices, Merton. Sealed tenders, endorsed "Tender for Private Street Works," must be delivered by 4 p.m. on Oct. 13, to C. J. Mountfield, clerk, district council offices, Kingston Road, Merton, Surrey.

Oct. 14. CARDIFF.—Supplying and fixing kerbing on portions of the Aberdare and Hirwain, Aberdare and Navigation, Neath and Pontwalby, Bridgend and Port Talbot, Bridgend and Llantrisant, Cardiff and Pontypridd, Cowbridge and Llantrisant, and Neath and Llansamlet main roads for the Glamorgan County Council. Contractors must produce evidence of being insured against liability for accidents to workmen. Copies of the specification and quantities may be obtained at the offices of the clerk, and at the county surveyor's office, town hall, Bridgend. Sealed tenders for the whole or sections of the work on bill of quantities supplied to be delivered together with the names and addresses of two substantial sureties, by October 14, marked outside "Tender for Kerbing," to T. Mansel Franklen, clerk of the county council, Glamorgan county council offices, Westgate Street, Cardiff. Fair wages clause.

Oct 14. TWICKENHAM.—Supplying brown Kentish pit flints, for the U.D.C. Form of tender and specification may be obtained on application to Fred W. Pearce, F.S.I., surveyor to the council, town hall, Twickenham. Sealed tenders, endorsed "Tender for Pit Flints," are to be delivered by hand or registered post, by Oct. 14, to H. Jason Saunders, clerk to the council, town hall, Twickenham.

Oct. 16. PRESTON.—Levelling, paving, etc., and making good Thorn Street, from Ribbleton Lane to No. 39, for the Corporation. Plan, section, and specification may be seen and schedule of quantities and form of tender obtained at the office of the borough surveyor, Town Hall, Preston, to whom sealed tenders, endorsed "Tender for Paving, etc.," must be delivered by noon on Oct. 16. Fair wages clause.

Oct. 20. BARNET.—Supplying materials and labour in making-up and formation of Clarendon and Malden Roads, Boreham Wood, for the R.D.C. Drawings and specifications may be seen at the office of the council's surveyor, T. England, "Fernlea," Furze Hill Road, Boreham Wood, where forms of tender may be obtained. The contractor will be required to give security, in accodance with the Public Health Act, 1875, for the due performance of contract. Local labour where possible must be employed. Sealed tenders, endorsed "Street Works," to be delivered on or before October 20th, to G. D. Byfield, solicitor, clerk to the council, 12, High Street, Barnet, Herts.

Oct. 21. KINGSTON-ON-THAMES.—Supplying about 5,000 tons of Guernsey, quenast, or other granite, for the Corporation, suitable for road-making, to be broken to pass through a ring 1½-in. internal diameter. Deliveries spread over a period of twelve months. Tenders to be on forms obtainable of the borough surveyor, R. Hampton Clucas, at the municipal offices, where samples must be left. Sealed tenders, endorsed "Granite," to be delivered by Oct. 21, to Harold A. Winser, town clerk, municipal offices, Kingston-upon-Thames.

MISCELLANEOUS.

Oct. 12. EAST PRESTON.—Steam rolling roads throughout the district, for the R.D.C. Tenders, stating weight of roller, and other particulars, with price per day inclusive, to be sent to the chairman of the rural district council, board-room, East Preston, by Oct. 12. The person whose tender is acceptel must enter into a contract to supply the roller upon receiving six days' notice under a penalty.

Oct. 14. KIRKCUDBRIGHT.—Construction of 150 lineal yds. or thereby of a concrete quay wall fronting the river Dee, with excavations, road-making, filling up the existing dock, and other attendant works, for the town council. Drawings may be seen at the office of J. and H. V. Eglesham, C.E., 24, Wellington Square, Ayr, from whom copies of the specification, lithograph plans of site, etc., schedules of quantities, and forms of tender may be obtained on payment of £2 2s. Tenders, on the form supplied, and marked "Tender for Harbour Works," to be delivered by 4 p.m. on Oct. 14, to John Gibson, town clerk, town clerk's office, Kirkcudbright.

Oct. 15. ROCHDALE.—Erection of an overhead bare copper cable at the workhouse, for the guardians. Specifications, etc., to be obtained of the union clerk. Tenders, sealed and endorsed "Cable," to be delivered by Oct. 15, to R. A. Leach, union clerk, union offices, Rochdale.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxviii.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (22½) desires engagement; six years' experience; good knowledge of domestic and city warehouse work; 1st class honours construction. Student R.I.B.A.—A. T., 2, Avenue Road, Forest Gate, E. 4568

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT and surveyor's assistant (22), wide experience, working drawings, details, and full sizes; specifications, measuring and supervising, etc.; excellent refs.; salary 30s.; trial willingly. —Box 4596, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT'S Assistant, fully qualified, wide experience; excellent testimonials, desires London engagement, whole or part time. — Box 4601, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4592

ARCHITECT'S and Surveyor's Assistant (21) requires engagement with good architect, 3½ years' student in architect. construction and kindred subjects, land surveying and levelling. Board of Education qualifications; prelim. R.I.B.A., refs.—Apply Box 4572, BUILDERS' JOURNAL Office.

A Practical estimator will be pleased to price builder's quantities or give estimates from plans and specifications for tendering, quickly by post. Send for lowest terms.—Estimator, c/o Mr. Moth, Baddow Road, Chelmsford. 4535

ARCHITECT and Surveyor's Assistant (21), good draughtsman, details, perspectives, surveying, levelling, etc. Prize-winner, first class advanced building construction, and architecture certificates —S. K., Prob.R.I.B.A., first-class refs.; moderate salary.—Box 4578, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 4½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S assistant, experienced in working drawings, details, surveys, etc.; first-class references; specimens of work; orders taken for water colours, perspectives, deed plans for conveyancing, drawings, designs, etc.—Aubrey Pritchard, Bryndenden, Rhyl, N.W. 4549

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 40, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant (23), over 7 years' London and Provincial experience; excellent references. Inter.R.I.B.A. Exam.—H. J. Wilson, 17, Clifton Road, Crouch End, N. 4612

ARCHITECT'S and Surveyor's Assistant desires change; 6 years' varied general experience; assist quantities, good refs.—Box 4617, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade. —Apply Box 4585, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER, with nine years' experience in first-class house-building and general repairs, desires appointment; fair draughtsman, well up all trades, tradesman; moderate salary; highest references. —Box 4507, BUILDERS' JOURNAL Office.

BUILDER'S Assistant (23), disengaged; construction, surveying, mensuration; fair knowledge quantities and levelling; also costs, accounts, wages, etc.; good draughtsman; supervise jobs and assist estimating.—Box 4523, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

BUILDER'S Assistant desires situation. Sixteen years' experience in office routine, estimating, measuring, accounts, etc. Also experienced in outdoor management. Moderate salary.—W. P., 65, Leicester Road, East Finchley. 4569

BUILDER'S and decorator's clerk seeks situation, well up in all trades; ten years' experience; age 26; Midlands preferred; wages moderate.—Apply Box 4599, BUILDERS' JOURNAL Office.

BUILDER'S assistant desires change, 29, abstainer, experienced, quantities, plans, surveying, estimating, book-keeping, shorthand, typewriting, measuring, variation accounts, supervise jobs; excellent references; moderate salary.—Box 4604, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (24), seeks situation; 7½ years' London experience. P.C. jobbing, wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4608

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CONTRACTS.—Estimator, measurer, etc. (London and country experience), requires position. Successful in tendering. Can guarantee brisk business. Make most of measured accounts, and practically and efficiently help with management. Country preferred. **Small salary.** — Estimator, Durston House, **The Grove, Deal.** 4564

ENGINEER wants post, London or Provinces; 12 years' experience, calculations, quantities, designs, detail drawings, bridges, structural steelwork, prepared, reinforced concrete.—Box 4579, BUILDERS' JOURNAL Office.

ESTIMATOR and building surveyor, Q.S.A., desires re-engagement with builder, architect, or surveyor; permanent or temporary; estimates, quantities, measurements, variations and accounts.—A 768, Fulham Road, London, S.W. 4501

ESTATE Clerk of Works, all-round town and country experience; surveying, plans, quantities, etc.; considered good manager of men; character will bear strictest investigation.—Apply Box 4566, BUILDERS' JOURNAL Office.

GENERAL Foreman, just completed West-end job; experienced and capable.—Reply J. L., 20, Wellington Avenue, Lower Edmonton. 4618

GENERAL Foreman, long and varied experience in town; thoroughly practical; good at reinforced concrete work; trade joiner; moderate wages; good references.—50, Peel Road, Wembley. 4565

IMPROVER, surveyor's or builder's office (21), technical student, four years' practical knowledge, supervise, neat draughtsman; abstainer; good references.—Marfleet, Totland Bay, I.W. 4581

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

JUNIOR Assistant (22), student R.I.B.A., practical building construction, experience, details, working drawings, neat draughtsman, surveying, assist quantities; three building certificates; prizeman, good references; specimens; salary moderate.—Box 4593, BUILDERS' JOURNAL Office.

LATE Pupil (22), four years' experience, requires berth as surveyor's or architect's assistant, drawing, surveying, levelling, qualified Stage III., Building Construction and Architecture.—J. W. D., Laurelwood, Hare Lane, Godalming. 4582

MACHINIST (joiner) requires re-engagement; good spindle hand, used to first-class work; 10 years last place; good references.—H. Cruse, Boxford, Newbury, Berks. 4537

MANAGER of masonry works or general foreman, well up in management of men and machinery, London and country experience; practical in all trades. — Thomas, 38, Napier Road, Tottenham. 4602

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER, experienced (registered), **gas and hot water fitter, new jobbing, sanitary work,** good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

QUANTITY Surveyor, Member Q.S.A., 32, eight years' practical building experience, eight years' office practice, desires post as senior or managing assistant.—Box 4610, BUILDERS' JOURNAL Office.

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STUDENT R.I.B.A., 23, well trained man, desires situation as assistant; 1½ guineas. — Box 4607, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

Property & Land Sales

By EDWIN FOX AND BOUSFIELD.

At the Auction Mart.

On Wednesday, October 21, at Two o'clock.

To be let on Building Leases, in Four Lots.

CITY OF LONDON (on the verge of).—FREEHOLD BUILDING SITES advantageously situate, being Nos. 1 and 3 and 2 to 18 (even) Clifton Street, Nos. 31 to 37 (odd) Sun Street, Nos. 32 to 38 (even) Earl Street, and Brown's Buildings, with access also to Appold Street, close to Finsbury Square and the railway termini at Liverpool Street and Broad Street The property possesses the extensive fontages of 175 ft. to Clifton Street, 82 ft. to Sun Street, and 72 ft. to Earl Street, and covers the total area of about 30,000 superficial ft., and is admirably adapted, both from the extent and position, for the erection of manufacturing warehouses or other commercial premises suited to the various trades carried on in the locality.

Building leases for 99 years from December 25, 1908, will be granted at rents to be determined by competition, subject to an allowance of one year's peppercorn.

Lot 1.—8,800 super. feet.
Lot 2.—7,500 super. feet.
Lot 3.—12,600 super. feet.
Lot 4.—1,100 super. feet.

Particulars at Messrs. Edwin Fox and Bousfield's office, 99, Gresham Street, Bank, E.C., and of the vendor's solicitors, Messrs. Kinsey, Ade, and Hocking, 9, Bloomsbury Place, W.C.

CITY OF LONDON.—FENCHURCH STREET.—LETTING by AUCTION of an important BUILDING SITE of 3,000 square feet, being Nos. 1 to 5, NORTHUMBERLAND ALLEY, situate one door from Fenchurch Street and next to Lloyd's Avenue.

MESSRS. NORTON, TRIST and GILBERT will LET by AUCTION, at the AUCTION MART, E.C., on TUESDAY, November 3, 1908, the above SITE on BUILDING LEASE for 90 years from Xmas, 1909.

Particulars, with plan, etc., of Messrs. Dawson, Bennett and Co., Solicitors, 2, New Square; of Messrs. Waterhouse and Co., Solicitors, 1, New Court, Lincoln's Inn, W.C.; at the Mart; and of the Auctioneers, 70, Queen Street, Cheapside, E.C.

October 14, 1908. Volume 28, No. 714.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Mr. Cave and Unemployment.

In the present sorry state of the Architectural Profession it is some satisfaction to find the President of the Architectural Association addressing that body on the evils of unemployment, and particularly on the aspects of it that have been apparent to the officials of the Association during the past session. It is a somewhat disheartening tale—an unemployment register that grew to alarming proportions during the early summer, resignations due to inability to pay subscriptions, and arrears in subscriptions that have had to be met by much patience, forbearance and sympathy. And lastly a slightly diminished membership, due, we are glad to say, to a decrease in the number of new members; for if the Profession is overcrowded, and this is admitted on all hands, it were idle, nay, criminal, to rejoice over an increase in the number of men enrolled in it. Indeed Mr. Cave's address was graver, and, if we may apply the word, more statesmanlike, in tone than any of the Presidential addresses we remember for many years past. Of yore students and young architects were exhorted to enthusiasm on all and every occasion; it was as the blessed word Mesopotamia in the Presidential vocabulary. Now we have a President who recognises that enthusiasm must already exist among young architects at the present day, and that they require no exhortations on the subject; that the young men, to-day, are sufficiently acquainted with the hard and bitter side of life to realise their responsibilities without a periodical call to order. And in tackling a question which must ever be present to their minds, and in adding words of sympathyand understanding, Mr. Cave has confirmed the wisdom of his re-election to the Presidential chair. For if a little help is worth a deal of pity, an ounce of sympathy is worth, now-a-days, a ton of preaching. In the present ing words of sympathy and understanding, ment are needed to keep up a man's ideals, and to stimulate his energy to greater efforts. At the same time we could have wished that Mr. Cave had grasped this nettle more firmly, and discussed the causes of its growth a little more closely. We are not persuaded that these causes are beyond the power of architects to remedy if not wholly to prevent. Architects get but a very small proportion of the nation's building activities under their control; in a time of depression, such as we are now experiencing, they get practically none at all. Our object therefore should be to so rehabilitate the profession in the public mind that it obtains its proper share of the nation's work; and that can only be effected by Architects banding themselves together, so that by virtue of their strength they will be enabled, not to supplicate, but to demand a due recognition for their art. To deserve that recognition and to keep it they must ensure that each man who joins them is properly and adequately trained, and those who cannot boast that qualification must be excluded from the ranks. It is idle to argue that what other nations have done and are doing cannot be done here. It can be done; only the personal susceptibilities of the few are upraised against the welfare of the many, who must finally prevail. If the leaders will not lead let us see to it that the movement comes from the ranks, and that soon. There is no time like the present.

King's Lynn and Its Council.

We referred in a previous issue to the action of the King's Lynn Town Council in passing the plans of four cottages which show an open space at the rear of the buildings, smaller than the area prescribed by the by-laws. Now we are no friends of that rigid Government code of building rules that so many provincial authorities have adopted to their subsequent sorrow; we have criticised "full many a time and oft" its sins of omission and commission; its foolish prohibition of methods of building perfectly suitable to rural districts; its inapplicability to both urban and rural needs. But if there is one by-law that should be enforced without compunction, both in town and country, it is the one that regulates the amount of open space around a dwelling. Half the by-laws in the code would be unnecessary if there was one transcendent by-law stipulating that no dwelling-house shall be hereafter erected on less than a prescribed minimum area of ground, and that such dwelling-house shall not cover more than a certain proportion of the said minimum area. Possibly when the taxation of land values has passed into law, it might be possible to give effect to such a regulation; but until then it is an imperative duty for authorities to permit no deviation from the salutary rules that are already in existence. The restricted area makes the potential slum: it is the battle ground where national welfare wages war with private greed. It is impossible to sympathise with the Lynn Councillors; they passed these plans by 12 votes to 5, against the advice of their Surveyor and Medical-officer, after an unseemly squabble. It cannot be urged, therefore, that they were passed in ignorance. Now a town meeting has been held, and a resolution unanimously passed protesting against their conduct, and a copy of this resolution is to be sent to the Town Clerk and to every member of the Town Council. But why not have sent a copy to the Local Government Board? it would be much more effectual. If the outside world scents the acrid vapour of jobbery in this business, the Lynn Town Council has only itself to blame.

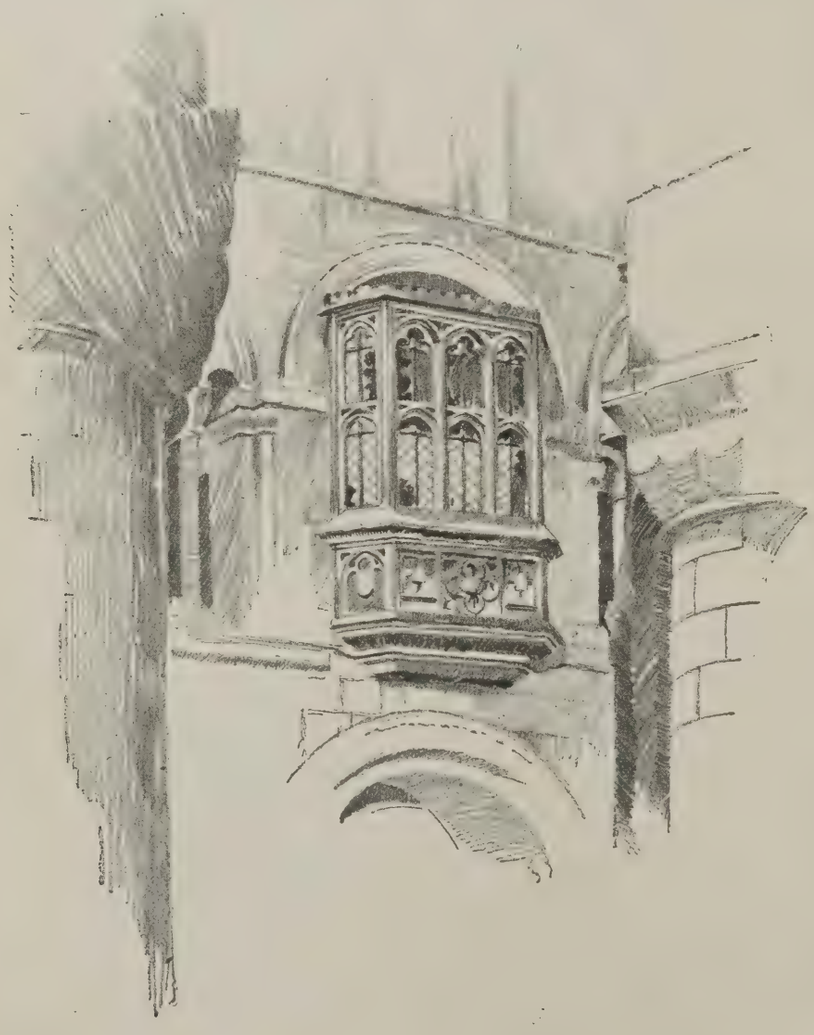
Primitive Pontefract.

Pontefract is itself again. The judgment of Philip drunk has been reversed by Philip sober. The Corporation, it appears, had appointed one of their members to be the architect for a new elementary school, "upon resigning his seat." The quoted phrase we take as we find it in the local press, and precisely what it means is with us a matter of pure conjecture. But, whatever the arrangement may have been, it has fallen through, and honour is vindicated. The Corporation has been prevailed upon to rescind its resolution, and to invite competitive designs for the school. Pontefract's noble victory over itself was not achieved without a struggle. That there was much preliminary heart-searching and soul-wrestling may be inferred from this discreet but pregnant passage from a local newspaper: "A heated discussion ensued, into which personalities were freely and liberally introduced." It may have been an equally exuberant but more kindly disposed manifestation of this same free and liberal spirit that led the Corporation to the verge of what a censorious and a cynical world might be tempted to regard as jobbery. We prefer to regard the incident as the innocent tactical error of a plain and primitive people, who, like the genial philanderer in "Beauty and the Barge," meant "no harm, only affability." And if, as may be inferred, the architect has lost both his seat on the Council and his hold on the job, one is rather disposed to pity his plight. He could not well have both, but, assuming that, as we are glad to believe, he was entirely free from guile with respect to

this serio-comic episode, it seems rather hard that he should have neither the one nor the other, and thus be made the sole victim of the Corporation's little mistake. Perhaps he will try his luck in the competition; for which, it is to be hoped, a competent assessor may be appointed, if only for the better avoidance of the "frequent and free" personalities to which the primitive people of Pontefract seem painfully prone.

American Architects Anathematised.

It would be interesting to know exactly what is the matter with M. Borglum, the Belgian sculptor, who has been engaged on the decoration of the Episcopal Cathedral of New York. His own view is that American architecture has disagreed with him. At any rate, he has delivered himself—or, at least, is reported to have done so—of a rather atrabilious criticism of American architects. He says that they "have cribbed every form and scroll they build," and that "they wander annually to Europe to gather ideas to restock their idealess plants at home." He adds that "they are laymen, untouched by dreams of ideals, who peddle cotton, religion, and æsthetics." Perhaps these observations have lost or gained something in the process of translation into the American language. As they stand, they will hardly conduce to M. Borglum's popularity among Americans, who are notoriously supersensitive to candid criticism. Let us hasten to add that we by no means share M. Borglum's views. Much of the architecture of America is really noble in the *ensemble*, whether or not the details were "cribbed." As to American architects flocking to Europe—"annually" or otherwise—to study architecture and "gather ideas," where else would M. Borglum have them go—to the boundless prairie? And would he deny them also the inestimable (but apparently somewhat risky) privilege of importing Belgian sculptors? We suppose, however, that his opinions on architecture ought to be worth having, or it would not have been thought worth while to publish them in a New York journal, and reproduce them in a London daily newspaper. There is the more reason why he should have expressed them temperately.



FROM A PENCIL DRAWING BY W. H. HOWLING.

ORIEL WINDOW
ST. BARTHOLOMEW'S
CHURCH, SMITHFIELD.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Oct, 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct. 31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos. Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street Preston. Deposit £5 5s.
No Date.	CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50. £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council. Bodmin. Deposit. £1 1s.

* *This competition has been unfavourably reported upon by a Correspondent.*

Congregational Church House, Manchester.—The award of Mr. Paul Ogden, F.R.I.B.A., the assessor in the competition for the above building, has just been announced. The design placed first was prepared by Messrs. Bradshaw and Gass, of Bolton. The design by Messrs. J. Gibbons and Son was placed second, and that by Messrs. J. and J. Swarbrick third. Many designs were submitted, and they were all of a very meritorious character. The designs were exhibited in the rooms of the Manchester Society of Architects, 16, St. Mary's Parsonage, Manchester, from Tuesday, October 6th, to Tuesday, October 13th, 1908.

New Schools for Rotherham.—The award of Mr. E. R. Robson, of London, the assessor of the competitive designs for the Upper Standard School proposed to be erected on the South Grove site, Rotherham, has been delivered. He placed No. 2 plan first in the competition, and the No. 3 plan second. These plans are the designs (No. 2) of Mr. David B. Jenkinson, and (No. 3) of Mr. James Totty, both of Rotherham. The premiums for the first is £50, and for the second £20. The school is estimated to cost £12,000.

Whittingham Asylum Annexe.—This new competition is announced. We note the absurd sum of £5 5s. deposit required for the conditions.

Other Competitions.—We refer to the "Daily Mail" Ideal Homes, and the Swansea Cottage Homes' Site Competitions elsewhere.

THE ARCHITECTURAL ASSOCIATION.

The President on Architectural Depression.

Mr. Walter Cave delivered his Presidential address to the Association on Friday last. After thanking the members for the honour of his re-election, he:

Thanked the retiring members of the Council, Messrs. R. S. Balfour, E. Guy Dawber and J. S. Gibson for their services, and extended a cordial welcome to their successors, Messrs. G. Gilbert Scott, F. Winton Newman and Percy May:—

Expressed the sincere thanks of the Association to the officers, Mr. Henry Tanner and Sir A. Brumwell Thomas, Vice-Presidents, Mr. C. Wontner Smith and Mr. Maurice E. Webb, Hon. Secretaries, and Mr. Henry T. Hare, Hon. Treasurer; and also to the permanent staff, particularly Mr. Driver, the Secretary, who "has worked as hard and as successfully as ever. . . . . Everyone who has been intimately connected with the Architectural Association knows that it is very largely due to Mr. Driver's tact and ability that we are in the position we occupy to-day":—

Alluded to the

Extinction of the Building Debt

on their premises by a final payment of £628 6s. 5d., completing the total of £10,326 and leaving a credit balance of £280; and also to the necessity for extensions, more space being required for the increasing library, extra accommodation for the staff and a hall for the meetings, suggesting the inauguration of an Extension Fund, to which sums could be allotted from time to time as the resources of the Association:—

Mentioned that the

Membership is Now 1,727

as against 1,754 last year, a decrease due to a diminution in the number of new members:—

Referred to the generous donation of a sum of money, by an anonymous benefactor, to form

A New Travelling Scholarship

in connection with the British School at Rome; also to the Henry Saxon Snell Scholarship of £50, and hoped that the subject set this year—"A Convalescent Home for Children"—would produce a good competition; also to the essay prize, for which the subject set is "The Development of Brickwork":—

Tendered the thanks of the Association to the Editors of The Association Journal, Messrs. Edwin Gunn, G. L. Elkington, J. Alan Slater and Percy May, and to the retiring Editor, Mr. Baxter Greig:—

Acknowledged the indebtedness of the Association to the various Architects and Builders who have permitted the members to make visits to their buildings, and alluded, with satisfaction, to the large attendance at these visits and to their value to the student.

The President then dwelt at some length on the

Energy and Progress

of the Association, and to the numerous outlets into which that energy was directed, mentioning the Discussion Section the Camera and Sketching Club, the Musical Society and the success of its play, and the Athletic Club, which has now over 160 members, and which embodies Cricket, Rifle, Swimming, Rugby Football, Hockey, Association Football and Rowing Sections—only the last two needing more support. Mr. Cave, in reiterating his firm belief in athletics, in the training and self-denial necessary for an athlete, and the value of the special qualities thus developed in general life, suggested the formation of a Golf Section for those members whose cricketing and football days are over.

He went on to refer to those hopeful signs of energy and progress in the Association, but pointed out the immense amount of organisation required to keep all this going, and to the necessity for all even the most junior members taking their share in the work. "I think that with an Association like ours the sooner the younger members are placed in a position of responsibility the better for them and for the Society. In order to forward these ends, the Council, after careful consideration, has adopted certain regulations affecting its elections and the posts of its officers, whereby

Promotion Will be More Rapid

and the younger members will have greater opportunities of coming to the front. Progress should be the password, not only of the Council, but of all the minor branches of the Association."

The A.A. Schools.

The President then spoke of the schools and of the success which had attended the policy initiated last year, of placing both the day and evening schools under one head master, Mr. Maule, who had been ably seconded by Mr. Varndell and all the assistant masters. They had to regret the retirement of two of the teachers, Mr. Banister F. Fletcher and Mr. T. O. Foster, whom he thanked on behalf of the Association, for their excellent work. He alluded to the loss of Mr. H. H. Stannus, "who for many years was a lecturer of exceptional merit, and a very true and kind friend to many of our members, and one who always took the greatest interest in our Schools."

A reference to the Life Class, started during the session, and to the value of figure-drawing for architects, the human figure being the standard for proportion for all architecture, brought the President to a consideration of the alterations "in connection with the Intermediate Examination of the Royal Institute of British Architects. Probably those whom this examination mostly affects have noted these changes. But I cannot help feeling that to the profession at large the omission of the development of the Greek and Roman Orders as a subject comes somewhat as a shock. Other subjects omitted include the characteristic Gothic mouldings in England, Classic ornament, and the outlines of Mediaeval and Renaissance Architecture in Europe. It is true that two subjects are added to take the place of part of what is omitted, but to my thinking the omission of the study of the Orders seems a mistake, and especially so in these days, when the revival of the Renaissance is playing such an important part in the architecture of our time."

Mr. Cave then referred at considerable length to the prevailing

Depression in Architecture.

which remarks we give in full:—

"The architectural profession has lately been passing through one of its periodical times of depression, and although there are some signs of improvement, the outlook is still very serious. It would be useless to enter into the causes for this, as I believe they are beyond our control, and it would not profit us in any way, but it may be of interest to note its effect on our Association.

"As I stated at the beginning of my paper, our numbers have suffered a slight decrease, but this is a small matter as compared with the number of resignations due to inability to pay our subscription. I can assure you that the Council has listened with the most sincere regret to letters from members who have been thrown out of work. In all cases where it has been possible, the greatest leniency has been exercised, and whenever applied for, extension of time has been gladly given. The Council has also decided to give more nominations in connection with the Architects' Benevolent Fund on account of the recent donations made by the Musical Society, and thus in some measure help our more unfortunate brothers. There is another way in which this general depression has affected the Association, and that is in the Register of Assistants kept in the office. This list of the unemployed reached alarming proportions during the early summer, and it is a fact well known to the Secretary, that members still keep their names on the list though they may have obtained a temporary berth. This is obviously unfair, and will in future be very strictly watched and guarded against as far as possible. Then again, it is open to very serious question if, in view of our large membership, *non*-members should be allowed to avail themselves of the Register of Assistants. It is not so much on account of possibly crowding out the members themselves, though this is of some importance, but on account of the fact that in very few cases have these non-members received as good an architectural training as we ourselves provide. It is quite true that all our members have not been through our Schools, but the number of those who have is increasing rapidly, and the demand in many of the best offices in London and the provinces for assistants trained in our Schools is, I believe, greater than the supply. I think that it would be to our advantage as an Association and to the profession at large if our Register was kept for our own members. This, I know, will be called 'Protection,' but the article is good, and I do not see why we should not get a full return for it.

"There is another point in connection with the present depression in our profession, which I should like to touch on, namely, the establishment of Architectural Schools mainly supported by the public rates. During a crisis like the present one, the fact that the architectural profession is overcrowded must become more and more apparent, and the facilities afforded by these rate-aided schools induces many parents to see a simple solution of the education question by making their boys architects if they show the smallest liking for drawing, and the result is that in, say, 80 cases out of every 100 these boys reach manhood only to find themselves draughtsmen with intermittent employment, when they might be in a position of earning a living by the exercise of some trade.

"I do not deny the advantages which are gained by the education of the artistic sense, which may awaken the desire for beauty, which, after all, is a natural instinct. This, in the abstract, is one thing, but the indiscriminate training of practitioners, with the rare chance of benefiting some individuals, at the expense of others, is a policy which is open to very serious objection.

"These remarks apply equally well to our Schools, but with a difference. I think with us it will be conceded that the education offered; and the methods

adopted, are of a higher quality than in the schools I have mentioned. The result is that a better class of student is attracted.

"We have spent many years in establishing our system. We have a large majority of the profession behind us, and devote our whole energies to turning out men who will be a credit to us. And lastly, we do not hesitate (and I speak with personal experience) to point out very clearly to parents the inadvisability of their sons adopting our profession whenever circumstances clearly indicate that to be the wisest course, and before it is too late to start in some other direction.

"The qualifications which are necessary for the making of an architect have been the subject of several presidential addresses from this chair, and I do not intend to go over the same ground. But there are several points in connection with modern architectural practice which I think might be noticed in connection with these remarks. For instance, the purely business side of our work is daily becoming more and more important. The increasing restrictions of the Building Acts, not only in the towns but in the country, necessitates a study of the legal aspects of problems which are already sufficiently difficult. It has frequently occurred to me that there is room for a special consulting branch in our profession, which would deal entirely with these legal points connected with all questions of light, air, party walls, Building Acts, &c., and even questions of sanitation. These consultants might have the same training as the ordinary architects, and special classes might be arranged accordingly in our Schools, so that they could enter into the architectural aspects of the case, at the same time as they specialised on these particular points.

"Another point in connection with modern practice is the increasing competition of the big furnishing companies, who not only undertake to supply everything necessary to the furnishing of a building, but actually to provide the building itself. I suppose we have all suffered under this innovation, and it is very difficult to see any remedy. There is no doubt that the public are saved, or think they are being saved, a great deal of trouble if the whole transaction is carried out by one firm, and it is unfortunately true that the public have little confidence in architects' estimates. This I believe to be one of the main causes of the growth of these firms, who are gradually usurping the functions of the architect. There is also the question of capital which can be spent in the form of advertisement, and in submitting unsolicited designs, which would be not only derogatory, but impossible to the members of our profession. The remedy for this can only be looked for in steady, conscientious work, and in paying particular attention to estimating, and endeavouring in every way to restore the confidence of the public. It is a fact that the public are beginning to take more interest in architecture, and critical articles are appearing form time to time in the Press which show that there is a section of the people with a desire for beauty, which, as I have said before, is a natural instinct, and only requires proper training to make itself felt.

"The development of the critical faculty is important, not only to the public and the Press, but also to architects themselves, and I venture to say that the real power of criticism is extremely rare."

The President concluded his address with some remarks on the value of

Accurate Observation.

and memory sketches. These are good materials with which to feed the critical faculties, but we have to find out for ourselves what is good and what is beautiful.

"Youth is the age for receiving and retaining impressions.

"Last year I reminded you of your glorious heritage in the past.

"Throughout the length and breadth of England were still to be seen buildings full of the quiet beauty of the country side, full of the history of bygone generations, and full of the true spirit of romance. These things can only be appreciated by those who approach them with reverence, and with love for the labours of those hands long since at rest. So I would say to the student, try and realise the beauties of your own country before the calls of work make it too difficult. Journey, if need be, on foot, and drink in the spirit of romance before it is too late, and so when the opportunity comes you may be able to lift your art above the rush and tumult of to-day."

THE ARCHITECTURAL PROFESSION OF TO-DAY.—V.

"There is but one way of making great evils small; that of looking them straight in the face."—Democritus.

We earnestly advise members of the architectural profession to act upon the excellent precept contained in the above quotation from the writings of the ancient Greek philosopher. In our view their profession is being constantly lowered in public estimation by the unprofessional conduct (and disloyalty to the collective interests of practitioners), evinced from time to time by architects whose methods of obtaining work seem to proceed almost entirely from a far too zealous and exclusive concern for their individual interests. All who have, even to a limited extent, the interests of their profession at heart should, therefore, carefully consider and endeavour to realise the probable effect on the minds of the public of the various nefarious practices to which we are about to call attention, and to look these, or other, evils which beset the profession, "straight in the face" with the object of devising some means of removing them forthwith—root and branch.

Although we confess we think it extremely unlikely that any remedial measure, short of the adoption of Registration, will bring about the desired effect, yet we should be glad to receive a practical suggestion relative to the possible formation of a Board of Control, specially appointed with the view of preventing unscrupulous architects from disgracing their profession and themselves by such disloyal actions as (1) working for less than the authorised scale of charges, (2) taking part in competitions, either in the capacity of assessor or competitor, of which the conditions are not of a nature to commend themselves to the majority of the members of the architectural profession, (3) degrading the profession and reducing it in public estimation to the level of a trade by endeavouring to attract the attention of the public to themselves and their buildings through the medium of huge notice boards and other methods of advertisement.

With regard to (1) there is, unfortunately, every reason to believe that, owing to the general dearth of work and the increasing stress of competition among the members of a terribly overcrowded profession, the practice of *underselling* is becoming all too prevalent among the architects of to-day. Nor is this reprehensible method of securing work by any means confined to the less known members of the architectural fraternity. Even architects who belong to that particularly select and august coterie from which competition assessors are usually selected have been sometimes known to undersell each other when application has been made to them by promotors of competitions to state the fee they require for acting in the judicial capacity to which we refer. Now the authorised scale of charges for assessing competitive designs is explicitly stated in the regulations governing the conduct of architectural competitions drawn up and issued by the R.I.B.A. But notwithstanding this fact some architects who, presumably, are held in sufficient general esteem to be regarded in the light of suitable candidates for an appointment of this kind (which ought to be looked upon as one of an extremely honourable nature), are capable of acting in the manner we have indicated.

As to (2), the evil-doers are found both among competitors and assessors. Members of the architectural profession have frequently been warned, years ago through the medium of the Competition Reform Society, and, in more recent times, by the veto of the R.I.B.A., not to take part in certain competitions in which the conditions were not regarded as satisfactory. In the case of the Competition Reform Society, we believe we are stating a fact in saying that in each instance in which the veto was applied, the members of that society loyally and honourably adhered to the views of its governing body. But the Royal Institute of British Architects, on at least one memorable occasion, has covered itself with ridicule by its clumsy, although well-meaning, efforts to "boycott" competitions of a particularly unsatisfactory character. In the case, for example, of a recent competition which was thus vetoed by the R.I.B.A., not only was a very prominent architect—despite the prohibition of the leading architectural society—induced by the promoters to act in the capacity of assessor, but among the competitors were to be found the names of several well-known members of the very institute whose council had been endeavouring to render the competition abortive. In view of this somewhat unfortunate contretemps it would be as unwise to dilate at any length on the extent of the *esprit de corps* observable among members of the profession as it would be useless, in the future, to insist with any large amount of superfluous fervour upon the much vaunted influence of the Royal Institute of British Architects. We are aware that the assessor to whom we refer is not a member of the R.I.B.A., but, in our judgment, disloyalty to the profession at large is a far more heinous offence than any refusal to be bound by the most uncertain, vacillating, and often unfair and erratic action of the Council of the Institute on questions affecting the conduct of architectural competitions. Surely the success met with by the comparatively small body of ardent reformers which constituted the membership of the Competition Reform Society affords sufficient proof of what

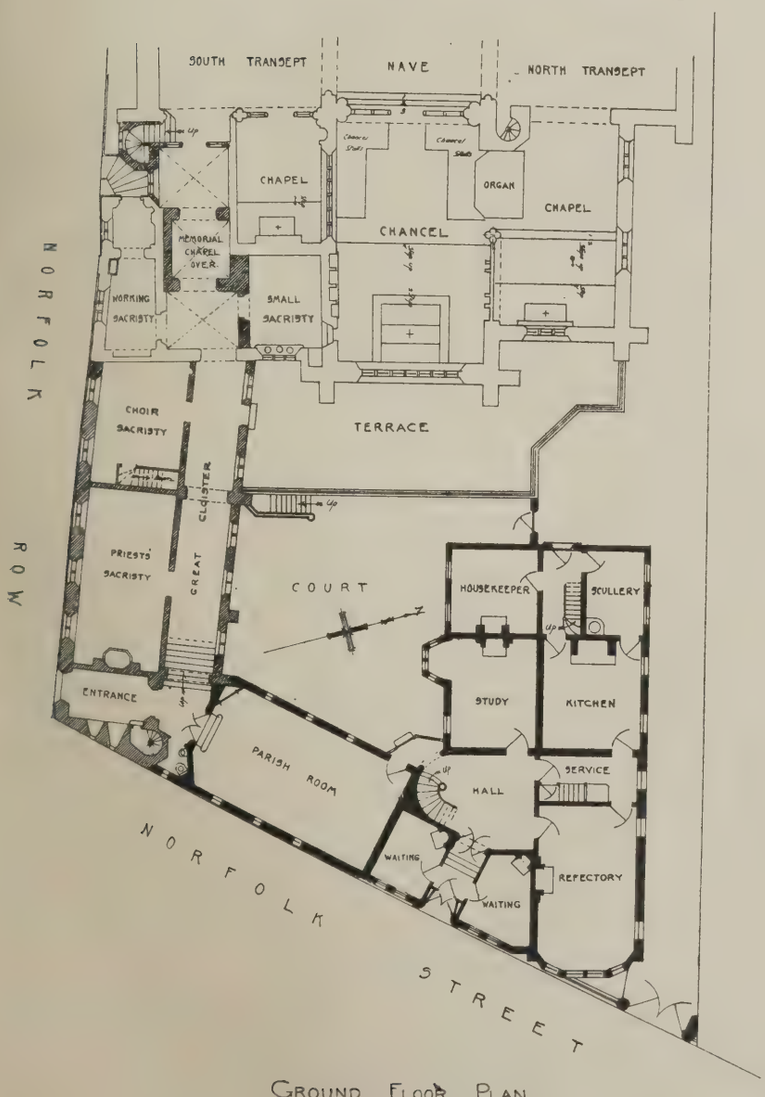
can be accomplished by an organisation of architects who, having previously agreed upon a definite policy of reform, are sufficiently tenacious of their purpose to ensure the realisation of their aspirations? We believe the primary pledge required from every member of the Competition Reform Society was one to the effect that he would undertake to abstain from taking part in any competition in which the promoters had not definitely stated their intention of appointing a suitable assessor. Thus, some years ago, by means of this useful Society, the interests of competing architects were well safeguarded and zealously maintained. But since the work of the Society has been carried on by the Competitions Committee of the R.I.B.A., the result has been anything but satisfactory. Strangely enough, only to-day, whilst the above lines were being penned, we received a letter of complaint from a Fellow of the R.I.B.A. to the effect that another Fellow of that body had recently taken part in a competition for which no official assessor had been appointed! With this recent example of the extreme usefulness of the R.I.B.A., perhaps one of the many ardent supporters of its well-known *laisser-faire* policy will tell us why a small and little-known organisation of architects, in which the names of "eminent" practitioners were conspicuous by their absence, could, years ago, successfully effect what the Royal Institute of British Architects is unable to accomplish to-day?

Whilst, perhaps, there is, to a limited extent, *something* to be said in favour of (3) inasmuch as it might possibly serve to create some sort of public interest in the architect and his work if the name of the designer of a building were, unobtrusively, inscribed upon some portion of the structure, yet the direct advertising suggested by the methods employed by those architects who are accustomed to fix huge notice boards, embellished with their names, qualifications (if any), and addresses (all of which may, however, be thus conspicuously presented with the truly laudible object of directing the public to the terrestial abode of the untrained architectural "genius") similar in character to those displayed by enterprising house-agents and tradesmen does not serve to make it easier for the man in the street to understand where the "art" of the architect ends and the commercial instinct of the tradesman begins.

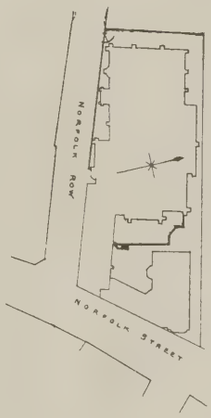
Owing largely to the overcrowded condition of the architectural profession there has been, for many years past, what may perhaps justly be described as a fierce scramble for work in which, not unnaturally, those architects in whom the com-

ST. MARIE'S CHURCH AND BUILDINGS; SHEFFIELD:

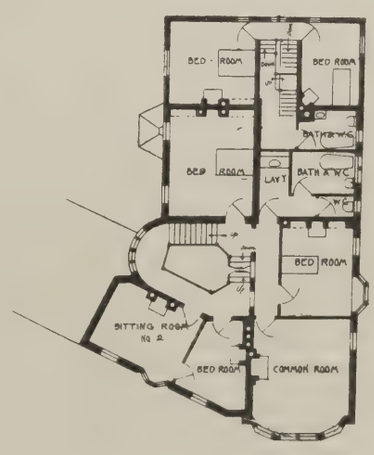
□ ..... WEIGHTMAN AND HADFIELD.—1846-50.
▨ ..... CHARLES HADFIELD.—1876-8.
■ ..... C. AND C.M. HADFIELD



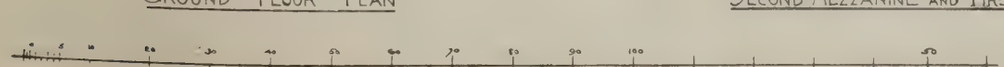
GROUND FLOOR PLAN



BLOCK PLAN



SECOND MEZZANINE AND FIRST FLOOR



(See Centre Plate.)

mercial instinct is present in a highly developed form have often succeeded, whilst their artistically (or morally) far more deserving brethren have failed. The formation of a thoroughly representative Board of Control to the authority of which all practising architects throughout the Kingdom should be subject would probably result in bringing about an improvement in some present-day methods of conducting an architect's practice. All duly authenticated complaints of unprofessional conduct could be inquired into and adjudicated upon by this Board of Control by which could also compile and issue to members of the profession a scale of fees governing the professional practice and charges of architects. Attention has so frequently been drawn to the careless manner in which, to the serious detriment of the profession at large, the scale of charges issued by the R.I.B.A. has been drafted, that it seems hopeless to expect that anything will be done by that body to remedy the evil. With clause (1) of this precious document staring him in the face how can an architect, by any strength of the imagination, reasonably contend that the drawings and documents relating to a building he has designed remain his own property on the completion of the work? Yet such is still the contention of many members of the profession, although those architects who have been present in courts of law when this ancient controversial question has been the subject of acrimonious dispute are better informed.

Our Plate.

The illustrations show the St. Marie's parish room and clergy house, erected at the corner of Norfolk Row and Norfolk Street, Sheffield. They form the completion of the grouping of buildings embodied in a general scheme laid down in the early forties, when St. Marie's Church was erected in the hey-day of the Gothic revival, the late Matthew Ellison Hadfield and his partner, John Gray Weightman, collaborating in the design. The church itself, with nave 100 feet by 25 feet, chancel 40 feet by 24 feet, width across aisles of 60 feet, and transept 83 feet internally, and tower and spire some 200 feet high, was opened in 1850. The Munster Memorial Chapel, Sacristies, and building at the junction of Norfolk Row and Norfolk Street, were designed by Mr. C. Hadfield, later, in 1876-8, while our illustrations are of recently-completed work, in which Mr. C. Hadfield and C. M. Hadfield have collaborated. The church and buildings stand on the site of an old mansion and grounds formerly the property of the Dukes of Norfolk, locally known as "The Lord's House," and replaced an older chapel erected 1815-16.

We are given to understand that Mr. Herbert Goodman, A.R.I.B.A., has removed to Dashwood House, 9, New Broad Street, E.C. The telephone numbers, however, remain as heretofore.

* * *

The statement that the ancient wooden houses in Collingwood Street, Blackfriars, were shortly to be demolished, has received a flat contradiction. The owners of the property state that no scheme for rebuilding exists, nor is there the slightest probability of demolition.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

Right of Way Question.

LEEDS.—S. G. B. writes: "The owner of property A desires to break out a gateway into the street, as shown on sketch (not reproduced). Has the adjoining owner B any legal right to object? All the property and streets are old."

The answer to this question entirely depends upon the ownership of the land you mark as "Street (not taken over by public)." If this land, on which the street exists, is B's property, he certainly has the right to object to A opening out the proposed gateway. Even though A probably has a right of way over this "street" from the other gateway (which apparently exists at the opposite end of his property), B can certainly object to the proposed enlargement of A's right, and may restrain the suggested work by applying for an injunction to prevent it.

F. S. I.

Proportionate Cost of Labour in Various Trades.

YORK.—W. R. writes: "The sum of £5,000 has been paid in labour for the erection of a number of workmen's bay-windowed semi-detached roughcast cottages with baths in sculleries. The proprietor bought his own material, and put foremen in charge of each trade, consisting of (1) bricklayer, plasterer, and tiler; (2) joiner; (3) plumber and gasfitter; (4) painter. Can you kindly say what should be (approximately) the proportion of each of the four trades' expenditure in labour?"

As the proprietor bought his own materials, it will perhaps best answer this question if I say that the proportions between the cost of materials and of labour in each of the trades mentioned should be somewhat as follows:—

	Labour.		Materials.
Bricklayer ...	1	to	3
Plasterer ...	2½	,,	1
Tiler	1	,,	4
Joiner	3	,,	2
Carpenter ...	1	,,	3
Plumber, etc....	1	,,	3
Painter ...	1	,,	1

F. S. I.

Calculating Loads of Floor.

LONDON, W.C. — P. W. writes: Kindly state where I may obtain information as to the allowances usually made in America for floor loads in high buildings, especially with regard to the proportions of total live loads for which each individual floor is calculated, which are assumed to be transmitted to the walls and stanchions of the lower floors and foundations.

The practice of various American architects and engineers in regard to proportioning columns to the loads is discussed fully in "Architectural Engineering," by J. K. Freitag (London: Chapman and Hall, Ltd.). The New York Building Law specifies that for buildings exceeding 5 storeys in height, the column loads shall be made up as follows: "For the roof and top floor, the full live loads shall be used; for each succeeding lower floor, it shall be permissible to reduce the live load by 5 per cent. until 50 per cent. of the live load is reached, when such reduced loads shall be used for all remaining floors." The reports of the R.I.B.A. on Steelwork and Reinforced Concrete also made recommendations on this point.

Acoustics: Concrete Floors.

BOURNVILLE.—A. C. H. B. W. writes: (1) Kindly say where I could obtain a book dealing fully with the erection of concert-halls and dining-halls, together with the necessary appurtenances, and, if possible, say where the buildings dealt with may be seen. Also please give information on acoustics relating to such buildings. (2) Would you kindly favour me with a detail of a concrete floor, showing joists in same to receive oak flooring, say, for a load of 2 cwts. per ft., the centres of the girders being longitudinally 15ft., horizontally 6ft. (3) Will you kindly explain the exact and true method of ascertaining the various thicknesses under varying spans of cement concrete floors without reinforcement, to carry varying loads?

(1) We know of none. There is no reliable book on the subject of acoustics. The solution of such problems is in the hands of very few experts.

(2) We do not undertake to design work for readers. Apply to one or two reinforced-concrete firms for estimates and designs.

(3) There is no exact and true method. We gave an approximate method in a former issue. Our correspondent evidently desires to study structural steelwork and reinforced concrete design, and we have recommended books in answer to other enquiries in this and recent issues.

Mathematics of Modern Building.

BRENTFORD.—SEEKER writes: Having in view the great amount of steel construction used in modern buildings, and the necessity for an architect to be able to calculate the stresses, strains, and sizes of girders, etc., how much Euclid, algebra, mechanics and trigonometry, is it necessary for one to know so as to work out any problem in this construction? Also, what text books would you recommend for study on this subject.

Euclid, algebra, and trigonometry are valuable more as a training to enable a student to grasp the principles of applied mechanics more readily, but a sufficient knowledge for an architect desirous of designing steelwork can be obtained by the study of mathematical books specially written for practical students, such as "Engineering Mathematics Simply Explained," by H. H. Harrison (London: Percival Marshall and Co., price 1s. 6d. nett.). As regards books on mechanics, we recommend "Elements of Mechanics," by Mansfield Merriman (London: Chapman and Hall, Ltd., price 4s.), and "Mechanics Applied to Engineering," by John Goodman (London: Longmans, Green and Co., price 9s. nett.). As for the study of steelwork design, we think you would do well to take a course in one of the correspondence schools, who supply clear, yet efficient books, to their students.

Books on Mechanics or Physics.

LONDON, W.C.—S. X. writes: What is the best book, covering the subject of Mechanics and Physics, as given in R.I.B.A. Prelim. Exam?

Lessons in "Elementary Physics," by Balfour Stewart (Macmillan and Co.), and "Mechanics for Beginners," by J. B. Lock (Macmillan).

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UNIVERSITY OF GEORGIA





THE RECTORY HOUSE, ST. MARIE'S CHURCH, SHEFFIELD. C. & C. M. HADFIELD, ARCHITECTS.

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OF THE
UNIVERSITY OF ILLINOIS

THE "IDEAL HOMES" EXHIBITION, LONDON.

Organised by "The Daily Mail."

The Lord Mayor, accompanied by the Sheriffs, attended in state to open this exhibition at Olympia, on Friday last. In his speech at the luncheon, Sir John Bell expressed his gratification at being associated with an enterprise which he was sure would prove beneficial to a large section of the population. It would justify its existence if it led people to study the question of increasing home comforts, for they wanted to get domesticity back to its old standard, to make home life really attractive. He also expressed his interest in the home industries section, in which Her Majesty the Queen has a stand for the Sandringham Technical School, and to the advantages of the apprenticeship system, to foster which the City Corporation had laboured for many years past.

Of the exhibition generally it may be said that, as presented, it is a disappointment. One would naturally expect to see a series of homes and rooms varying in cost and character, designed and arranged by experts, which would form models for the visitors, and possess a distinct and valuable educational influence. But the promoters, alas, do not seem to possess an ideal, and invite their patrons to select their own, out of a heterogeneous collection of exhibits that range from face powder to radishes, and boot polish to "camping-out" tents, which last seem to curiously traverse the whole idea of the exhibition. In fact, the exhibits which are in a home but not of it seem largely to predominate.

Architects will be mainly interested in the competitive designs for houses, costing £500, £750, and £1,000, assessed by Mr. E. L. Lutyens, which are shown in the gallery, the prize-winning designs being hung on the outside of Messrs. Waring's stand. There were, we understand, some hundreds of designs, submitted; but the competitors seem to have expended their ideas on picturesque exteriors, and it is a curious and informing fact that houses with the most satisfactory exteriors have poor plans, and *vice versa*. Comfort and convenience in the living and working arrangements have fared rather badly, and the housewife will lament how few competitors have considered her desire for cupboards. In the exterior treatments there is, on the whole, a praiseworthy desire for simplicity, and an avoidance of many chimney stacks and fussy gables.

Under the plan adopted in the competition, no one knows the names of the competitors until they declare themselves. Applicants were sent numbered counterfoils; one half they kept, the other half they stuck on their designs, without any name or address.

At the time of our visit but two of the competitors had declared themselves, Mr. Arnold Mitchell's card being attached to the first prize design for a £500 cottage, which wins the gold medal and £25, the prize offered for the best design in each of the three classes. Mr. Mitchell's design has a very compact square plan, having dining-room, drawing-room, small hall, kitchen, scullery, larder, fuel and servants' w.c., on the ground floor; three bedrooms, bath-room, and w.c. on the first floor; and three more bedrooms, cupboard, and lumber space on the top floor. This is extensive accommodation for £500, and it has been accomplished by putting the two upper floors in the roof; there being a large gable on each face running back to the one central chimney stack. The deep projecting eaves and the immense pitch of the roof give a top-heavy effect, which appears to be crushing the cottage into the earth. It is noteworthy that every bedroom has a fireplace, and, therefore, the ordinary and proper means of ventilation, which so many competitors have forgotten, but Mr. Mitchell has not quite escaped the common fault of putting the kitchen range opposite a window, so that people cooking are always in their own light; though the window, in this case, not being exactly opposite, gives a small amount of side light on the right side.

The first prize for a £750 cottage has been won by Mr. Frank Bromhead, with a simple and unpretentious design in the modern "English cottage" manner. This provides four bedrooms and bath-room on the upper floor, which is entirely in the roof, and dining-room, sitting or living-room, verandah, kitchen, and the usual offices on the ground floor. The kitchen range is badly placed as regards light, and the cottage has the tiny windows and forced ingle-nooks which are characteristic of its school. The first prize £1,000 cottage winner (No. 22, Motto Vil-God-I-Zal) has not disclosed his identity; and for the sake of his feelings we trust he was not by when we heard the public discoursing on his design. The remarks were merely trivial when they were not blatantly ignorant; but if it comes to deciding an ideal home on the popular vote one has tremors if the views we heard expressed are going to rule. The author of this design has taken a rectangular plan, and some idea of the Beaux-Arts planning. The arrangement of his kitchen with regard to the pantry-servery, dining-room, and front door is admirable, but his kitchen range is placed right opposite the light, and the servants' bedroom next the kitchen has no chimney. The arrangement of the inner hall with regard to the dining-room and drawing-room is also good, and the separation of the kitchen from the family part of the house and the inclusion of cupboards are notable features. The stairs cut very awkwardly across a window, however, and the corridor on the first floor is not well lighted. The bath-room is only just big enough to get into, and is flanked on either hand by the h.m.c. and w.c., each about 5ft. by 8ft. The principle of wall over wall and void over void can be carried too far. The exterior—on the ground floor—is a particularly pleasing Georgian treatment in brick, admirable up to the cornice; but from there the design goes to pieces. The bedrooms, all in the roof, are lighted by miserable little dormer windows, entirely out of scale and design with the lower part of the building, and the pitch of the roof is so low that the rooms must be horribly uncomfortable. Indeed, judging from the remarks we heard, bedrooms in the roof are not at all popular with the general public, however economical they may be.

Strolling about the main floor of the hall, where the exhibits relating to construction, decoration, heating, lighting, furnishing, etc., are arranged at the main entrance end, we came across a number of good things. At stall No. 156, BRATT, COLBRAN and CO. are showing the "Heaped Fire" grates, one in an ingle-nook setting of white and mahogany, with delicate blue-green tiles; also "Heaped Fire" grates in brass and German silver, and a number of mantels, one built entirely in tiles, others in pine and oak, and one in cast-iron with a wooden shelf. Next door, the GLOVER-LYON VENTILATION CO. have a billiard-room in full swing, with billiard and snooker tournaments twice daily, for which prizes are awarded. This apartment very ably demonstrates the capabilities of the system in getting rid of the smoke and heat, and keeping a pleasant atmosphere. The air, propelled by a fan, enters through the frieze on one side of the room, being tempenred when necessary by the firm's electric heating apparatus, and is removed through the frieze on the other side of the room by means of another fan. It need scarcely be added that the system, devised by a well-known authority on lung complaints, is planned on strictly scientific lines.

At stall No. 177, a four-roomed bungalow, THE SILICATE PAINT CO. are showing the ever-popular Duresco, used both for interior decoration and for exterior use as a preservative to the walls. The woodwork throughout is treated with the firm's Charlton enamel paint in white and green shades. At stall 179, DOULTON and CO., LTD., are showing three bath-rooms, varying in cost and luxury, suitable for different classes of ideal homes, and including various types of their sanitary apparatus. Two sections of this big stand are devoted to the Doulton art pottery, which must be seen, as description cannot convey the colour effects. There are also shown filters, work in glazed faience, and the Doulton Carrara ware. THE NEWELLITE GLASS TILE CO.'S opal tiles are a feature of one of the bath-rooms at stalls 160 and 161; and at stall 159 T. and R. BOOTE, LTD., have a fitted-up lavatory and bath-room to show a fine exhibit of tiles and faience ware; also floor tiles and mosaic, and richly-decorated tiles for friezes, panels, fire-places, and furniture. Next to them, stall 158, the "Drawwell" fire grate of CORKER and CO. will doubtless exert an influence on the public which its name suggests. Cleanliness is a feature of it, as all the ashes are collected in a fire-box in which they can be carried away. Our readers will recollect that it was one of the grates placed first in the tests of grates for the new Government offices. At stall 168, WEBBER'S PATENT WINDOWS are to be found, so designed that they can be opened either inwards or outwards for cleaning and ventilation; the fittings are not visible and their application costs little more than with ordinary windows. The fittings are applicable to casements, as well as sash windows. They are also exhibiting their patent burglar-proof window catch.

Hall's washable distemper in 70 shades is, of course, the principal feature of stall

180, SISSONS BROS. and CO., LTD. For their exhibit a section of a cottage, designed by Mr. T. Gordon Jackson, has been built up, containing a completely-furnished living-room, on which the artistic possibilities of the distemper, and the firm's other paint preparations, have been demonstrated. At stall 193, BENHAM and SONS, LTD., exhibit the Wigmore Kitchener and Independent "Wigmore" hot-water system; the former is fitted with vertical roasting fire and smoke-consuming cheeks. It is economical in fuel and a good cooker. The hot-water system provides a constant supply of hot water day and night at very low cost. Stall 197, CANDY and CO., LTD., has a handsome fumed oak inglenook, designed by Mr. Maberly Smith, as a setting to the "Devon" fire (Design A in catalogue 3), and six other varieties of the "Devon" fire in glazed briquette, faience work and wrought hand-made metal work. One design, at the side of the stand, with soft-green glazed briquette surround, had the grate recessed into the breast, so that the straight kerb came in line with the jambs. This elimination of the projecting hearth and kerb seems a happy development in the "Ideal Home." The "Devon," by the way, was also awarded a first place in the tests of grates for the new Government offices. TREDEGAR and CO. show at stall 198 a number of the wooden electric fittings in which the firm specialise. Wooden fittings are not only light, clean, and a good insulator against stray current, but it is possible to design them in harmony with any style of decoration. By their use one is able to avoid the glare of bright metal in a delicate colour scheme. These fittings are shown in every form, standards, brackets, pendants, etc. The firm also undertakes complete installations of electric light in country houses.

One of the features of this part of the exhibition, and, indeed, of the exhibition as a whole, are the number of firms showing apparatus for the new petrol-air gas, by which a mixture of 2 per cent. petrol vapour with 98 per cent of air, produces a brilliant light when burnt with an incandescent mantle. The gas is non-explosive, non-poisonous, and can be also used for both heating and cooking. The hall was quite brilliant with this light at various stalls. The mixing is effected by a small, low-power machine, usually a hot-air engine, but various motive powers are now utilised. The apparatus has the additional advantage of being extremely small. At stall 220, STRODE and CO., well known as pioneers in every form of illuminant, are showing their Aerogen machines, driven by weights, hot-air engine or water motor. They also show a selection of artistic gas fittings for gas, electric light and acetylene. The new model "DE LAITTE" gas producing machine, at stall 215, may also be driven by water, electric or any other power, or by a suspended weight. The system has been used for towns and villages, as well as single and isolated dwellings. At stall 202 the "LITZ" SAFETY GAS CO.'S "oxy-petrol" apparatus is to be seen. With their machine it is claimed that 1,200 cub. ft. of gas can be made for 1s., the proportions being 1½ per cent. petrol vapour and 98½ air. The cost of producing a light of 1,000 candles for 1 hour or 100 candles for 10 hours, works out at 1½d., as against 2½d. for coal gas, 1s. 2d. for electric incandescent, and 1s. 3d. for acetylene. The "Litz" firm distribute a useful little pamphlet, containing numerous testimonials to visitors who call at their stand. In the "LOCO" VAPOUR-GAS SYSTEM, stall 225, the petrol tank is placed outside the apparatus building, to avoid all possible danger, and the gas is recommended for lighting, heating and cooking, also for singeing cloth, gassing yarn, etc. Economy is claimed in first and working costs, and purity in the light and gas. Cooking and heating apparatus are shown by all the firms.



At stall 221, the LONDON WARMING AND VENTILATING CO., LTD., are showing numerous examples of their anthracite stoves, in the manufacture of which they are pioneers. They show the "Senior" open fire, burning anthracite, and also numerous closed stoves. These stoves are now very well known; but the general public will now have a very good opportunity of seeing and testing their advantages.

At stall 223 GEORGE WOOLLISCROFT and SON, LTD., are showing "Down-draught" fires, in appearance like a well or sunk fire, constructed in fire-clay, with a narrow below the coal level, which induces a powerful draught to enable the fire to burn anthracite. The firm are also showing their "Raglan" mantel, and examples of glazed floor and roof tiles, for the manufacture of which they are well known. Before finishing these notes on the exhibition, to which we further refer next week, mention should be made of the fine exhibit by DAVIS, BENNETT, AND CO., at Stalls 160, 161. Here may be seen four model bath-rooms, ranging from one suitable to a labourer's cottage, to one designed for a palace, a model kitchen, all kinds of sanitary apparatus and fittings, ozonators for discharging artificial ozone in houses, and incandescent gas lighting; but the feature of the exhibit is the bathroom with onyx fittings, which will doubtless draw all visitors to a prolonged contemplation of its beauties.

THE A.A. BROWN BOOK.

The Architectural Association's "Brown Book" for session 1908-9, which has just been received, affords a complete conspectus of the varied activities of the Association, and is to the junior organisation what the Kalendar is to the R.I.B.A. We quote particulars of the interesting list of meetings: October 9th, annual general meeting, president's address (Mr. Walter Cave, F.R.I.B.A.) and distribution of prizes; October 23rd, "Michael Angelo as an Architect," by Professor Beresford Pite, F.R.I.B.A.; November 6th, "The Origin and Sense of Taste in Art," by Mr. Felix Clay; November 20th, "The Church of Santa Sophia," by Mr. J. B. Fulton, A.R.I.B.A.; December 4th, "Early Studies and Future Practice," by Mr. William Dunn, F.R.I.B.A.; January 8th, 1909, "Building Materials," by Mr. H. D. Searles-Wood, F.R.I.B.A.; January 22nd, "Schools," by Mr. H. T. Buckland; February 5th, "Reinforced Concrete," by Mr. John H. Markham, A.R.I.B.A.; February 19th, "The Press and Architecture," by Mr. A. Needham Wilson, A.R.I.B.A.; March 19th, "A Lesson from the Past," by Mr. J. A. Marshall. These meetings are held at No. 18, Tufton Street, Westminster, at 7.30 p.m. The subjects for March 5th and April 30th are not yet announced.

CONTRACTORS' SECTION
(MONTHLY.)

FRENCH SCAFFOLDING.

Some Impressions, and a Comparison with British Methods.

By A. G. H. Thatcher.

The general principles adopted by the French builders in erecting scaffolding are, to a great extent, allied to those adopted in this country, using this word to embrace Scotland. For it is somewhat curious that the Scottish builders have in use types of scaffolding but little known in England, which approximate closely to those of France. As an instance, the Scottish gabbard may be mentioned. This has its double in a system commonly seen across the Channel, with the difference that while there the standards are of whole timbers, in the north they are built up of scantlings. The Scottish derrick does not seem to be known, or, at any rate, used by our neighbours; in its place, a single tower is built, again of whole timbers. Of course, it cannot carry a crane, and, therefore, its use is more restricted. Pole scaffolding, as may be expected, has great points of similarity, the differences (to be considered later) being chiefly in matters of detail. Minor appliances in every day use are of similar character to ours, and perform similar duties, such differences as may be seen being more in their construction than otherwise.

To deal with the framed construction first. Fig. 1 is produced from a photograph of a portion of the west front of Rouen Cathedral, which is at present undergoing extensive repair. Whole timbers are used for all standards; the transoms and braces are of 6in. by 2in. scantling. Figures 2 and 3 show a single bay in detail. The standards cannot, of course, be obtained in a single piece, and in this instance the connections were made by halving and bolting; although, as will be seen later, this procedure is not always considered necessary. Bracing is fixed both ways, and shoring from the outward side is put up to keep the structure steady. Bolts are not used for all connections, the smaller timbers being simply nailed in their place. Certainly, the nail, or, more properly, the spike, is a powerful one, being used up to 10in. in length, but to a Scotch scaffolder, used to bolts for all these purposes, there certainly seems room for improvement.

As before noted, the use of this type of scaffolding approximates to the use of the Scottish gabbard, and similar means are taken in each case to enable the mechanic to reach his work where a recess occurs in the building. Fig. 4 shows the arrangement in the gabbard, the needle continuing through the standard to the required distance, and Fig. 5 shows the French method, with the transoms fixed on the outside as well as the inside of the standard, and continued in a like manner. The system of fixing the transoms in pairs undoubtedly minimises the risk of failure that would occur if the spikes drew from overloading or similar cause.

Although squared timbers are generally used for the standards, it is not uncommon for unconverted logs to be put to the same purpose. So far as actual strength is a requirement, there can be no objection to this, but the extra difficulties it presents to anything approaching accurate framing make it an undesirable procedure.

The timber towers used for hoisting material seem to form the easiest means possessed by the French builder for carrying out this work. Fig. 6 is an illustration of one put up for the erection of a building near the Place d'Italie, Paris. One of the first things that strike an observer in Paris is the very free use made by builders of the pavements, and even of the roads, if necessary, for any purpose, and this photograph shows no exception to what appears to be the rule. To erect one of these towers, a hole is first dug about 4ft. deep for the insertion of each leg. Balks are chosen for these if the weights are considerable, otherwise poles serve the purpose. It happens, of course, that greater height is sometimes needed than can be gained with one piece, but this is allowed to present no difficulties. The length is laid upon the ground, and an extra piece is butt-ended to it. Two pieces of wood sufficient in length to give a considerable lap are nailed on, as shown on Fig. 7, and up the arrangement goes. Nothing more simple.

To properly appreciate the raising of these legs to a vertical position, one



FIG. 1. SCAFFOLDING, WEST FRONT, ROUEN CATHEDRAL.



FIG. 11. SCAFFOLDING IN PARIS.

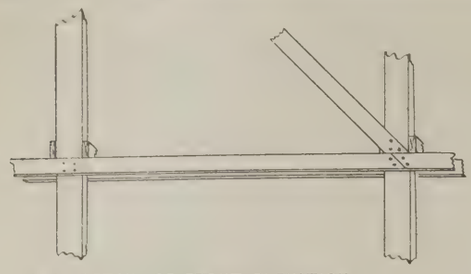


FIG. 2. DETAIL OF FRONT ELEVATION.

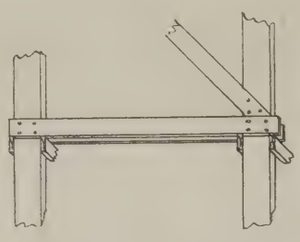


FIG. 3. DETAIL OF END ELEVATION.

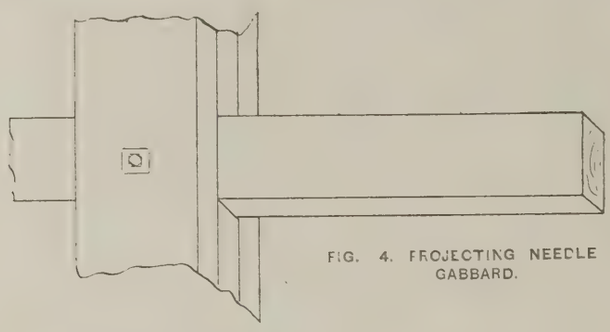


FIG. 4. PROJECTING NEEDLE IN GABBARD.

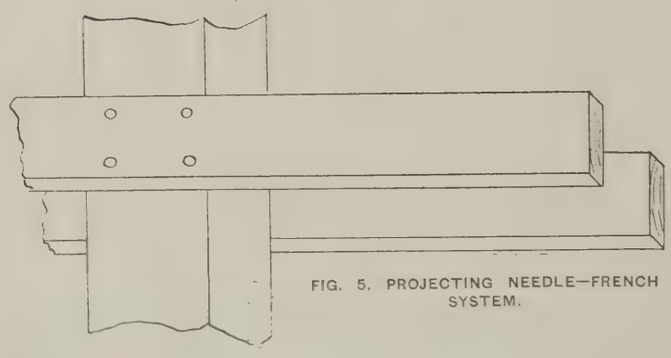


FIG. 5. PROJECTING NEEDLE—FRENCH SYSTEM.

must possess a sense of humour. The hole having been dug, a derrick is needed which requires a detailed description. Fig. 8 gives a general view of one. They are made up to 30ft. in height, and are fitted at the top with a pulley wheel. The sides are tied together, with rungs placed about 2ft. apart. These are made removable, so that the whole arrangement can be taken apart. Where the lowest rung might be fixed, a capstan drum is placed. From the drum a fall is taken over the pulley wheel and fastened off to the timber leg, catching it at about its centre, so that the lower and butt end is slightly the heavier. Everything being now prepared, the scaffolder, who, if not a man of importance, certainly should be a man of weight, climbs the rungs above the drum, into which he inserts a capstan bar about 7ft. in length. Clinging firmly to the extreme end of this, he literally throws himself backwards, and after frantic struggles ultimately reaches the ground, having by this means given the drum a quarter revolution (Fig. 9). His companion immediately follows his example, the placing of the second bar in the drum effectually locking it, and preventing the fall running down, should the first man release his weight. The sight of a stalwart Frenchman so engaged makes one appreciate the value of athletic exercises. It should be seen; a verbal description does not do the performance justice.

The leg, on arriving at a sufficient height to swing clear, is manipulated so that the butt end drops into the hole. This is then rapidly filled in, and the performance repeated with the other legs. They stand square on plan, and are about 10ft. apart. Transoms and braces are nailed into place, use being made of a pulley fixed at the top of one of the legs to raise these as required. At the extreme height extra timbers are laid across the centres of the transoms, and a pulley is fixed to this for raising the material. On one of the legs cleats are nailed. These can be seen on Fig. 6, and are for climbing purposes, should this be necessary at any time after the structure is erected. The winch used for lifting is fixed in a vertical position on the tower itself. Fig. 10 is an illustration of how this is done, arrangements being made in this case for the application of power.

These towers are commonly seen in use with pole scaffolding. This method of scaffolding is of an altogether lighter type than seen in this country, except for our smaller classes of buildings. The timbers are, as a whole, of an inferior standard; the quality of straightness, for instance, is certainly not considered a necessity.

The French buildings being frequently of stone, it would not be expected, from our point of view, at least, that the single-pole standard would be so regularly used. Yet such is the case, the puncheon which we use with masons' scaffolds being apparently unknown. When the height demands an additional pole, it is simply lashed to that first erected, and entire dependence is placed upon the lashing for a proper connection. The English scaffolder, with a better appreciation of the extent to which cordage can be trusted, makes it a practice, where a puncheon is not needed, to stand the rising standard upon a putlog resting on the ledgers, and there can be no doubt his method is the better one. The ledgers again give the impression of being lashed in a most haphazard fashion. A simple lap which does not often cross two standards, with no bearer beneath, is the usual means of increasing length. The putlogs are short ends of poles, birch not being in favour for this purpose. Occasionally scantlings are to be found, this being a practice sometimes seen in this country. There is an element of safety in the use of pole-ends, as they have to be lashed in

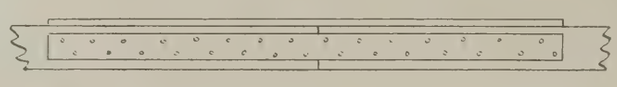


FIG. 7.



Section.



FIG. 8.

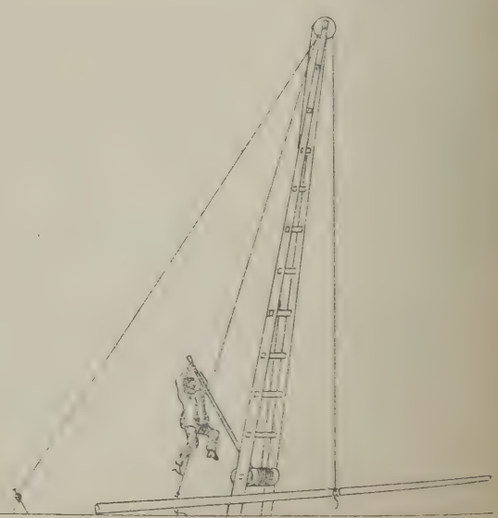


FIG. 9.



FIG. 6. TIMBER TOWER SCAFFOLD.

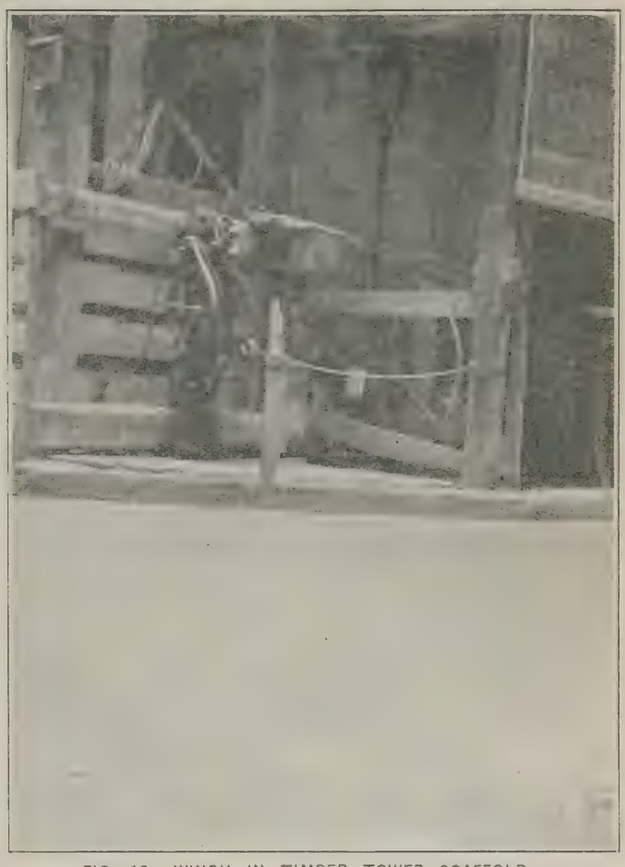


FIG. 10, WINCH IN TIMBER TOWER SCAFFOLD.

position owing to their tendency to roll, and this undoubtedly stiffens the erection. Being of such irregular growth, however, the sheeting naturally lies somewhat loose.

(*To be concluded.*)

Contractors' Notes.

A correspondent in the "Hereford Times" is asking why the builders of Hereford, and those who contemplate building, do not build houses suitable to the pockets of many of the residents of Hereford. Says the writer:—"Go where you like, you cannot get a decent house unless you pay a rent quite unsuitable to the small wage-earner. I myself have made inquiries about several lots of new houses recently built, and am told that they are £17 to £18 rent, which, with the rates, mean £21 to £22, or over 8s. per week. What we want in Hereford are the following two types of houses: Those to let at £17 to £18 (clear), and the others suitable to the working-man at £12 to £13 per year, or 4s. 6d. to 5s. a week. I have myself been asked by eight different people this week, four of them new-comers to Hereford, if I could tell them of decent houses at a decent rent, and nothing of the kind is to be got. As you know, the wages in Hereford are very low." Perhaps the builders of Hereford—"not to mention those who contemplate building"—will kindly oblige.

A novel case under the Workmen's Compensation Act came before his Honour Judge Thomas, sitting at the Southport County Court, at the end of last month. It concerned the registration of an agreement entered into by Messrs. A. K. Irving and Sons, contractors, of Southport, and Edward Herkes, a wood machinist, employed by the firm, who had his right hand badly maimed in a moulding machine. The latter was earning 37s. 3d. a week at the time of the accident, and the firm and their insurance company paid half his wages while under medical treatment. In January he made a claim for a lump sum of £150 in settlement; and received from the firm and the insurance company an offer of £75, to which he demurred, and the offer was then reduced to £65, the applicant being told that the longer he delayed the less he would get. Under this duress, and in ignorance of his rights, he agreed to accept the sum; but the Registrar of the Court refused to register the agreement on the ground of inadequacy; and being permanently partially-incapacitated, as testified by the judge's medical referee, a sum of £417 would be required to secure the weekly allowance to which he might be entitled. His Honour said under the circumstances he must hold that the allowance was inadequate, and, therefore, he could not register the agreement. With regard to the insurance company, he must say that the agreement was not properly and fairly obtained by them. It would now be for the workman to commence an action if he and his former employers could not come to an amicable settlement. Costs were allowed on B scale. The moral of this would seem to be that contractors will have to be careful in their dealings with the insurance companies, or they may be let in for a certain amount of moral obloquy which they do not deserve, since they have insured for the settlement of claims upon a just and equitable basis.

The "Northern Echo," Darlington, commenting on a slight increase in building activity at Newcastle, states that house building in that locality is still very slack, a condition that it attributes to "the predilection of the jerry builder for building streets of flats from which people are eager to escape when anything better comes in their way." Our contemporary goes on to say that though in several places in the Newcastle district "there is half a street at a time unlet," the builder "who is busy a few streets away is engaged in putting up the identical type which his own eyes can convince him are a drug on the market. That there is an opening for a more intelligent and healthy method of building is quite apparent in the rush for new self-contained little houses, no matter how small they may be. But the builder does not seem to read the signs of the times at all. He persists in erecting the same type of dwelling his father built before him, and does not vary one iota from the design or the ugliness of those his predecessors put up." The northern speculative builder might take a leaf out of the book of some of his London confreres, and enlist the services of an architect—not merely an architect, but a good architect. A "Willett" house is a recommendation in an estate agent's advertisement; the Bedford Park Estate has been a very satisfactory essay in speculative work; and for a cheaper class of dwelling, the streets designed by Mr. Walter Cave, lying between Little Road and North End Road, Fulham, are well worth a builder's inspection.

Matters of Opinion.

No. 1 (continued).—The Increased Employment of Specialist Contractors—Architects' Opinions.

Though we are informed, on the best authority, that contractors feel aggrieved over the increasing employment of specialists, particularly in the case of joinery work, our attempt last month to get them to voice that feeling was hardly so successful as we could have wished. The opinions we then gave from three important firms have encouraged us to carry the matter further, and it having been suggested that opinions from prominent architects would be helpful in forming an opinion on the merits of the case, we sent a letter to a number of well-known architects practising on the Southern English system. As is, of course, well known, buildings in the North of England and in Scotland are usually erected by a number of contractors, each specialising in a different trade; and the difficulties to which we have drawn attention do not in such case obtain. The letter was as follows:—

"During the last few years the practice of employing specialist contractors, especially in the finer and finishing trades, has greatly increased. We have received numerous complaints from contractors that, although they have fully-equipped joinery workshops, they seldom get a chance of executing the woodwork on buildings for which they are general contractors; and that with the numerous obligations imposed upon them, and severe competition, their position, in many ways, is becoming intolerable. In one recent contract brought to our notice, close on 40 per cent. of the amount consisted of p.c. sums for specialist firms, over whose action the general contractor had no control whatever, but for whose work he had to accept full responsibility. If the joinery, for instance, warped or shrunk out of the true to the extent of one-eighth of an inch, he had to reinstate it. Grave difficulties have occurred, also, in connection with the Workmen's Compensation Act.

"Contractors are, therefore, prepared to press for some alterations in the National form of contract, but it has been suggested that if some of the leading architects would give their reasons for preferring to employ specialists for much of the work in their buildings it would help to a better understanding of the matter, and possibly suggest a way out of the difficulty."

In answer to this we have received a number of replies from well-known architects as given below:—

MR. F. DARE BRYAN, F.R.I.B.A., Bristol.

Specialist contractors can be divided into at least two divisions; in the first I place those whose work is of such a nature that it would be difficult or impossible for an ordinary builder to execute it, and it would be detrimental to success that the selection and control of these workers should be left to the general contractor. On the other hand, special firms for such things as ordinary wood block flooring, plastering and joinery, which may be placed in the second division, are not necessary in the case of reputable firms, but with the class of builder who often responds to public advertisement it is advisable to protect the building owners by at least retaining the right to employ specialists. The desirability also of limiting competition amongst specialists as regards price is also apparent, and this would not be so conveniently obtained if the sub-contracts were concluded by the general contractor. As regards the responsibility of the general contractor for specialist work, this certainly ought to be strictly limited, and in many cases entirely abrogated; but to those who know the large extent to which contractors sublet even such ordinary work as I have placed in the second division, the agitation on their part seems somewhat unnecessary. Where architects are at liberty to invite well-tried men, they would, I am sure, be only too willing to entrust them, not only with the joinery, but all the work except that which I place in the first division. A multiplicity of contractors does not lessen an architect's labours, and when builders can convince the profession that they are thoroughly competent to do work of a special character, they will doubtless be entrusted with it. The system of specialists is, however, in my opinion, a necessity of the times, and the policy of the builders should be to regulate it, not to oppose it, and in this direction I think that they may rely upon the co-operation of architects.

MR. R. A. BRIGGS, F.R.I.B.A., London.

It is quite true that the practice of employing specialist contractors has greatly increased. It is a phase of the times. As fresh forms of construction and finishings are invented or adopted, so must the the number of specialist contractors increase. There must, in my opinion, be specialist contractors for steelwork, and in large works it is usual, I think, to have specialist contractors for the heating, sanitary work, carving, marble work, etc. I do not, however, see the necessity for employing a specialist contractor for the joinery and woodwork. The case you mention seems to me to be very unfair, viz., that the *general* contractor should be responsible for the work of the *specialist* contractor. I have never before heard of such a case, and am surprised that any responsible contractor should have agreed to such a condition. Where specialist contractors are employed, separate certificates should be given to them direct.

MR. WALTER CAVE, F.R.I.B.A., President Architectural Association.

I think that architects should not introduce specialists into their buildings unless they are convinced that the work required is beyond the power of the general contractor employed. If it becomes necessary, as in many cases of decoration, to employ a specialist, he should be under a separate contract, and the general contractor relieved of all responsibility. Special attention should be paid to the points of overlapping in the work. The tendency is towards greater luxury; life is becoming more complex; our necessities are increasing, and different standards are being established. The inevitable result is the appearance of the specialist in all professions and trades. He has to be reckoned with as the natural outcome of the movement of events, and I believe that it is only a matter of time before he overwhelms what we now know as the "General Contractor."

MR. ALFRED W. S. CROSS, M.A., F.R.I.B.A., London.

That the increasing tendency of architects to insert in the building contracts under their control many provisional sums to cover the cost of work to be executed by sub-contractors or specialists nominated by themselves often creates a situation that is exceedingly detrimental to the financial interests of the general contractor, may be at once conceded. But the specific complaints of certain contractors to which you refer, to the effect that although they possess fully-equipped joinery workshops, they seldom get a chance of executing the woodwork on buildings for which they are the general contractors, are of a somewhat startling nature, as I had no idea that this, in my opinion, most unfair application of the system of sub-contracting was prevalent, and certainly it ought not to be allowed to continue. With regard to the other grievances you mention, surely the general contractor's *responsibility* for defective workmanship or materials supplied by the sub-contractors, or his liability (arising from the employment of the sub-contractor), under the Workmen's Compensation Act, is fully covered by Clause 20 of the Form of Agreement and Schedule of Conditions for Building Contracts issued under the sanction of the R.I.B.A. in agreement with the Institute of Builders and the National Federation of Building Trade Employers? Broadly speaking, I think that no work which is included in the contract ought to be taken out of the general contractor's hands, provided he is fully competent to execute it, except when reinforced concrete or any other comparatively novel method of building is adopted, in which case until its use has become more general and its inherent properties better understood than they are at present, I think that most architects would be extremely ill-advised *not* to employ a specialist. I must also plead guilty to being sufficiently conservative in my views to prefer, as a general rule, to see constructional steelwork fixed by constructional engineers. Contractors should not lose sight of the fact that provisional sums are sometimes included (by the architect) in the specification, merely as a protective measure in case a pending contract should be secured by a builder whose reputation is not of the best.

MR. C. E. MALLOWS, F.R.I.B.A., London.

My custom is to employ the general contractor for a building to also undertake the woodwork, except in special cases where it is obvious a contractor does not possess the facilities necessary for the proper execution of it. In such cases, as doubtless you are aware, the general contractor applies to the specialist, and this custom has doubtless given rise to the state of affairs of which you say complaint is being made. The reason, therefore, which induces me to go to the specialist direct is sufficiently obvious.

MR. WILLIAM A. PITE, F.R.I.B.A., London.

I am fully aware that firms of contractors of position and eminence among their less prominent colleagues complain, and not without reason, that work which should reach them goes to specialist firms.

One can naturally understand the irritation that this must cause; and from the contractor's point of view the subject of specialists is an ever-vernal one.

It is difficult to answer the question briefly, which is one better suited, perhaps, for friendly conference, as there is something to say on both sides, from the varying conditions which govern any particular case in point.

Four trades may be instanced which

suggest some considerations in constructional steelwork. If the proposal is for steel-framing, it is reasonable to assume that an approximate weight as a provisional item can be included in the estimate which would enable the contractor to negotiate to his own advantage, and that of his employer, in a way that the selection of an excessive patent prohibits.

Generally, wherever possible, the whole of the joinery, and the hard woods in particular, can be obtained with better material and workmanship from a contractor possessed of fully-equipped shops, at a lower rate, probably, than from a specialist. Plain plastering, naturally, should come to the contractor; but the case is different with decorative plaster work, which is now of such a nature that it is a growing custom to employ a craftsman for the purpose. I am sure that all who have the art of architecture at heart, and among these we gladly recognise many eminent builders, the association of brilliant craftsmen with the architect is a matter for sincere congratulation. Sanitary plumbing, however, stands by itself, and registration has brought perfection to the trade and safety to a trustful public. Contractors are quite capable of providing any sanitary plumbing work. Finally, I would say that, speaking generally, that specialists should only be engaged where particular considerations call for such employment, and that, unfortunately, much desirable work is now diverted from the contractor's province, without reason, to some other source.

I am convinced, however, that no manner of good can result from seeking to enforce such a very desirable condition of affairs upon the National Contract.

MR. JOHN W. SIMPSON, Vice-Pres. R.I.B.A., London.

I have not heard of this complaint before, and do not understand it. If a contractor accepts responsibility for work, he does not personally control, it is presumably because he takes a profit upon it, and covers the risk by his own arrangements with the sub-contractor. In the case of patent systems of steel construction, marble or faience-ware, fibrous plaster, engineering, and many other matters, their inclusion in the general contract under the form of P.C. sums is to the advantage of the general contractor; at any rate, I never heard of one who desired to have them omitted. It should be remembered that the builder in London and the south is in most cases a financier farming various trades, and taking certain risks in the hope of profit. The contractor of the Midlands and the North—a master mason, joiner, or what-not—undertaking his own trade work and no other, is precisely what you refer to as a specialist contractor; and if architects distribute the trades direct to the workers, instead of employing an agent, it is doubtless because they find the work thus done better or cheaper, or both. As regards the subject of woodwork, which you specially mention, my rule is to entrust it to the general contractor, and he has nearly always served me well.

MR. ARTHUR H. RYAN TENISON, F.R.I.B.A., London.

I understand that there is a growing feeling of discontent amongst contractors, arising out of architects specifying specialist firms to execute the joinery in their works. From my own point of view, I consider that architects are only too ready to leave the making of joinery with the contractor when he can conclusively prove that he has the shops and plant for carrying out the work in a high-class and satisfactory manner. I always adopt this course myself. I venture to say that where an architect is permitted to select or appoint the contractor, sub-letting, whether by direct order of the architect or no, is never necessary. Why the necessity for the architect naming a specialist firm has arisen must be obvious to all concerned, viz., where open tendering or tendering by firms unknown to the architect takes place. I am not aware of any case where a contractor has omitted to add his 10 per cent. or 15 per cent. commission upon specialists' prices, and this being so, and the fact that no specialist to my knowledge has ever refused to make good his own work at his own expense if called upon to do so, I cannot say that I am convinced of a grievance existing.

MR. PERCY SCOTT WORTHINGTON, M.A. (Oxon), F.R.I.B.A., Manchester.

The custom to which you refer has grown up owing to the fact that so many builders are not in a position to carry out work of a special character. Personally, I prefer good joiners' to cabinet-makers' work, and act on this principle. But the experience is sometimes a bitter one. Good timber is increasingly difficult to get; most builders' businesses are too largely merely financial concerns, and a turnover is more regarded than a proper stock of seasoned timber. With regard to carving, ornamental plaster, lead and other work, these are obviously outside the scope of a general contractor's business. But I think that the case may be met by general contract clauses by which the contractor is to be responsible for special work, and for claims under the Compensation Acts, in all cases where an item for contractor's profit is provided for in the quantities after an included sum. If the contractor does not price these items, in anxiety to cut his estimate, that is his own fault. It seems only fair to a contractor to communicate to him, either in the quantities or as the occasion arises, the names of firms proposed as sub-contractors for special work.

Holborn Town Hall has been bought in the interests of the Primitive Methodist Church.

With reference to a paragraph in p. 262 of last week's issue, in which it was stated that a large London contract for plastering and reinforced concrete work had been secured by a well-known Liverpool firm of plasterers, we are now at liberty to say that the contract in question is that for the Selfridge stores in Oxford Street, W., which are being built at a cost of about £250,000. The plastering work and the construction of the reinforced concrete staircases at these mammoth stores have been entrusted to Messrs. Henry Johnson and Sons, plasterers, slaters, and tilers, of Primrose Hill, Fontenoy Street, Liverpool, who have also secured contracts on the following works in progress:—Tower Buildings, Bibby's Buildings, and Blackler's Emporium, Liverpool; King Edward VII.'s College, Lytham, near Blackpool; the new town hall, Lancaster; and others in London.

Proposed New Works.

Aberdeen.—The Town Council has sanctioned plans for the following works: Two dwelling houses on the west side of Polmuir Road, for Mr. A. G. D. M'Killigin; Messrs. Sutherland and George, architects. Motor car shed, at the rear of No. 1, West Craibstone Street, for Dr. James D. Wyness; Mr. G. Bennett Mitchell, architect. Four dwelling-houses on the west side of Albury Road, for Mr. Thomas Reid, shoemaker; Messrs. D. and J. R. M'Millan, architects. Addition to granite works on the east side of Hardgate, for Mr. William Taggart, granite merchant; Mr. Duncan Hodge, architect. Five dwelling-houses on the west side of Holburn Street, for Mr. Joseph Shirras, builder.

Banks, Lancs.—A meeting has been held to consider the erection of a public reading-room.

Beckenham, Kent.—The U.D. Council have passed plans for five houses, Belmont Road, A. and R. Westerman; four houses, Marlow Road, J. Hughes; additions, 43, Cator Road, Jones and Andrews; motor house, Court Downs Road, Copeland and Son; one house, Stanley Avenue, J. Andrews; three houses, Blandford Road, Golder and Co.; one house, Stanley Avenue, D. W. Morris; additions to Heathfield, Scott's Lane, M. Zimmerman; six houses, Clock House Road, F. D. Rodda.

Belfast.—The Markets Committee of the Corporation have strongly recommended the Council to proceed at once with the erection of a new abattoir on the Stewart Street site, at an estimated cost of £32,118. The work was sanctioned eight years ago by the Local Government Board, who have written complaining of the delay.

Cardiff.—The Local Government Board has written to the Board of Guardians authorising alterations to the workhouse laundry to the extent of £2,608, and extensions at Ely Homes Hospital at a cost of £850.

Chelmsford.—The Town Council have passed plans for the following:—Three cottages, Burgess Well Road, for Mr. James I. Taylor; four cottages and shed, Church Street, Moulsham, for Mr. G. T. Bedingfield; two detached houses, Rainsford Road, for Mr. F. Cracknell; offices, Duke Street, for the Essex Education Committee; house and stables, Primrose Hill, for Mr. Arthur Cowler; and two pairs of flats, Trinity Road, for Mr. William Rosser.

Chippenham, Wilts. — The District Council has approved plans of alterations to a house at Kingston Langley for Earl Cowper, of alteration to "The Cleeve," Corsham, for Mr. F. J. Chapman, and of two new houses on the Ladyfield Estate for Mr. Rogers.

Doncaster.—The plans for rebuilding the Brown Cow Hotel in Frenchgate have been passed.

Eltham.—A new branch is to be erected in the High Street for the London and South-Western Banking Co., but progress is at present stopped, pending negotiations by the Woolwich Borough Council to set back the proposed frontage line in connection with a widening improvement.

Fosdyke, Lincs.—The Holland County Council have approved the plans of Mr. Healey Johnson, Boston, for a new bridge here over the River Welland.

Handsworth.—The District Council have applied to the Local Government

Board for sanction to borrow £3,100 for street improvements and the construction of a new street from Rookery Road to Friary Road. An enquiry will be held.

Hornsey, Middlesex.—The Borough Council has approved the following plans: Two dwelling-houses in Colney Hatch Lane, Muswell Hill, Mr. Edmund Cude, Archway Road, Highgate; shop in Campsbourne Road, Hornsey, Mr. A. T. Hill; additions to No. 28, Grand Avenue, Muswell Hill, Mr. W. J. Collins; alterations in and additions to No. 10, Victoria Parade, Muswell Hill, Mr. D. A. Whitehead; and amended plans for seventeen dwelling-houses in Southwood Lawn Road, Highgate, by Mr. A. G. Shearing, Kentish Town.

Hull.—The Somerset House property, Anlaby Road and Walton Street, has been purchased on behalf of the East Riding Territorial Association for their new quarters. Messrs. Wellsted and Dosser, and Mr. Arthur Easton have been requested to prepare preliminary sketches for the necessary buildings on this property, and also plans and estimates for the other quarters at Park Street, the work being divided between the two firms of architects.

Hull.—The Corporation has passed plans for the following:—J. E. Mallison (amended), one house and shop, Newland; W. Finch (amended), six houses, Westminster Avenue; G. B. Cheeseman (amended), seven houses, Reynoldson Street; J. Wood, four houses, Durham Street; G. T. Spruit, seven houses, Ventnor and Exmouth Streets; Garden Village, Ltd., eight houses, Garden Village; ditto; F. Allon, 12 houses, Blaydes Street; F. J. Watts, nine houses and two shops, Hessle Road; G. Wardell, two houses, Victoria Avenue; J. T. Taylor, eight houses, Whitworth Street and Southcoates Avenue; G. T. Spruit, two houses, Inglemire Lane; A. Whincop, 16 houses, Essex Street: Mrs. L. Charles, two houses, Aberdeen Street; Garden Village, Ltd., 34 houses, Garden Village, and 24 houses, Garden Village; J. T. Taylor, three houses, Holderness Road; W. Finch, eight houses, East Park Avenue; Garden Village, Ltd., one house, Garden Village; Mrs. P. Smith, 14 houses, Devon Street; J. H. Osborne, 14 houses, new street, Anlaby Road; J. E. Wright, eight houses, Marlborough Avenue; H. Hornsey, 16 houses, Estcourt Street; Trustees of Mission, mission, Great Thornton Street; British Petroleum Company, stores, Dairycoates; Yorkshire Baptist Association, chapel, Holderness Road; Blundell, Spence, and Co., methylating works, Bankside; Wray, Sanderson, and Co., offices, Morley Street; Trustees, Pearson Institute, extensions, Cleveland Street; B. B. Mason and Co., reconstruction of premises, Lowgate; G. Taylor, shop, Jamesson Street; Reckitt and Sons, Ltd., extensions, Dansom Lane; Hull Brewery Company, Ltd., Duke of York, Garden Street; Hull General Builders, Ltd., office, etc., Lockwood Street; Trustees, Primitive Methodist Church, class rooms, Fountain Road; Trustees, Hull Royal Infirmary, additions, Mill Street; A. Scott, workshops, Maxwell Street.

Ilford.—The surveyor to the U.D. Council has prepared plans and estimate for a dust-destructor. Application has been made to the Local Government Board for loans of £8,115 for the buildings, and £6,885 for the destructor, or £15,000 in all.

Leatherhead.—It is proposed to built a new elementary school for 100 pupils at a cost of about £4,000. At present all the schools in the parish are Church of England schools, and the new building is required to bring the accommodation up to the requirements of the Education Committee. If the church authorities are unable to raise the funds, the County Council will proceed to do so, at the cost of the ratepayers.

Leyburn, Yorks.—Messrs. W. and T. R. Milburn, Sunderland, are the architects for 24 houses which it is proposed to erect on land between Leyburn and Middleham. The Leyburn Rural Council are considering the provision of an isolation hospital for their district.

Leyland.—The U.D. Council are contemplating the erection of a new fire-engine station. The site has yet to be fixed.

Lincoln.—A new church is to be erected in the parish of St. Swithin's; and a site has already been secured at the end of Bridge Street, at a cost of £260.

London, S.W.—It is proposed to pull down some of the Crown property on the west side of the Haymarket, adjoining St. James's Market, widen the entrances to the market, and erect new blocks of business premises. Negotiations between the Crown authorities and the Westminster City Council, as to the width of the new streets, are now proceeding.

Malton, Yorks.—The postal authorities are about to erect a new post-office here.

Margate.—The Borough Council has provisionally agreed to buy the Kursaal site for the purpose of erecting a concert pavilion and winter gardens. The sum mentioned is £16,000.

Motherwell.—The Dean of Guild Court passed plans for a range of dwelling-houses in Shields Road. The plans show 23 houses of one room and kitchen, 11 houses of two rooms and kitchen, and two single apartments. There will be ornamental garden plots in front of the houses. Messrs. Muirhead and Ferguson, joiners, had plans passed for dwelling-houses in Gavin Street, consisting of three two-room and kitchen houses and five houses of one room and kitchen. Plans were also passed for the new chambers to be erected in Brandon Street by the Dalziel Parish Council, consisting of inspector's office, board-room, registrar's office, and dwelling-house, the estimated cost being £2,500.

Perth.—The directors and subscribers of the County and City Royal Infimary have agreed by 36 votes to 24 to build a new infirmary, at a cost of £30,000 to £40,000, instead of reconstructing the old one at a cost of £15,000.

Saltaire.—The proposal to extend the Sir Titus Salt Hospital has been postponed by the Governors, pending an enquiry to ascertain the desirability of erecting a new hospital. This latter course is urged by the District Council.

Scarborough.—The Marine Drive Subcommittee of the Scarborough Town Council have approved a scheme to cost £2,000 for a protective apron to the damaged section of the Marine Drive.

Southport.—A new variety house, to be called the Empire Theatre, is proposed to be built in Lord Street, at a cost of £45,000. The buildings will comprise, also, a handsome ball-room, shops, and offices. The theatre is to be erected ready for opening next August during the season.

THE SOUTH WALES COTTAGE EXHIBITION.

Awards for the Site Plan.

We have received from the National Housing Reform Council, under whose auspices this exhibition is to be held, the judges' report on the designs submitted for laying out the site. The report, which is signed by

George T. Brown, F.R.I.B.A.,
(President Northern Architectural Association),
Marcus Hoskins, F.S.I.
(Swansea Corporation Estate Agent),
H. Bedford Taylor
(Architect to Bournville Village Trust, &c.),
Raymond Unwin
(Architect First Garden City, Ltd., and Hampstead Garden Suburb Trust),

is as follows:—

"We carefully examined the plans sent in for this competition, and after eliminating about 80, we went into the minute details of those remaining, and it was only after a considerable amount of careful comparison and discussion that we were able to arrive at a final decision.

"We award the Gold Medal to the design sent in by

Mr. James Crossland, Architect,
Broughton-in-Furness.

We consider this design deserves the first place on account of the careful consideration given to the contours of the site, the economical arrangement of roads, the treatment of the aspect, the possibilities of picturesque treatment in town planning, and the general practicability of the design for the purposes of the Cottage Exhibition. We hope, however, that in one or two places additional depth may be given to the plots which are rather too shallow.

"The design submitted by

Mr. Gilbert Waterhouse, Architect,
Park House, Buckhurst Hill, Essex,

is awarded the Silver Medal, in spite of the small frontages provided for the cottages, and the fact that some of the side roads, do not comply with the by-laws as to width. The contour arrangements are excellent, the total lengths of roads low, the treatment of aspect good, and the design possesses so much architectural merit that we have awarded it the second prize.

"The design sent in by

Mr. John W. Aldiss, Architect,
Newbridge, Mon.,

is placed third on account of the great economy in the construction of the roads and consideration of aspect and sea view. The general access from east to west is, however, defective."

We regret that pressure on our space prevents us from publishing in this issue the winning designs, with a precis of the authors' notes on the same, but we hope to do this in our next issue.

With reference to the article on "Building Monolithic Concrete Walls," on p. 275 of our issue for October 7th, we are informed that the Monocrete Construction Company, of Cheltenham, have arranged an agency for three years with a first-class Australian representative, and that agencies have been also established for Egypt, India, and Cyprus. It is further announced that the French Government are largely adopting the Monocrete machines for barracks and fortifications, and for colonisation requirements.

THE BUILDING TRADES' EXHIBITION,

BINGLEY HALL, BIRMINGHAM.

The Lord Mayor of Birmingham opened this exhibition at Bingley Hall, on Monday last. Federation members visiting Bingley Hall are invited to inspect our stall (No. 79), where copies of our various publications are on view and on sale, and where our representatives will be glad to answer inquiries and to receive advertisements. Our friends are asked to regard our stall as a convenient rendezvous, where appointments may be kept, parcels received, and letters written.

Among the prominent exhibits may be mentioned the following:—

THE AEROGRAPH CO.'S SPRAY-PAINTING APPARATUS.

Two new outfits for plain and ornamental painting are shown by the well-known firm of spray-painting apparatus makers, the Aerograph Co., Ltd., of 43, Holborn Viaduct, London, E.C. One of these outfits comprises the pressure machine with a petrol motor, mounted on a trolley, and we illustrate below the handpiece or "Aerograph" spray-painter. The spraying nozzles of these instruments can be made large enough to cover at almost any speed; but in practice it has been found best to make them of a size to do from three to five square yards per minute, and give a good even coat. This shows a great saving of time and labour. For wall and ceiling decoration, the spray painter, or a smaller spray known as the "Pistol" pattern, will be found very useful. The possibilities in the way of graduated tints, and the perfect blending of colours, must be seen to be duly appreciated. Either oil or distemper colours may be used, and the work can be done on any surface. One tint can be put over another without waiting for the first to dry thoroughly; no washing up or muddy tints are produced. Each outfit consists of the handpiece or "Aerograph" spray-painter, an air compressor, paint pot and tubes, and the motor, but a smaller apparatus is supplied for decorative work, to be used with a hand-pump.

ARMOURED TUBULAR FLOORING, E. C. AND J. KEAY'S CONSTRUCTIONAL STEELWORK, ETC.

The stand erected for Messrs. E. C. and J. Keay, Ltd., Princes Chambers, Corporation Street, Birmingham, is designed to show various types of stanchions and roof principals. Three kinds of supports are shown, and the fencing is specially adaptable for export, as it can be sent away in pieces and put together by unskilled labour. Here is shown also a sample of the patent armoured tubular flooring, with concrete girders reinforced with a corrugated steel bar, light hollow coke breeze tubes, and top layer of concrete. This floor is classified "Full Protection" by the British Fire Prevention Committee, and has the advantage of being practically soundproof. It is very suitable for use in hospitals, schools, workhouses, and public institutions.

BEST AND LLOYD'S ARCHITECTURAL METALWORK.

Messrs. Best and Lloyd, Ltd., gas and electric lighting fittings manufacturers, whose head office is at Cambray Works, Handsworth, Birmingham, and who have London show-rooms at 11, Bartlett's Buildings, Holborn Circus, E.C., have attractive exhibits selected from their high-class gas and electric light fittings. They show also some interesting examples of wrought-iron gate work, cast lead rain-water heads, and other architectural metalwork.

THE BIRMINGHAM GUILD OF HANDICRAFT

show a variety of metal fittings, including those for gas, electric light, and acetylene; door and cabinet furniture, electric radiators, gas stoves, "Guild" enamel letters, etc., etc.

BRITISH CORK ASPHALT, LTD.

This company (of Hammersmith, London, W.), show their patent cork asphalt paving, in various applications, and a selection of photographs of some of the works that have been carried out by the company.

BULLERS' CHINA AND GLASS DOOR FURNITURE.

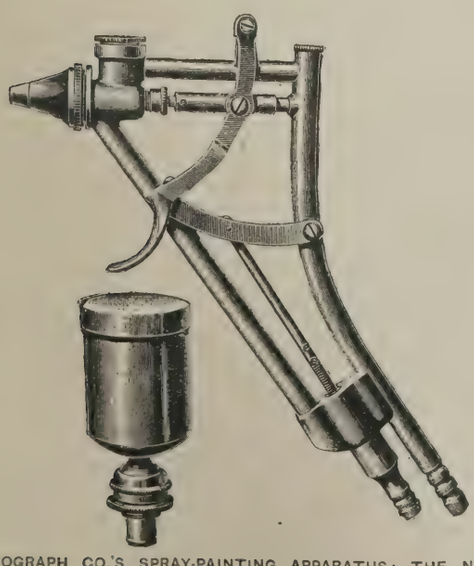
Messrs. Bullers, Ltd., Tipton, Staffs., exhibit a case giving a selection of their china and glass door furniture, which shows great variety and considerable elegance of design and colouring.

CAKEBREAD, ROBEY AND CO'S DRAIN APPLIANCES.

Messrs. Cakebread, Robey and Co., Stoke Newington, N., exhibit a selection of their drain-cleansing rods, drain tools, drain cleaners, smoke-test machines, drain plugs, etc. Specialities are their patent joints for drain rods, and the standard smoke-test machine, which is made almost entirely of metal, and drain plugs which screw up on small wheels running between the two plates.

WALTER C. CANDY'S SANITARY WARE, ETC.

The following goods are exhibited by Mr. Walter C. Candy, New Street, Birmingham: Roofing tiles, enamelled sinks, pedestal closets, enamelled baths, closet seats, drain-clearing appliances, red and blue ridges, stoneware drain pipes, pedestal lavatory basins, heavy fireclay closets,



THE AEROGRAPH CO.'S SPRAY-PAINTING APPARATUS: THE NOZZLE.



ELECTRIC RADIATOR BY THE BIRMINGHAM GUILD OF HANDICRAFT.

patent closet hinges, flushing cisterns, patent chimney pots, and quarries.

CARRON COMPANY'S RANGES, BATHS, AND CHIMNEYPIECES.

The Carron Company, Carron, Stirlingshire, show their "Palace," "Carrona," and "No. 55" ranges; half a dozen baths and several lavatories; and various chimneypieces and "interiors." Among the last-named are some very attractive copper and brass canopies and fronts.

CURTIS'S AND HARVEY'S GAS MANTLES.

Curtis's and Harvey, Ltd., 3, Gracechurch Street, London, E.C., show their "Ironclad" gas mantles, which are so named because they are fitted with a patent metal top.

DOCKER BROTHERS' VARNISHES AND COLOURS.

Messrs. Docker Brothers, Ltd., Metropolitan Road, Saltley, Birmingham, have designed their stand to represent an Adam drawing-room. The walls are painted and finished with the firm's flat enamel, and the doors have been painted, grained as mahogany, and twice varnished, once with the firm's oak varnish, and once with their special eggshell flatting varnish. Outside, the stand has been finished with white enamel, and the doors are varied suitably for outside work.

GITTINGS, HILLS, AND BOOTHBY'S VARNISHES, ETC.

This firm, whose address is Tower Varnish Works, Long Acre, Birmingham, have a stand in the form of a tower, recalling their trade mark. The panels of the stand are painted with washable distempers in three colours, but otherwise the woodwork is finished with their various specialities in paints, stains, and varnishes.

KIRCHNER AND CO.'S WOODWORKING MACHINERY.

Messrs. Kirchner and Co., 21-25, Tabernacle Street, Finsbury Square, E.C., show a large number of their planing, moulding, and thicknessing machines, a very popular hand-feed planing machine and general woodworker, mortising and tenoning machines, draw-stroke trimmers and mitering machines, saw-benches, band-sawing machines, and an improved grinding and sharpening machine for planing-knives, moulding-irons, etc.

ARTHUR KOPPEL'S TRACKS AND WAGONS.

This firm (of Lombard Street, London, E.C.) show several portable railway track installations of various gauges, portable wrought iron turntables, several tip-wagons, a crane skip, and a locomotive.

MAJOR AND CO.'S "SOLIGNUM."

In order to illustrate an important branch of work for which "Solignum" is used—namely, the treatment of wooden buildings occupied by animals—Messrs. Major and Co., Ltd., Hull, show a loose-box coated with the preparation inside and out. This is, of course, but one of the many classes of work for which "Solignum" is used. It is largely employed for half-timbered work of dwelling houses, etc., and as an artistic stain for interiors.

THE PATENT TIP-UP BATH CO.

This firm, whose address is Broad Street, Birmingham, show the kitchen portion of a small house, illustrating the two best positions for their patent tip-up baths, which are extensively used in cottage property, the space they occupy when out of use being merely vertical, so that they take up very little floor room.

MESSRS. C. A. PETERS' CARBOLINEUM AND OTHER SPECIALITIES.

Messrs. C. A. Peters, Ltd., Derby, and 116, Newgate Street, London, E.C., show their well-known Carbolineum wood preservative; also their portable stoves, for which it is claimed that they give off no smoke or smell, and that they are specially suitable for heating motor houses, etc. These stoves are shown in a specially built wooden pavilion which has been treated with Carbolineum. They have also on view samples of "Sotor," which they recommend as an absolutely reliable means of preserving wood from the ravages of the Teredo navalis; of their "Prism Antioxide," for the prevention of rust; of the "Antioxide" enamel paint, which can now be had in all shades; of the "Carbotron" fuel, which burns without smoke, smell, or dust; and of their rapid cutters and mincers for kitchen use.

RANSOME-VERMEHR MACHINERY CO.'S CONCRETE MIXER.

The Ransome-verMehr Machinery Company, Caxton House, Westminster, exhibit a No. 0 mixer, with charging measuring hopper and automatic water tank, arranged for belt drive. The Ransome Concrete Mixer having been described and illustrated in THE BUILDERS' JOURNAL of May 27, 1908, p. 460, many readers will doubtless be glad to avail themselves of the opportunity afforded by the exhibition to examine the machine itself. A strong recommendation of the mixer is its very conspicuous simplicity of construction. There is no complicated mechanism to get out of order, there is very little gearing, and the machine can be easily and effectively cleaned. It is rapid in action, and eminently efficient as to the product, perfectly mixed concrete of thoroughly uniform quality being turned out at unrivalled speed. The discharge of the concrete being effected during revolution by means of a chute regulated by a simple lever device, no tilting is required; and further economy of time and labour is effected by the addition of a hoist which is controlled by the man who works the discharging chute.

RONEO OFFICE SUPPLIES.

Roneo, Ltd., 17, Martineau Street, Birmingham, display specimens of their well-known duplicators, letter copiers, steel office fitments, stencils, inks, paper, and other office supplies.

RONUK FLOOR TREATMENT.

Ronuk, Ltd., Manchester, Portslade, and London, demonstrate their sanitary method of treating floors, by which the pores of the wood are filled up, and a hard, bright, and durable surface is formed, in which germs find no harbouring, while the surface thus formed is easily cleansed. The firm make a specialty of the first preparation and polishing of all kinds of flooring, and have carried out many important Government and municipal contracts.

THE SAXON PORTLAND CEMENT CO.

The Saxon Portland Cement Co., Ltd., Cambridge, show cement of their well-known brand in various states, from the raw material to the finished product. Next to the raw material as taken from the quarry, is shown the mixed chalk marl. Then, in succession, are shown the following; the impalpable "flour," prepared for combination in correct chemical proportions in special mixers; ground marl ready for burning; the ground marl pressed into blocks for convenience of loading into the kilns; block ready for kiln; block after grinding and mixing to the standard chemical composition ready for burning; the various kinds of clinker obtained after burning in rotary and in continuous kilns respectively; the same after the first stage of crushing and grinding; and, finally, a sample of the finished product. This affords testimony of the extraordinary pains taken to produce a cement of sterling value.

SEYSSEL ASPHALTE, ETC.

The Seyssel and Metallic Lava Asphalte Company, 42, Poultry, E.C., exhibit at stall No. 1, Row M, samples of Seyssel asphalte and metallic lava asphalte. Sevssel asphalte is used for roofs and other exposed positions, the metallic lava asphalte being for damp-courses and basement floors. The stall is paved with a piece of Seyssel asphalte laid in two coats, together 1in. thick, and samples of the material are obtainable on application. A new booklet prepared specially for this exhibition includes some 30 illustrations of various important contracts carried out by the firm, including Liverpool Dock offices, Windsor Castle, Metropolitan Water Board reservoirs, St. Bartholomew's Hospital, and many others.

SMITH POWERS AND CO.'S PAINT AND TEREBINE.

Messrs. Smith Powers and Co., Priory Varnish Works, Coventry, show samples of their Titanic Paint, "Priorite," and Powers' Original Terebine.

WALKER AND WORSEY'S SAFES, DOORS, ETC.

Messrs. Walker and Worsey, Edmund Street, Birmingham, makers of bent steel safes, strong-room doors, etc., show, besides specimens of their special twelve-corner bent steel safe, some steel strong-room doors, locks and latches, panic bolts, and other door furniture and fittings, as well as a safety cleaning casement window, sash and casement fasteners, stays, etc.

WOOLLISCROFT AND SON'S FIREPLACES, TILES, AND FAIENCE.

Messrs. Geo. Woolliscroft and Son, Ltd., of Hanley, Staffordshire, display samples of their modern fireplaces, tiles for the building and cabinet trades, terra-cotta, and faience. Two of the fireplaces are fitted with a patent "downdraught" fire, which is on the floor level, and for which it is claimed that it effects complete combustion of the fuel, and gives the capacity to burn anthracite, the fire needing no attention after first lighting. Another fire displayed is the "Glow," which is especially chosen for its capacity to retain the heat from the fire, and to radiate it equably and slowly into the room. Some of the fireplaces are built of faience, others having surrounds of slabbed tiles, with majolica or opaque glazes in beautiful shades. The designs are also varied, one mottled white and green, being remarkable for its tile canopy, another for its double arch. The dadoes show variety of style and richness of colouring. The specimens of tiling for floors show patterns suitable for both private and public buildings, and the tile tops for restaurants, and tops and backs for wash tables are another interesting feature of Messrs. Woolliscroft's attractive stand.

SCOTTISH FEDERATION ORGANISATION.*

Inadequate Organisation.

At the present time, the Federation as presently constituted is not the force it should be. The building trade is the second largest source of employment in the United Kigdom, but the employers have hardly realised the value of combination for the protection of their trade interests. It is quite different with the operatives. It is quite evident that trades-unionism is becoming a greater force than ever. The socialistic and labour men are well represented on municipal bodies, and in Parliament they have more than fifty members.

The Operatives' Example.

Mr. G. N. Barnes, M.P., for the Blackfriars and Hutchesontown Division, Glasgow, addressing a meeting of the Scottish Horse and Motormen's Association in Glasgow on 16th August last said: —"In these days of producing for profit, it was necessary that trades unions should have trained men to make bargains for them and to apply all their pressure upon Parliamentary and municipal authorities. Trades unionism had improved the conditions of men, had raised wages and shortened the hours of labour, but it was necessary they should adapt themselves to the altered and changing conditions of industry, so that, instead of having small units of departmental and specialised branches of trades, they should have one strong organisation embracing all." Surely in these words there is a warning note to employers. If the men in their hundreds of thousands recognise that it is to their interest to have one strong organisation embracing all trades, rather than "small units of departmental and specialised branches of trades," then the operatives will be placed in a very strong position indeed.

Need for Closer Union.

But what is your position? I do not say do away with all your individual associations and federations. What I do advocate, however, is a bringing more closely together all these associations and federations into one large federation, on the executive of which each individual association would be directly represented, and the affairs of each individual association would be freely vented and considered by that general executive. At the present time we have only 13 associations in all Scotland, in the Scottish Federation, and of these thirteen associations, seven are in a very depressed state. Dull trade may have something to do with this depressing state of affairs, as regards those seven centres, but the other federated associations are affected as well, and might have gone to the wall but for the fact that in their membership they have men who are prepared to carry on the association work, and to keep their membership together so far as possible. A few good men interested in their association, and alive to the claims of their trade could keep an association together until the tide turned and trade improved a bit.

Scheme of Organization.

In order that the Federation may do greater and better work than it has ever before attempted, it must be properly organised. As it is just now, having only two meetings in the year, little real good work was done, and there is not, in my opinion, that close relationship between the members which should exist in all well-governed bodies. I would suggest that the Federation be divided up into centres, and I have allocated the districts as follows:—Inverness to include the Counties of Inverness, Ross and Cromarty, Nairn and Elgin; Aberdeen to include the counties of Aberdeen, Banff, and Kincardine; Dundee to include the counties of Forfar, Perth, and east Fife; Edinburgh to include the counties of Mid-Lothian, Haddington, Peebles and Linlithgow; Alloa to include the counties of Clackmannan, Stirling, Kinross, and East Fife (West of Burntisland); Hawick to include the counties of Roxburgh, Selkirk and Berwick; Paisley to include the counties of Renfrew, Dumbarton and Lanark; Kilmarnock to include the counties of Ayr and Wigtown; Dumfries to include the counties of Dumfries and Kirkcudbright; Oban to include Argyllshire. The secretary of the Association in the town responsible for one particular district would act as secretary of this smaller or County Federation, whose headquarters would be in that town; and the executive of the local association would require to undertake some work by way of deputations and so on, to endeavour to stir up interest in their immediate surrounding district and start associations if practicable.

Pay the Secretary.

Of course this would necessarily mean considerably more work for the secretary, involving a good deal of his time and no man could expect such work to be performed gratuitously. The labourer is worthy of his hire, and better work would be got from a paid secretary than from an honorary one, because a paid official is expected to do his work thoroughly and well, and if he does not, then you have your remedy. But with a secretary who works without any remuneration, you can neither expect the same amount of work done nor the same interest to be taken. Moreover, you could not question the work done by an honorary secretary, because it is all done gratuitously. At the same time, we must not disparage the work done by men who undertake secretarial duties gratuitously. Much good work is done by such men; but if they were paid for their services even better work would be forthcoming. Therefore, I say, pay your secretary, and pay him well, for the bulk of the work will fall on him.

The Money Question.

Where is the money to come from to pay the Secretary? Pay him out of your association funds, or from the funds of the Federation. At present, 2s. per member per annum is paid by each association into the Federation funds. That is a mere bagatelle compared to what the operatives pay into their unions. An extra shilling per member per annum would be sufficient to begin an aggressive work fund, and this could be augmented from time to time by voluntaty contributions, or otherwise. As time went on, and it was found that several new associations had been started, that would open up a source of revenue from which ordinary expenses could be paid.

Appointment of Delegates.

Each Association in one particular district would appoint delegates from its membership to act on the general county executive committee, which would be made up of an equal number of delegates from all the associations in that district. This executive committee would meet monthly, or quarterly, in the different towns in its own district to transact any business. Reports would be sent in periodically to the headquarters of the Scottish Federation, giving an account of all that was being done, and thus the whole Federation would be kept informed of the progress being made. In turn, each County Federation would appoint delegates and representatives to the Scottish Federation, who would meet half-yearly at at present, in different centres. The executive committee of the Scottish Federation would meet oftener, however, as occasion required. In this connection it might be a wise move to hold the next half-yearly meeting in one of the towns where the local association is in low water. This might result in stimulating interest there.

Formation of Centres.

The advantages of dividing up the country into centres or districts must be apparent to everyone. For instance, members of an association in one county know more about the building trade in an adjoining county than men in Edinburgh, for example, know about the building trade in Inverness. Hence, in this work of organisation the local men will know where to start right away. Then, again, many small matters of detail could be settled by a local branch of the Federation without consulting the parent body. As it is just now, each association appeals to headquarters on all matters, whether of great or small importance, because they have no alternative; but with a local branch of the Federation duly constituted, much time and trouble would be saved by having local matters dealt with by that branch Federation.

Then, over and above all, by having district or county Federations set up, governed by a central body—namely, the general executive of the Scottish Federation—the different centres are brought closer into touch with each other, with the result that more interest is taken in Federation matters generally, and all matters of business are more expeditiously gone about because the men concerned are on the ground, so to speak, and can have meetings, etc., at very short notice.

Glasgow Stands Aloof.

It is unfortunate that at this time, when organisation is being thought of, Glasgow is still outside the Federation. There can be no complete scheme of organisation without Glasgow, who seem to have considerable hesitation in declaring for Federation. I have done my best, both by correspondence and personal call, to induce the Glasgow Associations to rejoin the Federation, but the prospects are not encouraging. Why Glasgow stands aloof I do not know. Sooner or later they will require to stand closer together than they are doing, if they are to maintain their position as employers in the building trade. Organisation will alone safeguard their interests, and they should now come forward and take a share in the work of organisation of the Federation.

Apathy the Enemy.

If the scheme I have shortly outlined is to be at all a success, then it must receive the local support and earnest work of the members in the building trade themselves. It is not sufficient for a man to pay his guinea or half a guinea, as the case may be, and say, "That is my annual subscription," and do no more. Something more than that is needed. We cannot get on without money, certainly, but what is of far more benefit is

**Summary of a paper read at the annual meeting of the Scottish Building Trades' Federation, by the Secretary, Mr. James Cameron.*

a keen interest taken by the members themselves in the work of their association. The secretary feels encouraged and cheered when he gets a large meeting in response to his notices. How many times have meetings been called where a quorum did not turn up and no business could be done in consequence! That, I fully believe, is the experience of every secretary connected with this Federation. That should not be. It has a demoralising effect on the association as a whole. Those who turn up to the meeting and see no busines done begin to lose interest themselves, and when the next meeting is called they say, "Well, we got nothing done at the last meeting, and I do not feel inclined to waste my time going to any more meetings." Let it be a principle of every man, then, to attend the meetings he is summoned to, where at all possible.

Support the Secretary.

In conclusion, I make a final appeal to employers to bestir themselves and help by every means in their power to strengthen the Federation. An opportunity is given now, and if you will rally round your secretaries and encourage them in the work of organisation, much good, I believe, will be the outcome. But there must be real earnest work done. Make your secretary feel that you are at his back and will support and advise him whenever possible. Take a hand in the work, and you will find that your secretary will go into it with a right good will, and, notwithstanding the depressed state of trade throughout Scotland at the present time, I believe that if the seeds of closer federation are sown now, we shall reap the harvest in due season.

Messrs. J. E. Clegg and Son's Heap Riding Mills, Stockport, which were recently destroyed by fire, have been reconstructed under the supervision of Mr. Henry Stead, architect, of Heckmondwike, the constructional steelwork, fire-resisting floors and asphalte flat roofs throughout being carried out by Messrs. Homan and Rodgers, Manchester.

* * *

Bradford City Council have decided to fill the vacancy of City Architect, caused by the resignation of Mr. F. E. P. Edwards, by advertising. The appointment, however, is to be left in abeyance for the present, and work will, meantime, be given to architects in the city.

* * *

The following is a list of officers elected for the Halifax Architecture Society, for the coming year:—President, Mr. C. J. Fox, F.S.I.; vice-president, Mr. Graham Nicholas, F.R.I.B.A.; secretary, Mr. C. E. Fox; treasurer, Mr. J. J. Glendinning; Council, Messrs. T. Kershaw, W. E. Horsfall, L. Coates, Jesse Horsfall (Todmorden), E. C. Brooke (Brighouse).

* * *

Mr. Walter J. Pearce, we are informed, has now acquired the sole interest in the high-class decorative business which for eleven years he carried on as managing director. Mr. Pearce, besides being an experienced decorator and colourist, is a practical craftsman; and in his announcement that his business will be consolidated under his personal supervision at 41, Gartside Street, Manchester, he states that "the strictest privacy and reserve are shown in dealing with the special ideas and designs of architects, and with all business undertaken for builders, decorators, or other contractors."

Market Reports.

Iron and Steel Trades.

In our last report we pointed out the dangers of prophesying, and the extreme uncertainty of the position at that time. Since then the market has made a slight but sudden movement in the direction of better prices and more business. Better, however, is not at all the same thing as good, and conditions are still far from satisfactory. The pleasing factors are, the termination of the engineering strike, and the consequent resumption of work by our shipbuilders on the North East coast. According to latest advices, however, these firms have in the aggregate only sufficient orders on their books to keep them working at 25 per cent. of their maximum output. In the Clyde district, some of the largest yards in the neighbourhood of Glasgow are practically idle, but quite a substantial amount of contracts were booked last month, so that the winter prospects are, on the whole, encouraging. The total output of the Clyde shipbuilding yards for the first nine months of this year has been little more than 50 per cent. of the output during the corresponding period of 1907. The other staple product of British steel manufacturers—namely, rails—also shows some tendency to improve. There is quite a large contract in the market for a Chinese railway under German management, the quantity involved being nearly 78,000 tons of rails and accessories, while there is quite a respectable tonnage of bridgework for the same concern. The latter, however, is not likely to fall to British engineers.

That the market generally is undoubtedly stronger as further evinced by the fact that many of the dealers are booking contracts for forward delivery. Girder merchants are again buying German joists for stock, and the German syndicate is very chary about making contracts for next year's delivery. When all is said and done, however, extremely low prices are still ruling for immediate specifications, and it would be unsafe to say that, so far as the immediate future and present are concerned, manufacturers are any better off than they were a few weeks ago. In Germany, in particular, there cannot be said to be any better demand; any improvement in prices is merely a reflex of the slight though real improvement in this country.

The Portland Cement Trade.

There is but little of interest to report this month respecting the Portland cement trade. There appears to be but little, if any, improvement in the demand, but there is no further falling away in prices, which, as stated in our last report, have reached an extremely low level. It is understood that the new fuel contracts have not yet been settled. There will certainly have to be a substantial reduction in fuel prices if manufacturers are to secure even a small profit on their sales of cement. The building trades continue slack, but there are undoubtedly signs of increased activity in large constructional works, while there is evidence of still further improvement in this department materialising in the near future. Such large works as Rosyth—the Admiralty specifications for which are to be distributed this month—will require huge quantities of cement; and although this work will probably not be commenced for some months yet, other somewhat smaller works, such as the new docks at Southampton, Portsmouth, and Methil, and the Doved Harbour extensions, will be calling for considerable quantities of cement all through the coming winter. The export market for cement shows no improvement, and the tonnages recently exported show a large falling off as compared with corresponding months of last year. Here again, however, there are indications of a revival, and it would not be altogether surprising if these materialised into real activity at a comparatively early date. In every direction abroad, the use of reinforced concrete for almost every kind of constructional work is developing at a rapid pace; and although the new method is making slow progress in the United Kingdom, it is satisfactory to note the growing interest that has been aroused not only among the professional classes, but among municipal corporations, railway companies, and other large corporations. With the removal of the Local Government Board restrictions, to which reference has constantly been made, and with the overhauling of the London building by-laws, which is almost certain to take place at an early date, we shall beyond all question see an almost universal adoption in this country of the great twentieth-century building material. When this comes to pass, cement-makers will find for cement a new outlet which is very badly needed.

The South Staffordshire Brick Trade.

About 90 years ago a splendid strata of clay was discovered in the West Bromwich district of Staffordshire, and contiguous localities. This clay was found to be peculiarly adapted for the production of all kinds of blue bricks, copings, stable bricks and paving bricks. It had an unrivalled run of success, for the bricks got specified for all kinds of public works, such as gas and waterworks, sewerage works, canals and railways, and the paving bricks became most popular. Engineers and surveyors found them adapted for bridges, viaducts, and tunnels, possessing in a marked degree strength and durability. For many years they stood their ground and held pre-eminence. Eventually there was such a demand that when the Great Central Railway and other railway extensions were in full swing, the old South Staffordshire makers could hardly supply in necessary quantities, and in the specified times. This resulted in many capitalists embarking on the manufacture of blue and brindled bricks. Various new companies were floated, and in their eagerness to make money, all sorts of clay beds were improvised, and all kinds of spurious blue bricks produced and put on the market at prices which the old and renowned makers could not compete with; these wares got foisted on the market as real Staffordshire Blues, but in process of time engineers found they were not up to the mark, and they began to reject them. The older makers to some extent reduced their prices as the innovators, not having incurred the same expense in manufacture, and being minus the good clay, had injured the trade. Original makers of Blues had to fight the competition, and rather than be cut out, and their old association disintegrated, they began, unfortunately, to cut down the prices, and this ended in many firms having to stop; something like half-a-dozen of the best and oldest firms eventually succumbed, through keeping up their standard at the same or even greater cost of making; for coal slack and other fuel and necessaries advanced seriously in price. Various attempts were made by some makers to re-combine, and to fix minimum prices, but the number of interlopers and their methods of business operated so keenly that the attempts to fix a ruling price failed, and so this ancient and once highly prosperous industry is demoralised. Now the atmosphere is beginning to clear, many of the speculators having come to grief. The effect of their policy and practices of course made an impression on others, and it became a question of the survival of the fittest. Some of the wiser heads have devised patent kilns and adopted other devices affecting cost of production, and these economies will enable them to surmount the crisis.

It is lamentable to record the closing of such an old-established blue brick works as Peter Wood, Ltd., Pump House Brick Works, West Bromwich, started 76 years ago; also the Tibbington Brick Co., Prince's End, Tipton; the Bloomfield Brick Co., and others, at Oldbury; several are in the hands of Official Receivers. Messrs. Hall and Boardman, of Swadlincote, built a brick works at Tipton, near Peter Wood's, about eight years ago, at a cost of £14,000 or more. This is now closed, and when put up for sale, only one offer was made, and that of £2,600. Other works have heavy bank charges and mortgages on them. Over-production, inexperience, and reckless working are the causes of the present deplorable position of South Staffordshire blue brick trade. This is not a case of foreign dumping for hardly any bricks of this special kind are imported. The railways, besides being good customers, have for some time past shown great consideration to the brick masters, and as a rule arrange with alacrity special rates for large lots. Time was when all the masters used to issue printed price lists. This was when they had a strong association. Now prices are quoted according to circumstances, and according to quantities. Still, there are a lot of big schemes in prospect requiring in the near future large numbers of good blues and brindles

Ruling prices at the works are:—			
Common blue wire cuts ... per	1,000	30	0
Best pressed blues	,,	45	0
Best stable bricks	,,	50	
Best blue paving, chequered and plain, 10in. by 5in. by 2in.	,,	42	6

Red Brick Trade of the Midlands.

The erection of dwelling-houses throughout the Birmingham and Midland district went on at such an unprecedented speed for something like 10 years that the brick trade was on the up-grade; but the speculative builders over-stepped the needs of the people, and now all the trades are suffering from dire depression. Workpeople cannot afford to marry, and those already married are in most instances compelled to meet the pinch by letting part of their houses to others. Then many of the iron-workers in the Midlands, through the transfer of large iron works to the sea coast, have migrated.

Besides the places enumerated, many works, and consequently the workers, have gone to Cardiff and many other South Wales towns, where coal is cheap and close at hand, and the shipping ports equally handy, and in many towns municipal rates are lower than in Birmingham, Wolverhampton, Walsall, Dudley, etc. The South Staffordshire district does not rank high for best red facing bricks; these are, however, produced in the Stourbridge district, and none better, but it is somewhat strange that for best reds architects specify largely for Ruabon and Accrington make, though carriage is greater. South Staffordshire makers turn out large quantities of common reds, largely used for ordinary houses in outlying streets, and many millions of such are used for inside walls, cellars, foundations, and in the erection of schools, libraries, and works. With the increase of trade, when it comes, house-building should regain some of its former briskness, and speculators will find the prices down to the lowest ebb they have reached for 15 or 20 years past. The manufacture of red bricks is even now very extensive, as there is a large number of yards going at Dudley, Blackheath, Bloxwich, Leanore, Walsall, Wednesbury, Wolverhampton, Aldridge, Erdington, and Birmingham, and in Warwickshire, and Leicestershire best and common reds are largely made, but prices are cut low.

Current Market Rates of Materials in the Various Trades.

The quotations given in this list apply only to larger quantities purchased in London (the minimum quantity for which these prices are applicable being given where practicable). Retail purchasers must expect to pay a reasonable advance on wholesale rates, as well as carriage. The trade discounts for each item have not been considered, as these would be affected by the quantity of the goods purchased. The endeavour is made to give fair average prices, which would in many cases be affected by the quality of the materials required.

BRICKLAYER.

The current rates for stocks, Flettons, and other common building bricks, and for local facings are not given, as local considerations obviously affect their prices, and readers who may make use of the information given in these columns can readily obtain quotations for themselves.

		Current rates.	Rates similar materials on Sep. 1.
Best blue pressed Staffordshire bricks	per 1,000	3 5 0	
do. bullnose bricks	do.	3 15 0	
Best Stourbridge fire bricks	do.	4 15 0	

Glazed Bricks.

Best white and ivory white-glazed one side	per 1,000	10 7 6	
do. glazed one end	do.	9 17 6	
do. quoins, bullnose bricks, and bricks glazed on 4½in. side	do.	13 17 6	
do. glazed two sides (double stretchers)	do.	15 17 6	
do. glazed two ends (double headers)	do.	12 17 6	
do. glazed one side and two ends	do.	16 17 6	
do. glazed two sides and one end	do.	17 17 6	
Splays, chamfers, and squints (to an angle of 45 degs.)	do.	15 7 6	
Double bullnose bricks, double splays, round ends, bullnose stops, and mitres	each	0 0 5	
Double bullnosed mitres ...	do.	0 0 7	
Internal angles, 2¼in. radius	do.	0 0 4	
do. do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Best buff and cream	per 1,000	11 17 6	
do. glazed one end	do.	11 7 6	
Other colours, extra ...	do.	4 0 0	
do. quoins, bullnoses, and bricks, glazed on 4½in. sides*	do.	15 17 6	
do. glazed two sides (double stretchers)*	do.	18 17 6	
do. glazed two ends (double headers)*	do.	15 17 6	
do. glazed one side and two ends	do.	19 17 6	
*These bricks in other colours, extra	do.	3 10 0	
do. glazed two sides and one end	do.	20 17 6	
Splays, chamfers, and squints for an angle of 45 degs	do.	19 17 6	
In other colours, extra ...	do.	3 0 0	
Internal angles, 2¼in. radius	each	0 0 5	
do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Ordinary-quality salt-glazed bricks, glazed one side ...	per 1,000	8 17 6	
do. glazed one end	do.	8 7 6	
do. quoins, bullnoses and bricks, glazed on 4½in. sides	do.	12 7 6	
do. glazed two sides (double stretchers)	do.	14 7 6	
do. glazed two ends (double headers)	do.	11 7 6	
do. glazed one side and two ends	do.	15 7 6	
do. glazed two sides and one end	do.	7 6	
do. splays, chamfers, and squints for an angle of 45 degs.	do.	13 17 6	
Specially prepared or dipped salt-glazed with plain glazed side or ends, as described above, same price as for best ivory whites	per 1,000		
Ordinary-quality salt-glazed double bullnoses, double splays, round ends, bullnosed stops and mitres	each	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed double bullnosed mitres	do.	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed internal angles, 2¼in. radius	do.	0 0 3	
do. 4½in. radius	do.	0 0 5	
Best dipped salt-glazed internal angles, 2¼in. radius	do.	0 0 4	
do. 4½in. radius	do.	0 0 8	
Ordinary salt-glazed moulded bricks (stretchers and headers)	do.	0 0 8	
Best dipped do	do.	0 0 8	
Second-quality glazed white and ivory white, 30s. per 1,000 less than best white			
Second-quality coloured bricks, same price as best whites of their respective descriptions			
Plain arch bricks £6 per 1,000 above list for respective kinds and colours			£4 per 1,000 above list.
Cambered arch bricks 1s. 2d. each, any kind or colour, if not exceeding 9ins. by 4½ins. by 2 ins			1s. each.
Rich majolica glazed bricks (headers and stretchers)	per 1,000	21 17 6	
do. quoins and bullnoses ...	do.	26 17 6	

Sand, Ballast, Cement, Lime, and Fireclay.

Thames and pit sand ...	per yard	0 7 0	
Thames ballast	do.	0 5 6	
Best Portland cement ...	per cask	0 5 10	
Best ground blue lias lime	per ton	0 19 0	
(NOTE.—The charge for the sacks to be added to prices per ton.)			
Grey stone lime	per yard	0 11 6	
Stourbridge fireclay in sacks	per ton	0 27 6	upwards

MASON, SLATER AND TILER.

The average current prices for stone per foot cube are given in the following list, the railway rates being calculated on the assumption that orders will be given for full truck loads of about 4 tons upwards.

Brown Whitbed Portland stone (in blocks containing on an average 20 ft. cube)	per ft. cube	0 2 0	
White Basebed do.	do.	0 2 1½	
Bath stone	do.	0 1 6	
Beer stone	do.	0 1 6	
Ancaster stone	do.	0 1 10	
Greenshill stone	do.	0 1 10	
Chilmark stone	do.	0 1 9	
Darley Dale stone	do.	0 2 3	upwards
Red Mansfield stone	do.	0 2 4	
Closeburn red freestone ...	do.	0 2 0	
Hard York stone	do.	0 2 10	
do. 6 in. sawn both sides landings (random sizes)	per ft. super	0 2 4	
do. 6 ins. rubbed two sides do.	do.	0 2 7	
do. 3 ins. sawn two sides slabs	do.	0 1 0	
do. 2 ins. self-faced random slabs	do.	0 0 6	
Broken Granite (blue Guernsey), 1½ ins. ...	per ton.	0 9 9	c.i.f. Thames
do. do. 2 ins. ...	do.	0 9 6	do.
do. do. 2½ins ...	do.	0 9 0	do.
do. (Imperial blue Scotch), 1½ ins.	do.	0 8 0	do
do. do. 2 ins. ...	do.	0 8 0	do.
do. do. 2½ ins. ...	do.	0 8 0	do.
do. (Midland Counties), 1½ ins.	do.	0 11 0	London station
do. do. 2 ins. ...	do.	0 10 9	do.
do. do. 2½ ins. ...	do.	0 10 6	do.
Granite Kerb (Norwegian), 6 ins. by 12 ins. ...	per foot	0 1 4	c.i.f. Thames
do. do. 12 ins. by 6		0 1 4	do.
do. do. 12 ins. by 8		0 1 6	do.
do. (Imperial blue Scotch) 6 ins. by 12 ins.	do.	0 1 2	do.
do. do. 12 ins. by 6		0 1 2	do.
do. do. 12 ins. by 8		0 1 4	do.
do. (grey Jersey), 6 ins. by 12 ins.	do.	0 1 3½	do.
do. do. 12 ins. by 6		0 1 3½	do
do. do. 12 ins. by 8		0 1 5½	do.
Circular kerb 4d. per foot	extra.		
Granite Pitchings (Aberdeen), 3 ins by 5 ins ...	per ton.	1 15 0	do.
do. do. 3 ins. by 6 ins.	do.	1 14 2	do.
do. do. 4 ins. by 5 ins.	do.	1 14 0	do.
do. do. 4 ins. by 6 ins.	do.	1 13 0	do.
do. (Imperial grey Scotch) 3 ins. by 5 ins.	do.	1 9 0	do.
do. do. 3 ins. by 6 ins.	do.	1 7 6	do.
do. do. 4 ins. by 5 ins.	do.	1 7 6	do.
do. do. 4 ins. by 6 ins.	do.	1 6 0	do.
do. (grey Jersey), 3 ins. by 5 ins.	do.	1 3 0	do.
do. do. 3 ins. by 6 ins.	do.	1 7 0	do.
do. do. 4 ins. by 5 ins.	do.	1 7 0	do.
do. do. 4 ins. by 6 ins	do.	1 5 0	do.
do. (blue Guernsey), 3 ins. by 5 ins	do	1 14 0	do.
do. do. 3 ins. by 6 ins.	do.	1 13 0	do.
do. do. 4 ins. by 5 ins.	do.	1 13 0	do.
do. do. 4 ins. by 6 ins.	do.	1 12 0	do.

Slates.

*Best blue Bangor Countess slates	per 1,000 of 1,200	13 0 0	upwards
do. 20 ins. by 12 ins.	do.	13 15 0	
First-quality Bangor Countess slates	do.	12 17 6	
do. 20 ins. by 12 ins.	do.	13 10 0	
do. Ladies	do.	7 5 0	
Permanent green Countess slates	do.	11 10 0	upwards
do. 18 ins. by 10 ins. ...	do.	9 10 0	
do. Ladies	do.	6 10 0	
Best "Eureka" unfading green Countess slates ...	do.	15 15 0	
do. 20 ins. by 12 ins. ...	do.	18 7 6	
do. 18 ins. by 10 ins. ...	do.	13 5 0	
do. Ladies	do.	10 5 0	
Best blue Portmadoc Countess slates	do.	13 10 0	
do. Ladies	do.	6 10 0	

**These prices are for lots not less than 4 tons.*

Tiles.

Plain red roofing tiles ...	per 1,000	2 2 0	
do. hip and valley tiles ...	per doz.	0 3 6	
Best Broseley tiles	per 1,000	2 10 0	
do. ornamental tiles	do.	2 15 0	
do. hips and valley tiles ...	per doz.	0 3 10	
Edwards's (Ruabon) brindled red or brown tiles ...	per 1,000	2 17 6	
do. ornamental do.	do.	3 0 0	
Valley tiles	per doz.	0 3 9	
Hip tiles	per doz.	0 4 0	
Peake's mottled or red Staffordshire tiles	per 1,000	2 12 0	
do. ornamental do.	do.	2 15 0	
Valley tiles	per doz.	0 3 6	
Hip tiles	do.	0 4 0	
Best "Rosemary" plain tiles	per 1,000	2 8 0	
do. ornamental do.	do.	2 10 0	
Valley tiles	per doz	0 3 8	
Hip tiles	do.	0 4 0	
"Hartshill" sand-faced tiles	per 1,000	2 10 0	
do. pressed do.	do.	2 7 6	
do. ornamental	do.	2 10 0	
Valley tiles	per doz.	0 3 5	
Hip tiles	do.	0 4 0	

CARPENTER AND JOINER.

Fir timber best middling Danzig	per load	4 15 0	
Seconds	do.	4 10 0	
Riga and Libau, full size	do.	3 5 0	
Swedish Balks	do.	3 0 0	
Pitch-pine (average 30 ft.)	do.	4 5 0	
Swedish Deals, 3 ins. by 11 ins., and 4 ins. by 11 ins. 1st quality	per standard	22 10 0	
do. 2nd do.	do.	20 0 0	
do. 3rd do.	do.	13 10 0	
do. 4th do.	do.	11 5 0	
do. 1st quality 3 ins. by 9 ins.	per standard	19 10 0	
do. 2nd do. do.	do.	16 0 0	
do. 3rd do. do.	do.	12 10 0	
do. 4th do. do.	do.	11 10 0	
Swedish Battens, 2½ ins. by 7 ins. 1st quality	per standard	14 10 0	
do. 2nd do.	do.	13 0 0	
do. 3rd do.	do.	11 10 0	
do. 4th do.	do.	10 10 0	
Battens, 2½ ins. by 6 ins., 2 ins. by 6 ins., and 2 ins. by 4 ins. do.	do.	9 10 0	
do. 2 ins. by 4½ ins. and 2 ins. by 5 ins.	do.	9 0 0	
For foreign sawn boards 1 in. by 7 ins. and 1¼ ins. by 7 ins. add to price of battens	do.	0 10 0	
For ¼ in. do. add	do.	1 0 0	
White Sea first yellow deals 3 ins. by 11 ins. (average price)	do.	24 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Second yellow deals 3 ins. by 11 ins.	do.	19 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	12 0 0	
White Sea first yellow battens 2½ ins. by 7 ins. and 3 ins. by 7 ins.	do.	17 0 0	
Second do.	do.	13 10 0	
Third do.	do.	11 10 0	
Petersburg first yellow deals 3 ins. by 11 ins.	do.	21 10 0	
For 3 ins. by 9 in. deduct from above	do.	4 0 0	
do. second yellow deals 3 ins. by 11 ins.	do.	14 0 0	
For 3 ins. by 9 ins. deduct	do.	1 10 0	
do. third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	11 0 0	

		Current Rates.	Rates on Sep. 1.
Petersburg battens, 1st per standard		14 0 0	
do., second	do.	11 10 0	
do. third	do.	10 10 0	
White Sea, first white deals, 3 ins. by 11 ins.	do.	15 10 0	
For 3 ins. by 9ins. deduct from above	do.	1 0 0	
do., second white deals 3 ins. by 11 ins.	do.	13 10 0	
For 3 ins. by 9 ins., deduct from above	do.	1 0 0	
do., first white battens ...	do.	11 0 0	
do., second do.	do.	10 0 0	
Pitch-pine deals	do.	19 0 0	
Add for less than 2 ins. thick	do.	0 10 0	
First yellow pine regular sizes	do.	40 0 0	
do., oddments	do.	32 0 0	
Second yellow pine regular sizes	do.	33 0 0	
do., oddments	do.	28 0 0	
American whitewood planks	per ft. cube.	0 4 6	
Kauri pine planks	do.	0 4 0	
1 in. by 7 ins. yellow flooring, planed and shot ...per square		0 14 0	
Add, if matched	do.	0 0 6	
1¼ in. by 7 ins. yellow, planed and matched ...	do.	0 16 6	
1 in. by 7 ins., white planed and shot	do.	0 12 6	
1 in. by 7 ins., white, planed and matched ... per square		0 13 0	
1¼ in. by 7 ins., do.	do.	0 15 6	
⅞ in. by 7 ins., yellow matched boarding, beaded or V-jointed	do.	0 11 6	
1 in. by 7 in., do.	do.	0 15 0	
⅞ in. by 7 ins., white do. ...	do.	0 10 0	
1 in. by 7 ins. do.	do.	0 13 0	
For 6 ins. boards deduct from the above prices ...	do.	0 6 9	

Hardwoods.

Teak ... ... per load		18 0 0	
Danzig and Stettin oak logs (large) ... ... per ft. cube		0 3 0	
do., small	do.	0 2 6	
Wainscot oak logs	do.	0 5 9	
Dry wainscot oak (in the 1 in.) ... ... per ft. super		0 0 9	
⅞ in. do., do.	do.	0 0 7	
Dry Honduras mahogany (Tabasco), in the 1 in. ...	do.	0 0 10	-
do., selected Figury do. ...	do.	0 1 8	upwards
do., American walnut do....	do.	0 0 10	

FOUNDER AND SMITH.

Cast-iron columns and stanchions, including patterns	per ton	7 10 0	
do., drain pipes, 3 ins. diameter, L.C.C. weights, in 9 ft. lengths, coated with solution ... ... per yard		0 2 4	
do., do., 4 ins. diameter ...	do.	0 3 0	
do., do., 5 ins., do.	do	0 3 10	
do, do., 6 ins., do.	do.	0 4 6	
do., do., 9 ins., do.	do.	0 6 3	
Rolled steel joists, Belgian (ordinary section)	per ton	5 10 0	
do., English	do.	5 15 0	
Rolled steel fencing wire...	do.	8 10 0	
do., galvanised	do.	10 0 0	
Steel compound girders (ordinary section)	do.	8 0 0	
Angles, channels, etc., do.	do.	7 0 0	
Galvanised sheets, common brands	do.	12 15 0	
Wrought-iron gas tubes (current discount off standard lists)	p.c.	70 p.c	
do., water tubes	do.	67½ p.c.	
do., steam tubes	do.	62½ p.c	
do., galvanised gas tubes...	do.	57½ p.c.	
do., do., water tubes ...	do.	55 p.c.	
do., do., steam tubes ...	do.	50 p.c.	

		Current Rates.	Rates on Sep. 1.
Expanded metal lathing, ⅜ in. mesh (short way) 24 gauge, in quantities of not less than 300 yds. ...	per yard	0 0 10	
do., 22 gauge	do.	0 1 3½	
do., 20 gauge	do.	0 1 5½	
do., ½ in. mesh, 24 gauge...	do.	0 0 10½	
do., 22 gauge	do.	0 1 4½	
do., 20 gauge	do.	0 1 6½	
(For quantities of between 300 and 700 yds. deduct approximately 10 per cent. from above; for quantities of between 700 to 1,400 yds., deduct approximately 15 per cent.)			

PLUMBER, COPPERSMITH, AND GLAZIER.

Sheet lead, 3 lbs.	per ton	17 12 6	17 5 0
do., above 3 lbs.	do.	17 2 6	16 15 0
Lead water pipe up to 2 in.	do.	17 12 6	17 5 0
Lead barrel pipe	do.	18 12 6	18 5 0
Lead pipe, tinned inside ...	do.	44 10 0	44 2 6
do., and washed outside ...	do.	47 0 0	46 12 6
do., soil pipe, up to 4½ ins.	do.	20 12 6	20 5 0
do., do., to 6 ins.	do.	21 12 6	21 5 0
do., do., above	do.	22 7 6	22 0 0
Lead sash weights	do.	20 2 6	19 15 0
Sheet zinc	do.	28 0 0	upwards
Copper sheets	do.	73 0 0	do.
do., nails	per lb.	0 0 11	
do., wire	do.	0 0 10	
Plumber's solder	per ton	65 0 0	
Tinman's solder	do.	80 0 0	
Old lead (against account, etc.)	do.	12 0 0	
Clean scrap copper, do ...	per cwt.	2 12 0	
Clean scrap brass do. ...	do.	1 18 6	
Old zinc, do.	do.	0 14 6	
15 oz. English sheet glass, thirds (in crates)	per foot	0 0 2½	
do., do., fourths	do.	0 0 1½	
21 oz. do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 2	
26 oz., do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 3½	
32 oz., do., do., thirds ...	do.	0 0 4	
do., do., fourths	do.	0 0 3½	
For obscured sheet glass add to fourths	do.	0 0 1	
15 oz. fluted sheet	do.	0 0 3½	
21 oz., do., do.	do.	0 0 4	
For obscured fluted sheet, add to above	do.	0 0 1	
¼ in. plain rolled plate ...	do.	0 0 2½	
3-16 in., do., do.	do.	0 0 2¾	
¼ in. do., do.	do.	0 0 3	
For rolled fluted plate add to the above prices ...	do.	0 0	

Bankruptcies.

DUNN, ALEXANDER, builder, 31, St. Michael's Square, Gloucester. Gross liabilities, £15,233 17s. 9d., £892 19s. 1d. expected to rank. Assets, as estimated by debtor, show a surplus of £3,768 11s. 6d.

BLANK, JOSEPH, builder, Nottingham Road, late Carr Street, Ilkeston. R.O., Sept. 28.

CAUNTER, EARNEST HY., builder, 5, Burshill Terrace, Well Street, Paignton. First meeting, 7, Buckland Terrace, Plymouth, Oct. 13. P.E., Town Hall, East Stonehouse, same day.

FANE, NORRIS, plumber, 146, Zetland Street, Southport. R.O., Oct. 2. Adj. same day.

HERBERT, HY. WM., lodging at 41, Coronation Road, and Jno. Bass, 289, Swan Lane, builders (trading as Herbert and Bass, Ellen Street), all Coventry. First meeting, O.R.'s, Coventry, Oct. 14, at 11. P.E., St. Mary's Hall, Coventry, Nov. 2, at 2.30.

ROLFE, WM., builder, 189, Hazlebank Road, Catford. R.O., Sept. 29. First meeting, 132, York Road, S.E., Oct. 14, at 11.30. P.E., C.C., Greenwich, Oct. 20, at 1.

RICHARDSON, GEO. RICHARD, surveyor, Dawnkuttie, Adelaide Road, Surbiton, and 10, Bolton Gardens, Teddington. R.O., Oct. 1. First meeting, 132, York Road, S.E., Oct. 16, at 11.30. P.E., C.C., Kingston, Nov. 10, at 2.30.

SMITH, CHAS. and GEO. MOREY, builders, 109, Walmer Road, Fratton Silon, Powerscourt Road, Buckland (trading as Smith and Money, Powerscourt Road, Buckland, Portsmouth.) R.O., Sept. 29 1st meeting O.R.'s., Portsmouth, Nov. 2 at 11.

SMITH, THOS., decorator (trading as Thos. Smith and Co.), 11, Walthew Lane, Platt Bridge, near Wigan. R.O., Oct. 2. 1st meeting, 19, Exchange Street, Bolton, Oct. 16 at 3. P.E., C.C., Wigan, Nov. 10 at 2.15. Adj. Oct. 2.

STACEY, THOS., builder and florist, Dwellingone and the Glebe Nurseries, North Cray Road, Bexley, and Clement Street, Sutton-at-Hone. R.O., Sept. 30. 1st meeting, 115, High Street, Rochester, Oct. 19 at 12.15. P.E., C.C., Rochester, same day at 2.30. Adj. Sept. 30.

BEST, ALF. JNO. (described in R.O., as Alf. J. Best), builder, 6, Mount Park Road, Ealing, late 25, Harrington Road, South Kensington. Adjourned P.E., Bankruptcy Court, Oct. 28 at 12.

GILLETT, WM. FREDK., timber merchant, 2, Styman Street, East Road, City Road, and ¾, Hardwicke Villas, Bounds Green Road, Bowes Park. Adj. Sept. 21.

HERBERT, HY. WM., lodging at 41, Coronation Road, and Jno. Bass, 289, Swan Lane (trading as Herbert and Bass, Ellen Street), all Coventry, builders. R.O., Sept. 21.

IRVING, WM. ROBT., builder, Leabourne Lea, Blackwell Road, near Carlisle. First meeting, 34, Fisher Street, Carlisle, Oct. 5. P.E., C.C., same place, Oct. 12 at 11.

PAWLEY, C. J. C., architect and surveyor, 25, Victoria Street, Westminster. R.O., Sept. 23. First meeting Bankruptcy Court, Oct. 5. P.E., same place, Oct. 30 at 11.30.

PERRIAM, ALF. JOSEPH, architect and surveyor, 104, Richmond Road, Thornton Heath, late 4, Dollis Road, Finchley. R.O., Sept. 22. First meeting, 132, York Road, S.E., Oct. 7 at 12. P.E., C.C., Croydon, Oct. 15, at 11. Adj., Sept. 26.

REAVELL, ALF. HY., builder, 37, Peascod Street, Windsor, and St. Faith, New Road, Clewer. R.O., Sept. 21. Adj. same day.

Partnerships Dissolved.

JOB JARMAN and WILLIAM DAWS, carrying on business as builders, contractors and decorators, at 3, Eton Street, Richmond, Surrey, under the style of "Jarman, Daws and Co.," has been dissolved, Sept. 7.

WALTER ROBINSHAW, DANIEL HOWARD DALTON, WILL HARRY TATTERSALL, and JOHN WILLIAM FLETCHER, carrying on business as builders, at Rochdale, under the style of the Spotland Equitable Land and Building Syndicate, has been dissolved, so far only as regards the said Daniel Howard Dalton, Sept. 10.

Coming Events.

Monday, October 12, to Wednesday, October 21.
MIDLAND COUNTIES BUILDING TRADES EXHIBITION, Bingley Hall, Birmingham.

Thursday, October 15.
SOCIETY OF ARCHITECTS.—Annual General Meeting, 8 p.m.

Thursday, October 15, and Friday, October 16.
ROYAL INSTITUTE OF BRITISH ARCHITECTS. — Examination for District and Building Surveyors. (Applications not later than October 1.)

Friday, October 16.
INSTITUTION OF MECHANICAL ENGINEERS.—Paper by Mr. J. E. Darbishire, on "Repairs, Renewals, Deterioration, and Depreciation of Workshop Plant and Machinery," 8 p.m.

ROBERT ADAMS' NEW INVENTION.

IMPORTANT TO ARCHITECTS & BUILDERS.

REVOLUTION in Silent Door Spring Hinges.
A New and Wonderful Floor Spring for Double and Single Action Doors.
Absolutely the Shallowest, Most Perfect, Powerful and Efficient Spring ever invented.
Half the size, Thrice the Value and Durability of others.
Its unique Sealed Check Chamber is Impervious to Water, and an immunity against oil-stained floors.
It is calculated to increase the demand for double and single action Door Springs, even more than my original celebrated and now Universally used 1870 patent Spring and Adjustable Shoe.
Such a Shallow Box as referred to above has never before been known to be practicable. It has been specially designed for the shallowest floors, to suit the exigencies of modern construction.
Robert Adams' other Specialities include New Patterns in Fanlight and other Opening Gearing, Panic Bolts, Weather and Water Bars, &c., &c.
Particulars on application to the Patentee:

ROBERT ADAMS, 3 & 5, Emerald Street, Bedford Row, London, W.C.

15 GOLD MEDALS AWARDED.

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS OF GREAT BRITAIN AND IRELAND.

THE COUNCIL, 1908.

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Representatives on the Employers' Parliamentary Council:
The President (C. H. BARNSLEY, BIRMINGHAM). WM. SHEPHERD (LONDON).

Secretary:
A. G. WHITE, 31 and 32, Bedford Street, Strand, London, W.C.

POINTS FROM THE MONTHLY REPORTS.

In the monthly report of the National Federation of Building Trades Employers, relations with the operatives of Rochdale, Leicester, and Swansea are noticed. The Federation's representations to the Home Secretary as to amending the Sweated Industries Bill so that it should not apply to industries in which employers and employed had agreed to working rules, seem to have been effectual, as the summary of conclusions (forwarded to us for reproduction, but omitted from want of space) of the Select Committee on the Bill, shows that it will not affect the building trade. An interesting agenda for the Annual Conference of Secretaries, on October 20th, has been prepared.

The Lancashire, Cheshire, and North Wales Federation has passed a resolution urging the National Federation to represent to the Board of Trade the practical impossibility of filling up accurately the returns required by the Census of Production Act. With respect to the memorandum from the Board of Trade, on the proposed Court of Arbitration, the Federation approved of the principle, but thought that the scheme would probably meet with greater success if the proposed courts consisted of members of the trade affected.

The Scottish Building Trades Federation, at its annual meeting, held on September 18th, in Aberdeen, appointed a deputation to wait on the Home Secretary to submit certain amendments to the proposed scaffolding regulations.

The good work that is being done by the Local Conciliation Boards was affirmed at the monthly meeting of the executive council of the Yorkshire Federation. From Bradford, Dewsbury, Huddersfield, Leeds, Morley, Sheffield, and Wakefield, there was a consensus of opinion that the Boards are very valuable, and are "conducive to the maintenance of cordial relations with the operatives." The expediency of giving notice for a general reduction of wages having been mooted, it was found that the local associations of the Yorkshire Federation are in agreement that it is not advisable at the present time to give notice for a general reduction, and the Northern Centre was to be notified to this effect. With respect to the introduction of the National Form of Contract to local authorities, it was agreed to recommend local associations to seek an interview (by deputation) with the local surveyor or similar official, in order to ascertain his views on the subject before submitting the form of contract to the local authority. It was agreed to request the Northern Centre and certain local associations to report upon the expediency of admitting the National Association of Builders' Labourers as parties to the Local Conciliation Boards. Opinions of the local associations on certain points with respect to the Board of Trade's proposed Court of Arbitration are to be invited. The next meeting of the Federation, and conference of association secretaries, is to be held at Leeds, on Thursday, October 22nd.

The Northern Counties Federation, at their quarterly meeting held at Sunderland on September 29th, discussed two important questions on which the Federation is at issue with the Education Building Committee of Durham County Council—namely, with respect to independent arbitration in disputes, and to the bill of quantities forming part of the contract. It was resolved to send a deputation to the Durham County Council; and, in case a modification of the Council's conditions were refused, the members pledged themselves to refuse to tender.

The Oldham Association is resisting an amended fair contracts clause that has been submitted to the Oldham Corporation by the Oldham Trades and Labour Council. The clause demands liberty of workpeople to fulfil the usual conditions of membership, such as paying or collecting subscriptions at any place or time required by the workpeople, provided that the duties of workmen are not thereby interfered with; seeks to make the principal contractor and the council responsible for the observance by sub-contractors of the specified conditions; requires the council to communicate to the workmen's organisation the names of successful contractors at least seven days before the contract is sealed; and demands that failure on the part of the contractors to comply with any of the conditions shall leave the council power to cancel the contract or call upon defaulting contractors to pay to the council any sum not exceeding £500, from which sum workmen shall be compensated for any loss which it may be proved they have suffered by the breach.

Extraordinary mortality among the members is reported by the South Shields Association, which has lost four members within three months.

Manchester and Salford starting and stopping times for operatives in all trades are, if possible, to be made uniform; the association is working with that object.

The Wakefield Association reports an earnest but apparently inconclusive discussion on the desirability of including in quantities an item to cover insurance against risks under the Workmen's Compensation Act, and on the general liability of "undertakers" under the Act. Details of the discussion are not reported.

A modification of the "notice rule" is reported from Rochdale as having been agreed upon by the National Board of Conciliation. It is to the effect that while men employed in workshops will give or receive one hour's notice, or wages in lieu, those employed on outside jobs will give or receive 2 hours' notice or wages.

The fair-wages clause in the corporation form of contract has occupied much of the attention of the Bristol Association, and the form evolved after much deliberation, and with the valuable assistance of Mr. A. G. White, the National secretary, is included in this month's report from the Bristol Association.

MONTHLY OFFICIAL REPORTS.

THE NATIONAL FEDERATION

Relations with the Operatives.

Rochdale.—The carpenters and joiners demanded 1d. per hour advance of wages, and a consequential alteration of the overtime rule, also an alteration of the notice to terminate engagement rule. The employers sent a proposed code of rules by way of counter-notice. The case went from the local board to the Northern Centre Board, and was by it referred back for further consideration, but without result. It was reconsidered by the Northern Centre Board on September 14th, and no decision was arrived at. An appeal to the National Board resulted in no decision as to the first two items. A decision as to the third item was given.

Leicester.—The Board of Trade "Gazette" reports that on September 8th a joint application was made to the Board of Trade for the appointment of a mediator to consider a dispute between the Leicester and District B.T.E. Association and the United Committee of Operative Bricklayers', Joiners' and Builders' Labourers of Leicester District, as to an alleged violation of the working rules relating to walking time and payment of standard rates of wages to builders' labourers. On September 14th the Board of Trade appointed Mr. T. Smith, J.P., of Leicester, to act as mediator in this dispute.

Swansea.—The joiners have given notice for an advance in wages and alteration of rules. The masters have given the operative plasterers notice for an alteration of rules.

Sweated Industries' Bill.

During last session of Parliament, the above Bill was referred to the Select Committee of the House of Commons on Home Work for consideration and report, and a representation was made on behalf of this Federation to the Home Secretary as to the desirability of amending the Bill so that its provisions should not apply to industries wherein the employers and employed, acting through their representatives, had entered into agreements for working rules dealing with wages and hours of labour.

Kindred Associations in Australia

On September 14th the secretary had a call from Mr. R. S. Walpole, secretary of the Victorian Employers' Federation, Melbourne, and secretary of the Central Council of Employers of Australia, a body analogous to the Employers' Parliamentary Council here. Mr. Walpole wished to convey to this Federation the good wishes of his Council, and to say that in dealing with the numerous experiments in labour legislation which are being tried in Australia, certain experiences had been acquired which might prove very useful in the near future to English employers of labour; if there was any information they had which was of utility to us in countering attacks, it was always heartily at our service.

Administrative Committee.

A meeting of the Administrative Committee was held on October 13th, at which were considered the various resolutions on the extension of the use of the National Form of Contract, as to the N.A.O.P. Agreement, as to the Building Operations and Engineering Works Bill, and as to a Builders' Foremen's Benefit Society, remitted from the half-yearly General Meeting. A meeting of the Journal Committee was also held, to report progress.

Organisation.

In spite of the deterrent influence of the prolonged spell of bad trade, it is most important that efforts to secure new members and revive or inaugurate local associations in districts where they are at present lacking should be steadily persisted in, and the position of all parts of the Federation at least maintained. A circular letter, therefore, has been sent out to the Federations, advising them that the National secretary is available to address organisation meetings anywhere, and will be glad to render assistance in extending the membership.

Conference of Secretaries.

The Annual Conference of Secretaries will be held in London on October 20th. On August 7th last, a preliminary circular was sent to the Federation notifying the above date, and inviting suggestions for the agenda or promises of papers by September 1st, and conveying the resolution of the Executive Committee, requesting the local associations to authorise their secretaries to attend. The two conferences that have been already held have proved so valuable and stimulating from the point of view of organisation, that it is earnestly hoped that the above recommendation of the Executive Committee will evoke a hearty response from every local association, and that a representative attendance will result. Without this direct action on the part of local associations, only the most active and energetic secretaries attend the conference, while the secretaries of the weaker associations, who most need stirring up and educating in regard to organisation, fail to put in an appearance, largely because there is no authority given them, and if they came it would be at their own expense. At the same time, secretaries who are anxious to improve their position and the standing of their association should not let any niggardliness on the part of their committee keep them away from a gathering where they will assuredly learn much which may be to their ultimate advantage if they rightly apply what they learn.

The following notice and agenda have been sent to all Local Associations through the County Federation secretaries:—

October 10th, 1908.

Dear Sir,

Conference of Secretaries.

I beg to advise you that the Annual Conference of Secretaries held under the auspices of the National Federation, will take place at the above address (31, and 32, Bedford Street, Strand, W.C.), on Tuesday, October 20th, 1908. The chair will be taken by E. J. Brown, Esq., Senior Vice-President of the Federation, at 11 a.m.

There will be a recess at 1 p.m. for lunch. At 2 p.m. the Conference will resume, and is expected to conclude its business about 4 to 4.30 p.m.

Your attendance is earnestly desired.

Yours faithfully,

A. G. WHITE,
Secretary.

Agenda.

1. Opening address by E. J. Brown, Esq., Senior Vice-President of the Federation. 2. Discussion of proposed model rules for a local association, adjourned from 1907 conference, and any resolutions arising. 3. The Official Journal: What is the best method of obtaining general support for it? (Suggested by the Committee of the Lancashire, Cheshire, and North Wales Federation). 4. A few observations upon the law of a builder's contract, by Mr. W. H. Hope, secretary of the Sunderland M.B.A. and the Northern Counties Federation. 5. Local Association management: (a) Paper by Mr. B. B. Moss, secretary of the Liverpool M.B.A., the St. Helens M.B.A., the Warrington M.B.A., and the Mersey Building Trades Employers' Federation, entitled, "Organising Generally." (b) Paper by Mr. Thos Smith, secretary of the Sheffield M.B.A., entitled: "Some Pointers on Association Building." (c) Paper by Mr. R. Hall, secretary of the Bury M.B.A., entitled "Some criticisms on association finance, with special reference to the financial proposals contained in some of the papers submitted to the 1907 Conference." 6. Two short papers by the National Secretary: (a) Federation Benefits; a companion paper to that given last year on Association Benefits. (b) Tenders and the information on which they are based.

Yorkshire Federation Conference of Secretaries.

A Conference of Secretaries of the Yorkshire Federation has been arranged for October 22nd, and the National secretary has promised to attend and address the meeting.

THE NORTHERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The Lancashire, Cheshire and North Wales Federation, The Yorkshire Federation, and The Northern Counties Federation.

Secretary: JAMES DENVER, Cromwell Buildings, Blackfriars Street, Manchester.

The quarterly meeting of the Executive Council of the Northern Centre of the National Federation was held at the Grand Central Hotel, Briggate, Leeds, on Monday, October 5th, when the president (Mr. Henry Matthews, J.P., Manchester) presided over a good attendance of representatives from the three Federations.

The secretary was authorised to attend the Annual Conference of secretaries to be held in London on October 20th.

Replies were read from the three Federations forming the Centre with reference to the working of the conciliation scheme, and as the experience of each seemed to differ very much, a sub-committee was appointed to consider the matter and report to a further meeting.

The question of the admission of the Labourers' Union into the conciliation scheme was considered at some length, and correspondence was read from the Federations, when ultimately a resolution was passed thereon

Mr. J. B. Johnson, of Liverpool, was elected to represent the centre on the Committee appointed by the National Federation to consider the question of amending the N.A.O.P. agreement.

NORTHERN CENTRE CONCILIATION BOARD FOR THE BUILDING TRADES.

A special meeting of the above Board was held at the Grand Central Hotel, Briggate, Leeds, on September 14th, at 2.30 p.m., when Mr. T. Wilkinson, Middlesbrough, took the chair, and Mr. D. Richards, J.P., Southport (operative), took the vice-chair. Mr. James Denver, Manchester, was appointed secretary for the employers' section of the Board, in place of Mr. John Tomlison, resigned. Some correspondence was read from the Liverpool Association, having reference to a complaint which had arisen under the St. Helens boundary radius, arranged by this Board a short time ago, and after some discussion a resolution was passed thereon. The appeal from the Rochdale Local Board for an advance in joiners' wages of 1d. per hour—from 9d. to 10d.—together with a proposed alteration in the overtime rule and the extension of the discharge notice from one hour to two hours, referred back from the meeting held on June 29th last, was again down for consideration, and representatives were admitted to state their case. The evidence from both sides having been heard, several votes were taken on each of the points in dispute, but no decision could be arrived at, both sides voting equal on each occasion, so that the matter will go before the National Board acording to rule. Some discussion then took place on the use of these Boards from both sides, and the meting terminated.

THE LANCASHIRE, CHESHIRE AND NORTH WALES FEDERATION.

Secretary: JOHN TOMLISON, Cromwell Buildings, Blackfriars Street, Manchester.

The Organising Sub-Committee of the Lancashire, Cheshire and North Wales Federation met in Manchester on Friday, September 11th, to decide on their plan of campaign for the winter in the unaffiliated districts, where it is intended to make special efforts to form branches.

The Administrative Committee met on September 11th, when several important matters affecting the district were considered, including the publication of the Official Year Book; the appointment of a committee to meet the operative joiners' executive respecting the construction to be put upon the conciliation rules, with a view to bringing about a settlement with the joiners at Altrincham; and the question of the admittance of the labourers' union into the conciliation scheme.

Some discussion also took place at this meeting with regard to the returns required by the Census of Production Act, it being claimed that it was practically impossible for employers to fill up the same accurately; and a resolution was passed urging the National Federation to bring the question of amending the form in future, to the notice of the Board of Trade through the Employers' Parliamentary Council.

A communication was read from the President of the Building Contractors' Association of Paris asking for information respecting employers' organisation in this district, and the secretary was instructed to supply the same.

Meetings have been held of the slaters' and plasterers' branch trade committees to consider relations with the operatives.

The slaters also have under consideration the question of the unfair competition of wholesale slate merchants with master slaters, and the committee who recently had this matter in hand were re-appointed to deal further with the same.

The plasterers had under consideration at their meeting the question of "ending or mending" the N.A.O.P. agreement, and a resolution was passed thereon.

The quarterly meeting of the Executive Board was held at the King's Arms Hotel, Lancaster, on Monday, September 28th, when Mr. William Bullen, Liverpool (the president) presided over a fairly large attendance of representatives from the federated towns.

The accounts of the quarter were passed for payment.

The memorandum from the Board of Trade re "Court of Arbitration" was considered, and although the principle of the same was approved, it was agreed that the scheme would meet with greater success if the courts proposed consisted of members of the trade affected.

The draft of a new rule to provide for "Arbi-

tration between Sole and Sub-contractors" in cases of dispute was referred to the Administrative Committee, with power to give the required notice for the same to be adopted at the general meeting in December.

A suggestion for amending the conciliation scheme, whereby the same would not be compulsory on local associations, was adopted to send to the Northern Centre

It was decided that this Federation could not see its way to agree to the admittance of labourers into the conciliation scheme.

A dispute that had arisen at Bury under the worked stone rule was considered, and referred to the Administrative Committee.

The recommendations of the plasterers' and slaters' trade committees (referred to above) were confirmed.

After the meeting several of the local employers attended in response to an invitation issued by the Federation to consider the question of organisation in the district, and several members of the Executive (including the president) addressed them on the subject, and as a result the Lancaster employers agreed to call a general meeting of their members at an early date, and to inform the Federation thereof.

LOCAL ASSOCIATIONS AFFILIATED TO THE LANCASHIRE, CHESHIRE, AND NORTH WALES FEDERATION.

ALTRINCHAM, SALE & DISTRICT ASSOCIATION.
Secretary: W. Moody.

The number of members to date is 144.

Nothing of importance has occurred during the past month. Four new members were elected at the monthly meeting on October 8th, and various Federation questions were discussed, particularly the proposal to include labourers in the National Conciliation scheme, the feeling of the committee locally being decidedly against it.

BURNLEY AND DISTRICT ASSOCIATION.
Secretary: G. Astwood.

The annual meeting of the above association was held on October 6th, at the Mechanics' Institution. Mr. Thos. Foster, of Padiham, was in the chair, and there was a fair attendance of members. The balance-sheet was presented, and showed a gain of £3 on the year's working. The number of members on the books is thirty, an increase on the previous year. Mr. Samuel Smith was elected president, Mr. John Stanworth and Mr. Durkin vice-presidents, Mr. John Hanson treasurer, and Mr. Geo. Astwood, 19, Clarence Street, secretary. The meeting decided to subscribe to the "Builders' Journal."

BURY AND DISTRICT ASSOCIATION.
Secretary: Robt. Hall.

During the past month the general committee and the various trades committees have held several meetings, the general committee dealing especially during the past month with amended rules for the better government of the association and its members, and particularly the definition of how far and to whom the inter-trading rules shall apply.

A matter mentioned in the last report—namely, the worked stone rule—is still unsettled, and the secretary reports that there has been no response to his request for information with respect to the working of this rule in other districts.

The annual general meeting will be held some time this month.

LIVERPOOL ASSOCIATION.
Secretary: Bertram B. Moss, F.C.R.A.

The forty-second annual general meeting of the above association was held in the Board room of the association, 24, Sir Thomas Street, on Thursday evening, October 1st. The chair was occupied in the earlier proceedings by the retiring president, Mr. A. L. Haugh, and there were present many past presidents, officers and members.

The annual report, which is very lengthy, dealing with various matters of importance to the trade, and the treasurer's statement of accounts for the past twelve months, were read and approved, and copies ordered to be supplied to every member, also to the various kindred master builders' organisations, local architects, corporation officials, etc. The chief items of interest contained in the report may be thus summarised: (1) A request by the operative joiners for an increase of three-farthings an hour, and for certain alterations in the working rules, was referred to the Conciliation Board, and it was agreed that the operatives should receive an increase of a farthing an hour, with a forty-seven-hour week all the year round except for men on "unprotected buildings" as defined in the rules, the winter hours for the latter men being forty-four and a half per week in November and February, and forty-two in December and January, the men taking their breakfast in their own time before starting work, all the year round. The rules are to remain in force for five years. (2) A claim for insulation money (sixpence per day extra), where the work had no connection with cold storage, but simply consisted of lining partition boards with asbestos sheeting and filling the space between with silicate cotton or slag wool, was paid "without prejudice," the sums involved being only small; but when the new rules were framed, a re-wording of the insulation rule was insisted upon, making it quite clear that the extra money will only be paid in connection with cold storage work. (3) A dispute with the masons was settled in favour of the employers, by the Local Conciliation Board. (4) Masons threatened to strike a member's shop in consequence of the employment of non-society machine hands. The committee resisted the demand, and the matter was allowed to drop. (5) It having been represented by the operative painters' society that several hospitals and charitable institutions have been letting out decorating and cleaning work to firms who are not recognised master painters, and who have in some instances employed persons other than painters to do the work, the council addressed a letter on the subject to all the hospitals and charitable institutions in the district. Favourable replies were received from most. (6) The council has made many representations to architects and corporation officials to the effect that hot and cold water services should be included in the plumbers' bill of quantities, and not given to heating engineers. (7) The Plumbers' Committee have submitted to the city water engineer a list of suggested amendments to the local water regulations, which have been in force without alteration for about thirty years. (8) The association appealed successfully, on behalf of Messrs. Morrison and Sons, against a demand for rates in respect of machinery and temporary offices on the site of the cathedral. The judgment then delivered is of the greatest importance to the building trade throughout the country, and the association is to be congratulated on having brought the matter to such a successful issue. (9) Following action by the association, Liverpool fibrous plaster manufacturers have agreed to allow five per cent. discount to master plasterers wherever practicable. (10) Many communications have been addressed to corporate bodies and architects respecting the conditions of contracts and invitations for tenders, etc., especially in reference to tenders being required without quantities being supplied. Protests were also addressed (a) to the Mersey Docks and Harbour Board in reference to tenders being invited for certain work which the Board subsequently did themselves; and (b) to the Education Committee with respect to new schools at St. Helens, for which the lowest tender was declined, and the Education Committee, instead of accepting the next lowest, insisted upon all firms retendering.

Mr. Frank Griffiths was elected president for the ensuing twelve months, and he then took the chair and thanked the meeting for his election. On the proposition of Mr. William Bullen, a hearty vote of thanks was accorded to Mr. A. L. Haugh, the retiring president, for his valuable services during the past year. The following further officers were then elected: Mr. R. Arthur Costain, senior vice-president; Mr. Chas. Tomkinson, junior vice-president; Mr. R. Stevenson Jones, treasurer; Messrs. H. E. Dallow and J. Sirett Brown, honorary auditors. Thirty-six members were then elected to form the council for the ensuing twelve months. The council is divided up into six trade committees, representing the following branches: Bricklayers, masons, plasterers and slaters, carpenters and joiners, painters, plumbers and glaziers, and electricians; each of these committees consisting of six members.

On the proposition of Mr. J. Sirett Brown, seconded by Mr. William Bullen, it was carried unanimously that the best thanks of the meeting be tendered to Mr. Bertram B. Moss, the secretary, for his services during the past twelve months.

A few matters of general interest were discussed under "General Business," and the meeting terminated with a vote of thanks to the chairman.

The association has for the first time issued a year book, in which the annual report is included.

LONGRIDGE AND DISTRICT ASSOCIATION.
Secretary: T. J. Watson.

The number of members to date is 24.

The twelfth annual general meeting of the Longridge and District Association was held on Thursday evening, October 1st, Mr. S. V. Robinson presiding. The committee's report and balance sheet were adopted. Mr. Thomas Kay, Jun., was elected president, and Mr. Richard Rigby vice-president for the ensuing year.

The Representative Trade Committee was appointed; Mr. William Almond was re-elected executive member, and Mr. Ed. Hesmondhalgh hon. treasurer.

MANCHESTER & SALFORD GENERAL ASSOCTN.
Secretary: John Tomlison.

The number of members to date is 214.

Meetings of all the branch trades are taking place in this district to consider relations with the operatives, the chief object being to bring about if possible uniformity in starting and stopping times throughout the trades.

OLDHAM AND DISTRICT ASSOCIATION.
Secretaries: Cowper and Dean, Accountants.

Business is quiet in the building trade in Oldham, owing to the cotton strike, and the consequent stoppage of mill building, etc. The executive committee are engaged in resisting a proposed amended fair contracts clause for corporation work, which has been submitted to the Oldham Corporation by the Oldham Trades and Labour Council. The clause contains what the master builders regard as stringent and arbitrary conditions, and a deputation has been appointed to wait upon the general purposes committee to represent the association's views. The committee are also waiting for developments regarding some new building by-laws which are proposed to be inserted in the next Parliamentary Bill by the Oldham Corporation. It is also the Committee's desire to endeavour to get all public bodies and architects to make more general use of the National Form of Contract, and action is being taken with this object.

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PRESTON ASSOCIATION.
Secretary: John Tomlison.

The number of members to date is 183.

The annual general meeting of this association was held at the George Hotel on October 7th, when Mr. William Croasdale presided. There were about 70 members present. The half-yearly report (the thirty-seventh) showed the association to be in a strong position, there being 183 members on the books, whilst the funds in hand had been increased by more than £90 during the financial year. The chairman, in moving the adoption of the report, congratulated the members on what had been accomplished, and felt sure that the prospects of continued success for the association were very bright, notwithstanding the very depressed state of the trade, which he was sorry to say did not present to him any prospect of immediate improvement. The society, having entered upon its nineteenth year, would therefore soon attain its majority, and he had no doubt that a career of usefulness and success was before it, if the traditions of the past were maintained. Mr. T. B. Garnett, builder, was elected president for the ensuing year, with Mr. R. H. Catterall, plasterer, and Mr. S. Salthouse, plumber, as vice-presidents; Mr. William Cooke, junr., being again elected the hon. treasurer. The various committees were appointed, and several matters of trade interest discussed.

ROCHDALE AND DISTRICT ASSOCIATION.
Secretary: H. Oldham.

The number of members to date is 61.

The appeal relating to the advance, etc., required by the carpenters and joiners, came before the National Board of Conciliation in London on September 29th. The voting as regards the question of wages resulted in a tie; therefore there was no decision. As regards the overtime rule, this is naturally governed by the wages question, and therefore no decision resulted. As regards the notice rule, the folowing decision was unanimously agreed to:—"That the words 'that one hour's notice be given on either side, or one hour's wages paid,' be deleted from the first two lines of present rule 8, and the following substituted:—'That one hour's notice be given on either side for men employed in workshops, or one hour's wages paid; and that two hours' notice on either side be given for men employed on outside jobs, or two hours' wages paid.' The rest of the rule to remain as heretofore."

There is nothing to report from the following associations, affiliated to the Lancashire, Cheshire and North Wales Federation:—Ashton-under-Lyne, Barrow-in-Furness, Birkenhead and Wirrall, Blackpool, Bolton and Farnworth, Chester and District, Crewe and District, Darwen, Heywood, Lancaster and District, Leigh and District, Llandudno and District, Macclesfield and District, Middleton and District, Radcliffe, Rossendale and District, Southport and District, St. Anne's-on-Sea and District, St. Helen's, Stockport, Wallasey, Warrington, and Wigan.

THE YORKSHIRE FEDERATION

Secretary; J. DAVIDSON, 14, Park Road, Leeds.

The monthly meeting of the executive council of the Yorkshire Federation was held at the Yarborough Hotel, Grimsby, on Friday, Sept. 25th, 1908. Mr. J. Biggin (president) occupied the chair, and was supported by forty-six delegates from the affiliated associations. The president referred to the serious loss which the Bradford Association had sustained by the deaths of Mr. Phineas Drake, an ex-president, and Mr. Michael O'Flynn, late Alderman of Bradford Corporation, who had for many years taken an active interest in the work of the association. In suitable and feeling terms, he moved "That the Federation having heard with deep regret of the deaths of Messrs. P. Drake and M. O'Flynn, tender their sincere sympathy and condolence to the relatives in the heavy loss which they have sustained, and also place on record their appreciation of the long and persevering efforts of the deceased in connection with the building trade generally, and the Bradford Association in particular." The members approved of the resolution by standing in silence. The minutes of previous meeting were read and approved. Apologies for absence were reported from Messrs. W. Nicholson, P. Rhodes, and W. T. Ledgard (Leeds); G. E. Powell (Sheffield), and G. Rayner (Halifax); and Councillor G. Mansfield, J.P. (York).

The treasurer reported receipt of the following amounts:—Subscriptions, £18 15s. 6d.; contributions to National reserve fund, £4 13s. 6d.; and balance of contribution from Federation insurance scheme to June 30th, 1908, £8 9s. 4d.; making a total of £31 18s. 4d.

On the motion of Mr. A. J. Forsdike, seconded by Councillor England, it was resolved to send a circular to each local association inviting their active support in maintaining the income of the Federation, and pointing out that several associations have not yet made any payment on account of subscription for the present year, while the amounts received from others show a serious decrease; and that it is most desirable, in order that the fixed expenses should be promptly met, that the Federation be favoured with the valued co-operation and generous support of local members and secretaries in this important matter. The treasurer reported that the mortgage deed for investment of £200 with the Huddersfield Corporation had been deposited at the London City and Midland Bank, High Street, Sheffield, where the account of the Federation is kept; and that the bank receipt was in the possession of Mr. Forsdike, treasurer.

Replies were read from the following Associations with respect to their experience of Local Conciliation Boards:—Bradford, Dewsbury, Huddersfield, Leeds, Morley, Sheffield, and Wakefield. There was a consensus of opinion that the work of the Boards was very valuable and mutually beneficial, being conducive to the maintenance of cordial relations with the operatives. It was resolved, on the motion of Councillor Mallinson, seconded by Mr. S. Coop, to notify the Northern Centre that the local associations and the Yorkshire Federation have not experienced any difficulty in connection with the Local Conciliation Boards, but that at all meetings which have taken place the proceedings have been conducted in an amicable and a friendly spirit.

Replies were read from several associations, including Barnsley, Bradford, Dewsbury, Huddersfield, Hull, Leeds, Morley, Scarborough, Sheffield, Wakefield, and York, with respect to the expediency of giving notice for a general reduction of wages. After careful consideration, it was resolved on the motion of Mr. J. Lindley, seconded by Mr. T. E. Taylor, that as the local associations of the Yorkshire Federation have unanimously expressed their opinions that it is not opportune at the present time to give notice for a general reduction in wages, so far as Yorkshire is concerned, this Federation hereby confirm the said decisions, and notify the Northern Centre to this effect.

The secretary reported that several associations have been supplied with copies of the letters to architects, in reference to the National Form of Contract. With respect to local authorities, a discussion took place as to the expediency of first seeking an interview with the local surveyor or engineer with a view of ascertaining how far he was personally disposed to accept the recommendations contained in the approved letter. On the motion of Mr. W. R. Thompson, seconded by Mr. A. J. Forsdike, it was resolved to request the West Riding architect and engineer to favour the Federation by receiving a small deputation consisting of the president, Alderman W. H. Jessop, J.P., and Councillor W. Nicholson; and recommend local associations to follow a similar procedure before officially writing to local authorities with a view to the adoption of the National Form of Contract.

The Chairman reported that, as a result of an appeal by the Sheffield Association, the Sheffield Corporation had modified the clause in the Corporation contract form with regard to retention money, by providing that one-half of the same would be paid at the expiration of six months, and the remaining half at the expiration of twelve months after the date of the certificate of the completion of the contract.

It was reported that the issue of "The Builders' Journal" for September 16th contained the first number of the official reports of the National Federation. In order that the members may receive the report of the Yorkshire Federation in good time, it is probable that the same will be inserted in the issue immediately following the meeting, in addition to being summarised in the monthly supplement dealing with Federation news generally. An urgent appeal was again made to local secretaries and representatives to use every endeavour to obtain subscribers, as this is the most effective manner of making the agreement an assured success.

It was reported that there were eleven branches of the National Association of Builders' Labourers in Yorkshire, and that several of these have entered into an agreement with employers with respect to rate of wages and conditions of labour. On the motion of Mr. J. T. Levitt, seconded by Mr. W. E. Biscomb, the Northern Centre and local associations who have entered into agreement with their National Association of Builders' Labourers were requested to consider and report on the expediency of admitting such association as parties to the Local Conciliation Boards, and whether it is feasible to submit matters upon which the Local Board cannot agree to the Northern Centre Conciliation Board; and generally as to the terms and conditions on which the acceptance of the application for admission should be based.

A statement of the present position of the National reserve fund was supplied to each member, and a letter from the National Federation secretary was read and considered. Mr. A. J. Forsdike moved a resolution, which was seconded by Councillor Mallinson, and duly carried, reminding the National secretary that the Federation has been allotted a contribution on the basis of the commuted subscription which is in excess of the amount due on wages, which basis has been already agreed upon by the administrative committee.

The Federation considered the action of the Board of Trade in establishing a Court of Arbitration in pursuance of the powers granted by the Conciliation Act of 1896. The secretary had prepared some preliminary observations, and it was resolved, on the motion of Mr. A. J. Forsdike, seconded by Mr. W. R. Thompson, to send a copy to each local association and invite them to favour the Federation with their opinions on the several points named, with a view to consideration of the question at a future meeting.

Attention was drawn to the statement of Mr. Shackleton, M.P., that the Home Secretary had promised to take steps for the appointment of a Royal Commission to take into consideration and

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report upon the expediency of compulsory insurance. On the motion of Councillor Mallinson, seconded by Mr. S. Coop, the consideration of the matter was deferred to a future meeting.

The president reported that the Northern Centre Conciliation Board had met at Leeds on Monday, September 14th, to consider an appeal from Rochdale with respect to joiners' rate of wages and alterations in rule. After hearing both parties, the Board were not able to come to a decision, the voting on each side being equal. It was stated that the operatives had appealed to the National Conciliation Board, and that a meeting had been called for an early date.

The president reported that the emergency committee had carefully considered correspondence with the Wigan Association secretary arising out of a contract near Wigan which was being undertaken by a member of the Yorkshire Federation. A resolution was unanimously passed, on the motion of Mr. A. J. Forsdike, seconded by Councillor Dawson, "that this Federation are of opinion that the member in question is entitled to be exempt from the new rules for the present contract, in accordance with the special reservation to that effect in the revised rules." The president reported that the emergency committee were desirous of having a conference with the association secretaries at the earliest possible date. It was suggested that it might be held on the day of the next Federation meeting, and that Mr. White, the National secretary, be invited to be present. Councillor G. Haigh, president of the Barnsley Association, stated that if it was in the interest of the Federation to postpone the visit to Barnsley until November, his association will be willing to arrange accordingly. Mr. J. S. Myers, on behalf of the president and members of the Leeds Association, invited the Federation to hold the next meeting in that town. It was resolved, on the motion of Mr. A. J. Forsdike, seconded by Councillor W. G. England, to hold the next meeting of the Federation and conference of secretaries at Leeds, on Thursday, October 22nd.

The Grimsby Association had kindly made arrangements for the members to inspect the Fish Docks, and also provided tea at the conclusion of the meeting. On the motion of Councillor England, J.P., seconded by Mr. A. J. Forsdike, a hearty vote of thanks was accorded to the president and members of the Grimsby Association for their courteous attention and generous hospitality.

LOCAL ASSOCIATIONS AFFILIATED TO THE YORKSHIRE FEDERATION.

HALIFAX ASSOCIATION.

Secretary: A. E. Dalzall.

The number of members to date is 26.

A meeting of this association was held at the Builders' Exchange, Halifax, on September 24th, at 7.30 p.m., the president, Mr. Lewis Firth, in the chair. Minutes of the previous meeting, held April 15th, having been confirmed, the secretary was directed to forward to the Yorkshire Federation the sum of £4 13s., being the contribution on £9,283 on account of wages paid at 1s. per cent. The secretary reported that, in accordance with the arrangements made with Lloyds, the annual return under the Act would be made by Lloyds on behalf of all those members who were covered with them. The secretary also reported that five members had not yet sent in returns of wages paid for the twelve months ending December 31st, 1907, and he was directed to press for the same. He further reported that the new abstract of the Factory Act, Form 57, was now in stock, and could be had by any of the members on application; and that the half-yearly meeting of the Conciliation Board was duly held on May 23rd, when the following officers were elected representatives:—Employers: Builders, Mr. Ben Riley, and Mr. Joshua Robinson; Joiners, Mr. Frank Moore. Operatives: Masons and Carpenters, Mr. Pratt, Mr. Baldwin, and Mr. H. Brown. President, Mr. Ben Riley; Vice-president, Mr. H. Pratt; Secretaries (employers), Alf. E. Dalall, F.A.A., Exchange Chambers, 29, Northgate, Halifax; Masons, Mr. C. Cordingley; Carpenters and Joiners, Mr. J. Booth.

Messrs. Raynor and Naylor reported on the meeting held in Sheffield on July 16th, and the minutes of the Yorkshire Federation meeting, held at Bridlington on August 21st, were read.

The secretary was directed to notify the Federation secretary that the Halifax Association was distinctly against any alteration in the rate of wages in this district, and against any suggestion for general reduction.

Mr. Naylor proposed, and Mr. Bancroft seconded, that the secretary use his best endeavours to persuade architects and others in Halifax and district to adopt the Federation Contract Form.

Mr. Raynor, on behalf of the association delegates, reported that the suggested amendments and alterations to the Halifax County Borough by-laws which had been drawn up by the Committee of Halifax builders, architects, and lawyers, had been submitted to the Council and received by them in a very satisfactory manner, and he reported many valuable and useful suggestions which the Council had conceded, and that generally the committee's work had resulted very satisfactorily. The secretary was directed to interview Mr. Fox, the secretary of the Halifax Architectural Society, and obtain from him a copy of the concessions and circulate them amongst the members as early as possible.

The next meeting is to be held on Thursday, November 5th, at the Halifax Building Trades Exchange, at 7.30 p.m.

SHEFFIELD ASSOCIATION.

Secretary: T. Smith.

There was a good attendance of members at the September monthly meeting of the Sheffield Association. Mr. T. Eshelby presided.

The question of the allowance by builders' merchants of preferential terms to builders again arose, on a statement by the secretary, who reported that a member had placed in his hands for sight the price list of a builder's merchant which he had obtained from a private person, and which bore an impress from a rubber stamp giving trade terms. The secretary also presented anonymously the letter of a builder's merchant—a member of the association—which stated, in reply to a builder's enquiry, that they (the merchants) could not allow the 10 per cent. asked for on goods supplied, as the architect had been told that their quoted prices were absolutely net.—Both matters were left over for discussion at the forthcoming meeting of the association and the Master Builders' Association.

A letter was read from the Operative Bricklayers' Society complaining that masons were being allowed to cut brickwood. It was pointed out that the complaint only referred to the cutting of holes for fitters, and that it did not therefore constitute a breach of the rules.

The secretary was instructed to send out a gummed printed slip to be attached to rules in workshops, calling attention to the commencement of short time on October 24th instead of November 1st, as agreed at the annual meeting of the local Conciliation Board.

A letter covering a copy of the corporation's proposed new by-laws was read from the town clerk. The letter was received on the Tuesday morning, and stated that the City Council proposed to confirm the by-laws on the Wednesday. At the instruction of a few members of the committee, he at once sent a letter of protest to the town clerk, pointing out that as the proposed by-laws embodied some drastic alterations the association requested that they should be referred back, so as to give the association an opportunity of considering them, and, with the assistance of the architects, the by-laws had been referred back at the council meeting, despite the most strenuous opposition. A committee, consisting of the president, and Messrs. J. Biggin, J. D. Cook, A. J. Forsdike, T. Roper, and J. A. Watson, were appointed to consider the by-laws and consult with the highways committee of the corporation, if such a meeting could be arranged.

In reply to a letter from the Yorkshire Federation, the secretary was instructed to say that the local Conciliation Board was a great success, that the association had recently obtained a concession from the city council in reference to retention money on corporation contracts, making the retention now only 5 per cent. and six months' maintainence instead of 10 per cent. and 12 months'. So far as the National Form of Contract was concerned, the matter was at the moment under discussion with the local architects' society, who had pointed out that they were advised by the R.I.B.A. that a defect in the contract was that while it provided for the bankruptcy of the client, it did not provide for such an eventuality on the part of the contractor.

A letter was ordered to be sent to the treasurer, Mr. A. Martin, expressing the sympathy of the association with him in his serious illness, and the hope that he would be speedily restored to health.

The treasurer's statement showed the finances of the association to be in a healthy position, the total already collected for the current year being £42 17s. 1d. more than for the whole of 1906, and £6 5s. 1d. more than for the whole of last year.

With respect to obtaining direct representation on the city council, the secretary regretted to have to report, on behalf of Mr. Forsdike, who was unavoidably absent, that he had definitely decided not to contest a seat. It was then suggested that as a prospective councillor could not be obtained this year, a vigilance committee should be formed, and the constitution of the committee was left over to next meeting.

The matter of fixing uniform holiday week so as best to meet the operatives was discussed, and left over for further discussion.

The secretary referred to the published minutes of the city council with reference to estimated wages from the model cottages at Wincobank, and the way in which that revenue was shewn to be effected by the provision of such roads as the Council stipulated for on other building sites.

A letter was read from the Architects' Society in reference to p.c. sums, and in reference to insertion of an item in quantities to cover workmen's compensation. The architects stated that they had obtained legal opinion on the point, and were satisfied that the risk belonged exclusively to the builder so far as payment for insurance was concerned.

It was mentioned that a circular letter with reference to the inter-trading rule had been sent out to all ordinary members requesting them to make to the secretary in confidence a return of all the merchants and manufacturers with whom they were trading with the object of inducing such persons and firms to become associate members of the association.

WAKEFIELD ASSOCIATION.

Secretary: J. Beaumont.

The number of members to date is 30.

The monthly meeting of this Association was held at the Strafford Arms Hotel, Wakefield, on October 1st, Mr. Tom Lee (president) in the chair.

The minutes of the previous meeting having been read and confirmed, the president, Alderman Judge, and Mr. Fallas reported on the busi-

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ness transacted at the Yorkshire Executive Council meeting, which they had atended in Grimsby on September 25th, and several matters arising out of this report were discussed.

The correspondence since the last meeting was also read, and a discussion was opened by the president and Mr. Sanderson with reference to the rate of insurance of plasterers' workmen under the Workmen's Compensation Act, and, on the proposition of Alderman Judge, seconded by Mr. Fallas, the secretary was instructed to write on the matter to Mr. Davidson, the Federation secretary.

It was reported that since the last meeting the circular letter drawn up by the Yorkshire Federation had been sent to each local architect and surveyor, and certain replies were submitted, dealing especially with the wishes of the members of the association for the inclusion in quantities of an item to cover the insurance against risks under the Workmen's Compensation Act. Arising out of this, an important discussion took place with regard to the liability of the undertakers of the work to workmen of the contractors in certain events. The working rules with the operative joiners were produced, which had been signed on behalf of the operatives, and arrangements were made for the signing of them on behalf of the employers.

On the motion of Alderman Judge, seconded by Mr. Fallas, the secretary was directed to attend the meeting of secretaries to be held in Leeds this month.

YORK ASSOCIATION.

Secretary: J. Hague.

The general quarterly meeting of the above association was held at the Old George Hotel, Pavement, on Tuesday, September 22nd, at 8 p.m. The president (Mr. G. Sharp) took the chair, and presided over a good attendance of members.

The minutes of last meeting having been read and confirmed, the president referred to the Yorkshire Federation meeting, which had been held in York since the last general meeting of the local association. A well-attended and interesting meeting had been held, and he thought the delegates enjoyed their visit to York.

Reduction of Wages.—This question, which had been referred to the local associations for consideration, having been discussed, it was unanimously resolved that the time was inopportune to consider the question of any reduction, and that a letter to that effect be sent.

Schedule of Prices.—The recommendation of the executive that the day's-work schedule be revised, and that committees be appointed for that purpose, was brought forward. Mr. G. Rawling proposed, "That we do not proceed further with the matter." The proposition receiving no seconder, Mr. C. Dent proposed, Mr. Biscomb seconded, and it was carried, "That the recommendation of the executive be adopted." Representatives of the various trade sections were then elected to serve on the revision committees.

Federation Letter to Architects and Surveyors.—This letter was read and approved, and it was unanimously agreed that the following additional recommendation be sent out with reference to cases in which it was usually stipulated that tenders should be sent in accompanied by schedules of quantities: "That the schedule of quantities be sent separate from the tender in a marked and sealed envelope, and that only the successful contractor's schedule be opened, the remainder to be returned unopened."

Builders taking off Own Quantities.—The chairman, on opening the discussion, said that a good deal of time was spent in this way by contractors, for which they got no return for their labour. It seemed to him unfair, both to the contractor and the architect, for builders to take off quantities. Mr. Biscomb said it was inadvisable to make a hard-and-fast rule. Much depended on the circumstances of each particular case. He should strongly oppose any resolution which might be brought forward having a tendency totally to prohibit the practice. Mr. Fairweather suggested that a minimum price might be fixed, and no tender should be given for work exceeding such minimum price, unless quantities were supplied to the contractors. After further general discussion, Mr. England proposed, and Mr. G. Rawling seconded: "That this association refuses to give tenders for any work put up for open contract by advertisement unless quantities be supplied." Mr. Fairweather proposed as an amendment: "That this association refuses to give tenders for any contracts amounting to a minimum of £150 (all trades) unless quantities be supplied." No seconder coming forward, the amendment fell through, and the original proposal was put to the meeting and declared carried.

There is nothing to report from the following associations affiliated to the Yorkshire Federation:—Barnoldswick, Barnsley, Bradford, Bridlington, Dewsbury, Grimsby, Harrogate, Huddersfield, Hull, Leeds, Malton (Norton), Morley, Scarborough, and Shipley and District.

THE NORTHERN COUNTIES FEDERATION.

Secretary: W. H. Hope, Solicitor, Post Office Chambers, 14, Norfolk Street, Sunderland.

The quarterly and general meeting of the Northern Counties Federation was held at the Grand Hotel, Sunderland, on Tuesday, September 29th, at 4 p.m., when the attendance numbered 36. The minutes of the last quarterly meeting, held at the Cottage Exhibition, Walker Gate, on July 15th, which had been printed and circulated, were taken as read.

The executive council's reports upon the following subjects were received and adopted:—Suggested reduction of the wages of the operatives; Federation and other local associations taking up shares in the Federated Employers' Insurance Association, Ltd, Manchester; "Builders' Journal"; annual return of membership.

The secretary read the correspondence that had passed between this Federation and the Northern Centre with respect to the working of the scheme for the settlement of disputes in the building trades, which showed that so far the conciliation scheme within this Federation had worked satisfactorily.

Two important questions at issue with the Durham County Council have reference to the principle of independent arbitration for the settlement of disputes, and the proposal that the bill of quantities should be part of the contract. Representations have been made to the council by this Federation, but without avail, as to these two important matters. On the proposition of Mr. A. Ross (South Shields), seconded by Mr. H. McNaughton (Middlesbrough), it was unanimously resolved "That a deputation be appointed from this Federation to meet the Education Building Committee of the Durham County Council at their next meeting to go fully into the two important questions at issue, and failing to secure a modification of the conditions of contracting, that the members of this Federation pledge themselves to refuse to tender; and that the deputation consist of Messrs. S. Easten, G. Gradon, J. Davison, J. W. White, A. Ross, W. T. Weir and the secretary, with power to appoint a substitute if necessary. And that all the members of the Buildings Committee be written to fully explaining the grievances of this Federation."

The president drew attention to the loss the Federation had sustained by the death of Mr. T. Banks, of South Shields, a valued member of the Federation, and, seconded by Mr. A. Ross, it was resolved, the members standing:—"That a letter of condolence be sent to his widow and family expressing this Federation's sympathy and regret."

It was resolved that the annual meeting of the Federation be held at Newcastle-on-Tyne in December.

Those present were afterwards entertained to tea by the Sunderland Association, to whom a hearty vote of thanks was accorded for their hospitality.

LOCAL ASSOCIATIONS AFFILIATED TO THE NORTHERN COUNTIES FEDERATION.

MIDDLESBROUGH ASSOCIATION.

Secretary: Walter Rigby.

The monthly general meeting of the Middlesbrough Association was held on Tuesday, October 6th, the president, Mr. W. S. Davison, in the chair.

With reference to the circular issued by the Streets Department of the Corporation, *re* the opening up of streets, for drains, etc., the committee who have this matter in hand reported that a meeting with the road superintendent had been held, and a schedule of prices, with certain conditions, for the making good of roads opened up, was considered and agreed upon, subject to the approval of the council. The schedule is based upon prices per lineal yard, for ordinary macadam roads, tar, macadam roads, stone and scoriæ brick paving, and woodblock paving. Minimum width of trench 2 ft. The builder to excavate and fill in ready for top crust, but not to supply or lay concrete bottom. Insertion of junction, or flanged socket connection according to size of main pipe.

It was resolved that the secretary, if possible, attend the National Conference of Secretaries in London on October 20th.

Mr. J. Bainbridge, builder and contractor, Redcar, was accepted for membership.

The resolution of the Northern Counties Federation in appointing a committee to interview the Durham County Council in reference to the contract agreement was approved.

SOUTH SHIELDS ASSOCIATION.

Secretary: J. G. Robertson.

It will be remembered that it was recorded on page 255 of this journal of September 30th, that the members of the South Shields branch were still deploring the death of one of their number, Mr. Samuel Deacon (who had been for many years an active member of the committee, and one of the honorary auditors of the branch, and who had died at the early age of forty-four), when they were further shocked by the death, on September 8th, of another valuable colleague, Mr. Thomas Banks, at the age of fifty-five. The branch now has to mourn yet another death—the fourth that has occurred within the short space of three months. Never before, as far as can be remembered, has our branch lost so many members within so short a period. Mr. Frank L. Pearson, who passed away early on Saturday morning, October 3rd, at his residence in Wentworth Terrace, South Shields, was 63 years old. He was a member of the firm of Henry Wilson and Co., timber merchants, Mill Dam. His business brought him into close contact with most of the shipbuilders and builders in the district, among whom he made many close personal friends. He was a Freemason and a member of the "Hilda" Lodge. He leaves a widow and a son and daughter.

At the monthly meeting of this branch (Councillor J. T. Armstrong presiding), when there was a large and representative gathering, the proposed new rules for the branch, which had been drawn up by a small committee and sent out in draft form to all our members were gone over serially. With the exception of the alteration in the title of our branch from "Northern Counties Federation of Building Trade Employers, South Shields Branch," to the 4' South Shields Branch of Building Trades Employers, affiliated with the Tyne and Blyth District of Building Trades Employers, and with the Northern Counties Federation of Building Trades Employers," the draft rules, with one or two minor alterations, were unanimously approved of as the rules of our branch.

The chairman referred to the question of having a telephone card printed with list of members and sub-traders on, to help to put into real operation the inter-trading rule, which provides that members shall as far as possible deal with members of the branch, and giving a preference to sub-traders who are members. Eventually it was agreed to leave the preparation of a draft form in the hands of the treasurer, the president, and the secretary.

After a long conversation, in which practically all the members present took part, it was unanimously agreed that the time was not opportune to seek a reduction in the wages of the operatives in the different trades.

STOCKTON-ON-TEES ASSOCIATION.

Secretary: W. C. Creasor.

On September 17th a presentation was made to Alderman T. E. Atterby, J.P., and Mrs. Atterby, on their marriage. Mr. John Davison, president of the association, occupied the chair, and in asking Alderman and Mrs. Atterby's acceptance of a handsome silver tea urn and a silver rose bowl from the members of the association, referred to the very prominent part Alderman Atterby took a number of years ago in helping to establish the association. He was one of the most respected members of the building trade in the North of England. Mr. Johnson and Mr. Brown also spoke. The latter said he had not had the pleasure of being associated with Alderman Atterby so long as other members of the Association, but from what he had seen of his work, Alderman Atterby deserved the thanks of his fellow builders. Mr. Creasor, the secretary of the Association, took the opportunity of thanking Alderman Atterby for the great assistance he had received from him in the early days of the Association. Alderman Atterby had spared neither time nor money for the Association in its beginning. Practically every honour the Association, or the Northern Federation could confer would have ben Alderman Atterby's, but he refused them all, saying he was content to remain one of the rank and file, and his thanks would be to see the Association really strong and alive. Alderman T. E. Atterby expressed his thanks for the valuable present they had made to Mrs. Atterby and himself. He was afraid they had over-estimated the little work he did towards organising the Master Builders' Association. He was glad the day of disputes and lock-outs was past in connection with their trade, and that now all these labour difficulties were dealt with by a Conciliation Board. He thought the proud position they were in was ample reward for the trouble they had taken in establishing associations all over the country. Strikes and lock-outs were a disgrace to civilisation, as, no matter how long a strike or lock-out lasted, they generally had to refer the matters to arbitration in the end. Mrs. Atterby also briefly expressed her thanks. The meeting was unique in the annals of the Association, as, for the first time, ladies were present.

SUNDERLAND AND DISTRICT ASSOCIATION.

Secretary: W. H. Hope, Solicitor.

A general meeting of this association was held in the board-room on Tuesday, October 6th. Among the business was the reception of a resolution passed at the quarterly meeting of the Northern Counties Federation of Building Trades Employers with respect to securing fair conditions of contracting from the Education Buildings Committee of the Durham County Council. The two important questions at issue are—the principle of settlement of disputes by an independent arbitrator, and that the bill of quantities shall be part of the contract.

There is nothing to report from the following associations affiliated to the Northern Counties Federation:—Blyth, Hartlepools, Newcastle-on-Tyne, North Shields, and Teeside.

THE MIDLAND CENTRE OF THE NATIONAL FEDERATION.

Secretary: F. W. AMPHLET, 58, New Street, Birmingham.

A meeting of the emergency committee was held at the secretary's offices, on September 10th, Mr. Wm. Wistance (president) being in the chair. The meeting had been called specially to consider the resolution passed at the last half-yearly meeting with reference to the revision of the Centre's rules. After some conversation, it was decided that the rules should be revised and reprinted. A few of the rules were discussed in detail, after which the secretary was instructed to draw up a copy of suggested rules (embodying the decisions arrived at by the committee), and to send printed proofs of same to the members of the committee prior to their next meeting.

With reference to the resolutions passed at the last half-yearly meeting of the National Federation in regard to the approved Form of Contract, the secretary was instructed to obtain, through the local associations, the names and addresses of all mayors, town clerks, borough surveyors, chairmen of spending committees, and other officials in the district, and to forward same to the National secretary. The emergency committee met again on October 1st, when the copy of suggested Midland Centre rules, drafted by the secretary, was considered, and, with slight alterations, approved and recommended to the Executive Council for adoption. The secretary was instructed to forward a copy of the proposed rules to each local association for consideration prior to the Executive Council meeting, October 15th.

LOCAL ASSOCIATIONS AFFILIATED TO THE MIDLAND CENTRE.

NORTHAMPTON ASSOCIATION.
Secretary: A. L. Airs.

The number of members to date is 35.

The annual general meeting of the Northampton Association was held on Friday evening, October 9th, at the Peacock Hotel, Northampton, when there was a representative attendance of members. The chair was taken by Mr. Henry Green, president. The minutes of the last annual general meeting were adopted, and the accounts up to June 30th, 1908, were passed.

The following officers were unanimously elected for the ensuing year:—Mr. Edwin Archer to be president, Mr. R. W. Harris to be vice-president, Mr. H. W. Hanwell hon. auditor, and the executive committee.

Hearty votes of thanks were accorded to the outgoing president, vice-president, and other officers, who suitably replied.

The annual dinner is to be held at the Angel Hotel, Northampton, on Thursday next, October 15th.

NOTTINGHAM ASSOCIATION.
Secretary: W. J. Barton, F.C.I.S.

There is little to report this month. Trade is still bad.

The matters mentioned in the last report are still having attention, further correspondence having been addressed to the city authorities and to the Architects' Society, while an interview was held with the Ironmongers' Association, but the negotiations have not yet advanced sufficiently to enable a report to be made.

[It will be remembered that last month it was reported that the association had appointed a sub-committee to consider several matters of interest and importance to the trade—for example, the increasing number of p.c. items in quantities, ironmongers declining to allow discounts on goods which the builder has to fix and pay for, and other matters of a similar character.]

WALSALL ASSOCIATION.
Secretary: J. L. Sweet.

The monthly meeting of this association was held on Friday evening, September 25th, when the chair was taken by the president, Mr. W. Wistance, and there was a fair attendance of members. The Census of Production Act, and the return issued by the Board of Trade thereunder, were discussed at considerable length by the meeting, as was also the new Form of Contract, and it was decided to recommend the members to use the new form on all possible occasions. The arrangement with the National Federation as to the "Builders' Journal" was also mentioned, and the members present expressed their intention of supporting the journal, the general appearance and contents of which were highly commended. The other matters considered were of minor interest.

The building trade in the Walsall district is still very quiet, and the prospect for the coming winter is far from encouraging.

There is nothing to report from the following associations affiliated to the Midland centre:—Birmingham, Bromsgrove, Burton-on-Trent, Coventry, Derby, Dudley, Hinckley, Kidderminster, Leamington, Leicester, Lincoln, Long Eaton, Loughborough, Mansfield, Newark, North Staffordshire, Nuneaton, Redditch, Stafford, Stourbridge, West Bromwich, Wolverhampton, and Worcester.

THE SOUTH-EASTERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The London Federation, The Southern Counties Federation, and The Eastern Counties Federation.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

THE LONDON FEDERATION.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

THE SOUTHERN COUNTIES FEDERATION.

Secretary; T. COSTIGAN, 31 and 32, Bedford Street, Strand, London, W.C.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTHERN COUNTIES FEDERATION.

There is nothing to report from the following associations affiliated to the Southern Counties Federation:—Brighton, Chatham and District, Gravesend, Maidstone, Portsmouth, and Southampton. We should be glad to hear from the secretaries of these associations.

THE EASTERN COUNTIES FEDERATION.

LOCAL ASSOCIATIONS AFFILIATED TO THE EASTERN COUNTIES FEDERATION.

GREAT YARMOUTH ASSOCIATION.
Hon. Secretary: R. J. Hill.

The number of members to date is 46.

The first monthly meeting after the summer vacation should have been held on Tuesday evening, October 6th. The secretary, in his usual course, advised every member by postcard, but much regretted that, in the result, only three members put in an appearance, so that no business could be done. Probably the slackness of work in this district has had a depressing effect on the members. The secretary, however, expresses the earnest hope that every member will make a special effort to attend the next meeting, which takes place on November 3rd, as that will be the annual meeting. A committee meeting will be called to make the necessary arrangements for this meeting.

There is nothing to report from the following associations affiliated to the Eastern Counties Federation: Cambridge, and Norwich.

THE SOUTH-WESTERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The South-Western Federation, and The South Wales Federation.

Secretary: W. F. LONG, 3, Northumberland Buildings, Bath.

THE SOUTH-WESTERN FEDERATION.

Secretary; W. F. LONG, 3, Northumberland Buildings, Bath.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTH-WESTERN FEDERATION.

BATH ASSOCIATION.
Secretary: E. J. B. Mercer.

There are no matters of particular interest to report this month. The slight dispute mentioned in the last report is we hope in a fair way for a satisfactory settlement.

Trade is still very dull.

Councillor J. W. Knight, J.P., president of the Bath Master Builders' Association for the present year, has accepted the office of Mayor of Bath for the ensuing year.

BRISTOL ASSOCIATION.
Secretary: A. J. Pitt.

The ordinary monthly meeting of the members of the Bristol Association was held on Thursday, September 24th, under the presidency of Mr. Frank N. Cowlin, when the principal business for consideration was in reference to the suggested amendment in the fair wages clause in the Corporation form of contract. As previously reported, an interview took place between representatives of the Association and the Bristol Trades Council in reference to a resolution (moved by the secretary of that body in the City Council), proposing an amendment in this clause, to which the master builders took exception as being impossible for them to carry out, when it was decided that each side should further discuss the matter, and endeavour to frame a clause which they considered would be acceptable to all parties, and submit same to the other side for their approval. The sub-committee appointed at the last meeting to deal with this question reported that they had met and drafted a clause which they considered would meet the case, and this, after full discussion by the members, was approved. It was accordingly decided to communicate with the Bristol Trades Council suggesting that the amended clause as moved in the City Council be approved, with, however, the elimination of the last paragraph—"For the purposes of this clause, a sub-contractor shall be deemed to include any person who employs workmen in the preparation of materials to be used by the contractor in carrying out his contract," and the substitution of the following:—"For the purposes of this clause, sub-contractors shall be deemed to include all specialists, merchants, tradesmen, or others executing any specific trade or portion of the works sub-let to them by the contractor for the purposes of the contract, with the approval of the architect or engineer." The complete clause thus reading:—"The works shall not be assigned or sub-let as a whole to any contractor, nor is any portion of the works to be sub-let without permission in writing from the architect (or engineer, as the case may be), and then only to responsible parties approved by the architect (or engineer); and the fact of any sub-contractor being permitted by the architect (or engineer) to undertake portions of the work shall not relieve the contractor from the full and entire responsibility attaching to the contractor, including responsibility under the clause herein contained with reference to the payment of wages and the observance of the hours and conditions of labour, nor from active superintendence of the works either personally or by a qualified agent during their progress. Provided that if the contractor shall be required by the architect (or engineer), the Corporation, or the specification to employ any particular sub-contractor, he shall not be responsible for work done or materials supplied by such sub-contractor, nor shall he be responsible to see that the clause relating to the payment of wages and the observance of the hours and conditions of labour is carried out with reference to the persons or workmen employed by such sub-contractor, nor for anything arising out of such sub-contract. For the purposes of this clause, sub-contractors shall

be deemed to include all specialists, merchants, tradesmen, or others executing any specific trade or portion of the works sub-let to them by the contractor for the purposes of the contract, with the approval of the architect or engineer."

The sub-committee mentioned that they had received considerable assistance in framing the amended clause from a letter received from Mr. A. G. White, the secretary to the National Federation, arising out of the report upon this question which appeared in the "Builders' Journal," and in which, amongst other matters, that gentleman had suggested endeavouring to induce the Corporation to adopt the National Form of Contract. The letter was read to the meeting, and the secretary was instructed to thank Mr. White for the valuable suggestions contained in his letter, which had been of great assistance, but to point out that, much as the members would like to see the adoption of the National Form of Contract by the Civic Authorities, yet they feared it was absolutely impossible to bring about such a change, the Association having already spent years in arriving at the present form, which, however, was a very fair and equitable one, and based upon the National Form. It may be mentioned that, thanks to the efforts of the Association, the National Form of Contract is almost universally used in this city.

The president reported that the Association had been in communication with the Joint Trades Committee in reference to the formation of the Local Conciliation Board, but that there were one or two matters which he desired to bring to the notice of their secretary, which could be best done at an interview, and accordingly the president was desired to take an opportunity of discussing the matter with that gentleman.

There is nothing to report from the following associations affiliated to the South-Western Federation:—Bridgwater, Cheltenham, Exeter, Gloucester, Hereford, Stroud, Taunton.

THE SOUTH WALES FEDERATION.

Secretary; W H. BILLINGS, Salubrious Chambers, Swansea.

There is nothing to report from the following associations affiliated to the South Wales Federation:—Cardiff, Newport, Pontypridd, and Swansea.

SCOTTISH BUILDING TRADES FEDERATION.

Secretary: JAMES CAMERON, Solicitor, 61, Lothian Road, Edinburgh.

The annual general meeting of the Scottish Building Trades Federation was held in the Imperial Hotel, Stirling Street, Aberdeen, on Friday, September 18th, Mr. James Leslie, vice-president, presiding. Delegates were present from Aberdeen, Dundee, Inverness, Edinburgh, and other centres. Apologies for absence were intimated from Oban, Hawick, Paisley, Perth, and Glasgow Master Builders' Associations.

The report by the executive, with the treasurer's account of intromissions for the past year, were read and adopted. The cash account closed with a substantial balance at the credit of the Federation.

In their report, the executive regret that again they are obliged to record that the building trade throughout Scotland is in a very unsatisfactory condition. It is recalled that at the last annual meeting a resolution was passed protesting against the decision of the Home Secretary not to appoint a member of the Scottish building trades on the Departmental Committee who had to enquire into the different systems of scaffolding in use. The scaffolding regulations which the Departmental Committee had framed were found in many cases to be altogether inapplicable to Scotland, and the protest passed at the annual meeting was sent to the Prime Minister, the Home Secretary, the Lord Advocate, the Secretary for Scotland, the Solicitor-General, and thirty-two Scottish members of Parliament. The witnesses from Aberdeen and Edinburgh who gave evidence before the Departmental Committee in London, carefully went over the report and regulations proposed by them. Many amendments were made thereon, and these were duly communicated to all the associations in the Federation, who were asked to say whether they approved or had any further amendments to propose. The several Glasgow associations were similarly approached, and now a set of amendments have been unanimously adopted for submission to the Home Secretary. It is further reported that efforts to get the Glasgow Employers' Council into the Federation have not, so far, met with success. It is believed that all the associations in Glasgow have not yet joined the Employers' Council, and this may to a certain extent explain why Glasgow is still outside the Federation. Other matters dealt with in the report are the Census of Production Act, 1906, the object of which is to obtain the quantity and value of the production carried on in the United Kingdom in the year of return; workmen's compensation insurance; and the inter-trading rule, which, in Scotland, so far, only Edinburgh has taken up in earnest.

Reports on the state of trade all over the country were read by the secretary, and, without exception, they were all in the same strain—dull trade, and little prospect of improvement.

Preliminary notice of the Conference of Secretaries to be held in London on October 20th, was next read, but it was decided that the Federation would not send the secretary this year. Mr. Cameron has, however, decided to go to the conference at his own expense; for he recognises the great educational value of such conferences.

The proposed scaffolding regulations were again brought up, and the secretary gave a report on the amendments proposed to be made thereon. It was agreed that a deputation be appointed to wait upon the Home Secretary in London, to bring these amendments under his notice, and to support same, and Messrs. James Leslie and George Farquhar, Aberdeen, along with Mr. John Lownie, Edinburgh, were appointed to go as a deputation.

As regards workmen's compensation insurance, the secretary outlined one or two schemes whereby a collective insurance arrangement might be come to; but after due consideration it was agreed that each member should insure at his own risk.

The secretary then read a paper on "Federation Organisation," pointing out how the Federation could be worked to better advantage if properly organised. [The substance of this paper appears in another part of the present issue.]

A deputation, consisting of Messrs. Craig and T. C. Stocks, Dundee, and the secretary, was appointed to go to Perth to endeavour to stir up some interest there.

The election of office-bearers resulted as follows:—President, Mr. James Leslie, Aberdeen; vice-president, Mr. Hector McVinish, Inverness. Delegates to National Federation, Messrs. James Leslie and Hector McVinish.

It was agreed to have the half-yearly executive meeting in Perth in April, 1909.

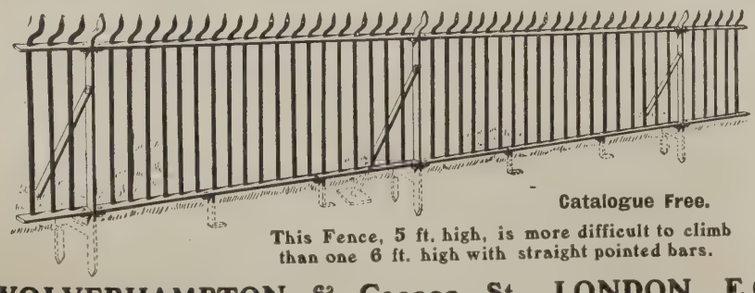
After the meeting, the delegates were entertained to lunch by the Aberdeen Building Trades Federation.

There is nothing to report from the following associations affiliated to the Scottish Federation:—Aberdeen, Alloa, Dingwall, Dumfries, Dundee, Hawick, Inverness, Keith, Kilmarnock, Oban, Paisley, Perth.

ASSOCIATIONS IN IRELAND.

There is nothing to report from the Dublin and Belfast Associations. We should be glad to hear from them, and trust that next month they may have something interesting to report.

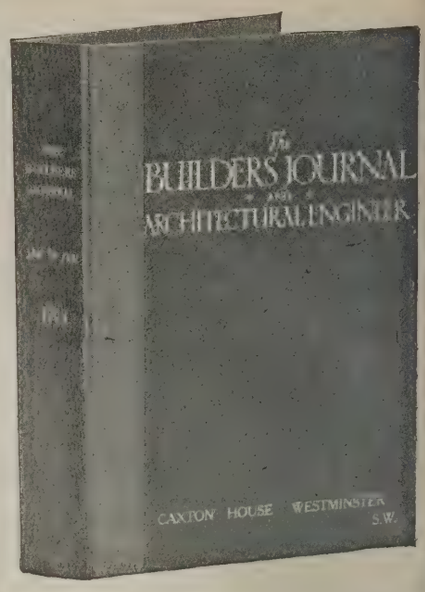
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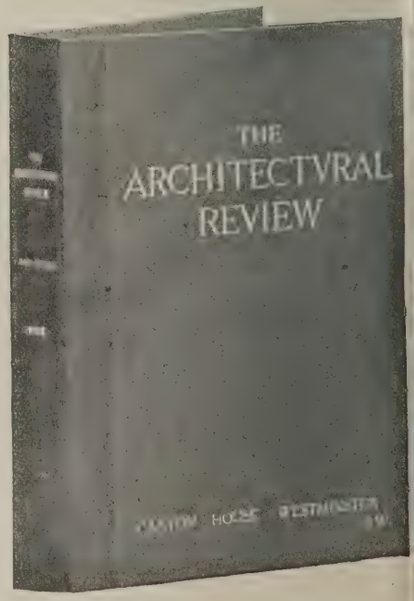
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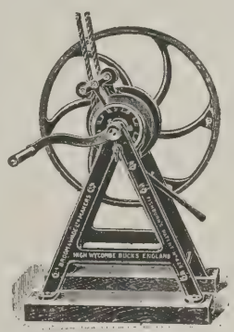
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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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Advertisements for the above can be received up till 10 o'clock on Tuesday at

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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abercynon (Wales). — For erection of a mixed school, with offices and boundary walls, at Carnetown, Abercynon, to accommodate 350 children, for the Mountain Ash Education Committee. Mr. W. H. Williams, architect, Town Hall, Mountain Ash:—

D. Davies and Sons, Cardiff	£5,370 0 0
T. W. Davies, Mountain Ash	5,330 0 0
L. Davies, Abercynon	5,214 19 8
J. H. James, Cardiff	4,755 13 0
Jones Bros., Treharris	4,735 0 0
T. F. Howells,* Cardiff	4,677 11 1

*Accepted.

Ashton-in-Makerfield.—For making up several private streets under the Private Street Works Act, 1892, for the Urban District Council. Mr. Thos. Burgess, F.I.S.E., surveyor, Ashton-in-Makerfield:—

W. F. Chadwick, Ltd., Liverpool	£5,492 2 2
Bennie and Thompson, Warrington	4,874 8 4
F. Hayes, Leigh	4,865 11 4
S. Kearsley and Co., Leigh	4,677 7 4
Heaton Bros., St. Helens	4,430 1 11
Cowburn and Sons, Hindley	4,427 3 11
Worthington, Manchester	4,415 5 3
Orrett and Sons, Ormskirk	4,270 18 10
H. and F. Lomax, Wigan	4,158 7 4
Webster and Winstanley,* Ashton-in-Makerfield	3,909 1 10

* Accepted.

Barking (Essex).—For laying the Upney Valley sewer (second portion), for Barking Town Urban District Council. Mr. C. F. Dawson, surveyor. Mr. R. A. Lay, assistant surveyor:—

J. Russell	£2,229 19 5
F. H. Kimber	1,617 1 10
T. W. Pedrette	1,191 18 11
W. G. Wakeling	1,184 17 9
D. T. Jackson	1,025 5 0
H. W. Taylor	1,020 5 11
W. J. Jackson	979 2 2
Wilson, Border and Co.	934 15 1
W. H. Hyde and Co.	921 0 0
G. Harber and Co.	884 2 6
A. M. MacDonald	879 10 0
MacLean and Co.	873 14 8
J. W. Jerram,* Boundary-road, East Ham	845 18 10

*Provisionally accepted.

Caerphilly (Wales).—For paving kerbing, channelling, flagging, sewering, forming, metalling, etc., parts of Eglwysilan Road, Abertridwr, Morgan Street, and Church Street, Llanbradach, for the Caerphilly Urban District Council. Mr. Alfred O. Harpur, surveyor:—

W. Burton, Cadoxton-Barry	£947 12 5
G. L. Morgan, Pontypridd	839 7 6
R. Webb and Son, Abercynon	823 16 1
W. J. Morgan, Penyrheol, Caerphilly	816 12 7
A. G. Collins and Co., Cadoxton-Barry	808 19 0
Geo. Rutter,* Barry	767 7 9

*Accepted.

Clacton-on-Sea.—For construction of stormwater relief sewer in Rosemary Road, Clacton. Mr. W. H. Radford, C.E., engineer, Nottingham:—

E. Frost, Tottenham, N.	£2,147 19 9
W. J. Jackson, Plaistow, E.	1,514 16 7
Carter and Wright, Yarmouth	1,459 0 0
Wilson, Border and Co., Romford	1,374 17 0
R. M. Parkinson, Peterborough	1,367 0 0
Z. Fairclough, Clacton	1,350 0 0
H. H. Barry, Radcliffe, Notts.	1,270 0 0
Firth and Co.,* Leicester	1,230 0 0

* Accepted.

Cradley Heath.—Accepted for erection of a branch Carnegie free library at Cradley Heath, for the Old Hill Urban District Council:—

W. Willnetts and Sons, Old Hill ... £2,830

London, N.W.—Accepted for constructing sewers and outfall extensions for Hendon Rural District Council. Mr. J. A. Webb, engineer and surveyor.

Outfall Construction.

Kelletts, Ltd., Birkbeck Bank Buildings. Holborn, E.C., £2,414 10s. 3d.

Outfall Sewer from Wealdstone end of Pinner to the Outfall.

Smith and Co., 27, Tothill Street, Victoria Street, Westminser, S.W., £4,188 17s. 6d.

(*Tenders continued on page viii.*)

RICHARD CRITTALL & Co.,

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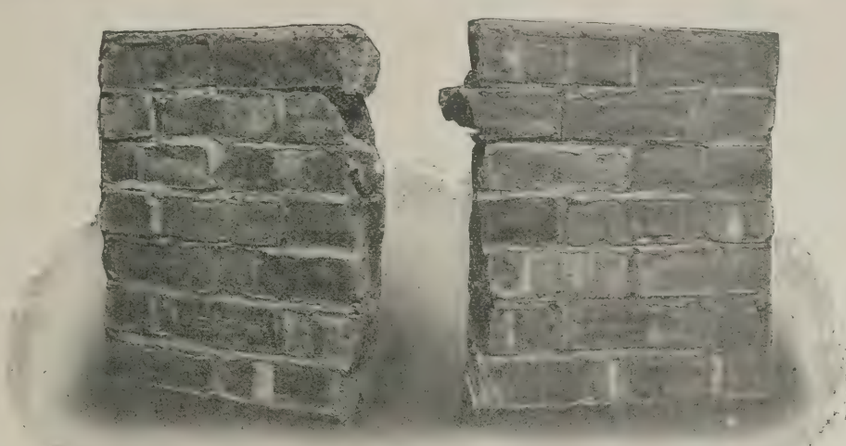
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(*Tenders continued from page vi.*)

London, S.W.—For paving sections of the carriageways of More Park Road and Hurlingham Road with creosoted deal wood blocks, for Fulham Borough Council:—

Improved Wood Paving Co., Ltd.	£2,588 14 3
J. Mowlem and Co., Ltd.	2,456 0 0
W. Griffiths and Co., Ltd.	2,409 13 2
Acme Flooring and Paving Co. (1904) Ltd.	2,400 6 0

Borough Engineer's estimate, £2,050.

London, S.W.—For new ward block, etc., at Isolation Hospital, Mortlake, for the Barnes U.D. Council. Mr. G. B. Tomes, surveyor:—

M. Ward, Streatham	£3,171
Leslie and Co., Kensington Square, W.	2,741
Roberts and Co., Kensington	2,710
Thompson and Beveridge, Harrow Road, W.	2,698
Munday and Sons, Trinity Square, E.C.	2,639
R. T. Hughes and Co., Ltd., Mortlake	2,639
Moss and Sons, Loughborough	2,633
Johnson and Co., Southwark, Bridge road, S.E.	2,629
Spencer, Santo and Co., Kensington High Street, W.	2,601
Turtle and Appleton, St. John's Hill, S.W.	2,595
Hunt and Sons, Barnes	2,566
F. W. Dunkley, Barnes	2,560
W. J. Renshaw, Putney	2,553
Jarman, Richmond	2,549
Peerless, Dennis and Co., Eastbourne	2,520
J. W. Jerram, East Ham	2,497
B. E. Nightingale, Albert Embankment, S.E.	2,495
Wm. Lowe, Barnes	2,495
H. C. Clifton, Bayswater	2,485
B. and A. Gale, Old Kent Road, S.E.	2,468
Thomas and Edge, Woolwich	2,454
Rice and Sons, Teddington	2,450
F. and G. Foster, Norwood Junction	2,356
Hyde and Co., Norwood Junction	2,241
G. Jaggard,* Aldenham Road, Bushey, Herts	2,150

*Accepted.

London, W.—For the construction of underground convenience for the Chiswick Urban District Council. Mr. E. Willis, A.M.I.C.E., engineer and surveyor:—

Doulton and Co.	£1,492
T. W. Pedrette	1,490
O. J. Plumridge and Sons	1,475
John Peattie	1,395
G. Jennings and Co.	1,385
Mellowes and Co.	1,249
W. Blackburn	1,211
C. P. Roberts	1,193

Leyton (Essex).—For construction of underground conveniences in Lea Bridge Road, Leyton, for the Leyton Urban District Council. Mr. William Dawson, M.I.C.E., surveyor:—

Kirk and Randall, Woolwich	£1,638 0 0
G. Jennings, Lambeth Palace Road, S.E.	1,630 0 0
Rowley Bros., Tottenham	1,552 0 0
Shurmur and Sons, Upper Clapton	1,440 0 0
F. and A. Willmott, Ilford	1,425 0 0
F. J. Coxhead, Leytonstone	1,364 0 0
W. Manders, Leyton	1,355 13 8
B. E. Nightingale,* Albert Embankment, S.E.	1,347 0 0

*Accepted.

Newport (Mon.).—For the erection of new buildings for the Newport Young Men's Christian Association, Commercial Street, Newport. Chas. E. Compton, M.S.A., architect, in conjunction with Messrs. Habershon, Fawckner, and Co., 41, High Street, Newport:—

D. Davies and Son, Cardiff	£5,800
W. Terrell and Son, Newport	5,725
T. Jenkins, Limited, Newport	5,650
B. Cooper and Co., Bristol	5,650
R. W. Moon, Newport	5,575
Sydenham Bros., Swindon	5,475
G. F. Ring and Co., Newport	5,448
A. T. Morgan and Co., Newport	5,400
G. F. Leadbeter	5,400
T. N. Morgan	5,300
Thos. Jerrett	5,199
F. W. Powlet	5,198
E. C. Jordan and Son	5,195
J. Charles	5,195
D. W. Richards and Son	5,189
H. Williams and Co.	5,075
C. H. Reed*	4,950

*Accepted.

Rochester.—For construction of a wharf (in timber) at the Common Creek, on the River Medway, for the Corporation. Mr. W. Banks, A.M.I.C.E., city engineer:—

A. Thorne and Sons	£4,337 0 9
Flower and Everett	4,197 11 2
J. Sandwin	3,895 9 4
Tilbury Contracting and Dredging Co.	3,329 4 0
R. H. P. Neal, Ltd.	3,267 0 0
G. Shellabear and Son	3,200 0 0
W. Muirhead and Co.	3,092 9 6
Thames Steam Sawmills, Ltd.	2,891 9 6
W. Rigby	2,867 4 3
Chafen and Newman, Ltd.	2,846 19 7
T. W. Pedrette	2,789 0 0
A. Fasey and Co.	2,777 6 11
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W. Hill and Co.	2,608 0 0
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F. Miskin, Ltd.	2,177 15 6
Kirk and Randall	2,144 0 0
West Bros.	2,139 0 0
Playfair and Toole	2,126 0 0
J. Cochrane and Sons	2,105 4 0
W. Swales	2,092 4 9
Leggott and Speight,* Hull	1,874 9 10

*Accepted subject to consent of Local Government Board.

Woodford Green.—For the construction of 15in. 12in., and 9in. pipe sewers, with the necessary manholes, ventilators, etc., in Chigwell Road, Salway Hill, Snakes Lane, and Grove Hill, for the Woodford Urban District Council. Mr. William Farrington, surveyor, Woodford Green:—

J. Russell, Wanstead	£2,894 17 4
Harber and Co., Forest Gate	2,658 12 10
O. T. Gibbons, Wanstead	2,423 0 6
A. Champniss, Wealdstone	2,361 3 4
T. Adams, Wood Green	2,188 3 2
Hamilton, Ltd., Hendon	2,115 6 10
E. Bloomfield, S. Tottenham	2,079 14 2
Manders and Co., Leyton	2,050 14 11
G. Brummell, Willesden	2,011 13 4
Parry and Co., Putney	1,938 13 8
Parson and Co., Ilford	1,925 0 0
D. Jackson, London	1,924 3 10
Langley and Co., Slough	1,901 8 4
Bower Bros., London	1,899 15 0
J. Ewart, London	1,886 0 6
J. Jerram, East Ham	1,858 12 6
Wilson, Border and Co., Romford	1,788 5 8
W. French, Buckhurst Hill	1,721 14 3
J. Jackson, Forest Gate	1,697 19 5
W. Wilson,* Ramsgate	1,607 6 6

Surveyor's estimate, £1,998 11s. 9d.
*Recommended for acceptance.

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Oct. 15. HENSINGHAM.—Erection and completion of seven cottages at Hensingham. Plans and specifications may be seen at the office of J. S. Stout, architect and surveyor, 36, Lowther Street, Whitehaven, to whom tenders are to be delivered by noon on October 15th.

Oct. 15. DARLINGTON.—Additions and alterations to the Offices of the guardians of the Darlington Poor Law Union. Persons desirous of tendering for the whole of the work may inspect the drawings, specification, conditions of contract, and obtain bills of quantities at the offices of the architects, Hoskins and Brown, Court Chambers, Darlington, until October 14th. Sealed tenders, endorsed "Tender for Additions and Alterations to offices," to be sent by noon on October 15th, to Chas. H. Leach, clerk to the guardians, Union offices, Darlington. Fair wages clause.

Oct. 15. LEAVESDEN (Herts).—Erection of a small open-air Balcony at the schools at Leavesden, near Kings Langley, Herts, for the guardians of the poor, in accordance with drawings and specification, which may be seen at the office of the surveyors, W. T. Farthing and Son, 46, Strand, W.C., between 10 a.m. and 4 p.m. Bill of quantities can be obtained on application to the surveyors. A deposit of one guinea is required to be made with the surveyors. Tenders upon the form provided, accompanied by priced bill of quantities fully marked out, in a separate sealed envelope, bearing outside the name of the contractor, must be delivered by 10 a.m. on October 15th, to Alfred A. Millward, clerk to the guardians, town hall, Pancras Road, N.W.

Oct. 15. WAKEFIELD.—Execution of the following works for the West Riding County Council:—Thorpe Salvin Provided School, via Worksop—Alterations and addition. Builder, painter, joiner, slater, plumber, plasterer, asphalter. Catcliffe Provided School, via Sheffield—Repairs and improvements. Joiner and plumber. Woodsetts Provided School, via Rotherham—Alterations, etc. Builder, joiner, slater, plumber, painter, asphalter. Treeton Provided School, via Rotherham—New heating chambers. Builder, joiner, painter, slater, plumber. No heating engineer. Plans may be seen and bills of quantity obtained on application to the county architect. A deposit of £1 is required in each case. Deposits must be posted to the West Riding treasurer, County Hall, Wakefield. A separate letter must be sent to the West Riding architect asking for quantities. Sealed tenders properly endorsed to be forwarded by 10.30 a.m. on October 15th to J. Vickers Edwards, county architect, Wakefield,

Oct. 16. BUSHEY.—Alterations and additions to the Merry Hill county council school at Bushey, for the Hertfordshire County Council. Persons desirous of tendering may see the drawings, specification, agreement, etc., at the county surveyor's office, Hatfield, between 10 a.m. and 4 p.m., Saturday, from 10 a.m. till noon. A copy of the schedule of works (quantities) and form of tender can be obtained at the county surveyor's office upon deposit of 2 guineas. Sealed tenders, endorsed "Tender for Merry Hill School, Bushey," must be delivered not later than 5 p.m. on Oct. 16, to Urban A. Smith, county surveyor, county surveyor's office, Hatfield. Security for the due erection of the works must be given by the contractor.

Oct. 17. KINGUSSIE.—Mason, carpenter, slater, plumber, plasterer, painter, and glazier works of two large villas to be erected on West Terrace. Plans and specifications may be seen with the architect, Alexander Mackenzie, C.E.

Oct. 17. PLYMOUTH.—Erection and completion of a horse slaughter-house at Prince Rock. Plans and specifications can be seen, and forms of tender and bills of quantities obtained, on deposit of £1 in cash with James Paton, borough engineer and surveyor, municipal offices, Plymouth, where conditions may be seen.

Oct. 17. LEEDS.—Erection of a transformer chamber (overground) in East Street, Leeds, for the electric lighting department of the Leeds Corporation. Specifications, plans, etc., may be seen and forms of tender obtained on application to H. Dickinson, manager of the department, 1, Whitehall Road, Leeds. Tenders must reach Robert E. Fox, town clerk, town hall, Leeds, by October 17th, endorsed "Tender for Transformer Chamber—Electric Lighting."

Oct. 17. SOLOHEAD (Co. Tipperary).—Repairs and improvements to Catholic church at Solohead, Co. Tipperary, for the parish committee. Drawings and specifications may be seen on application to the treasurer, Patrick Ryan, Hotel, Limerick Junction, to the priests of the parish, or at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick. Sealed tenders, endorsed "Tender for Solohead Church," will be received by the secretary, P. Doherty, Barnaleen, Monard, Tipperary, up to 1 p.m. on Oct. 17.

Oct. 17. NEWPORT (Mon).—(1) Extensions and alterations new playgrounds, and other work at the Tynewydd council school, Newbridge. (2) Asphalting playgrounds, matchboarding ceilings, and other repairs, to the Troedrhiwgwair council school, near Tredegar. (3) Asphalting playgrounds at Garnyrerw council school, Blaenavon. (4) Blocking floors at St. Dials council school, Cwmbran. (5) Repairs at Pontlanfraith council school, all for the Monmouthshire education committee. Plans and specifications can be seen at the offices of the secretary. Sealed and endorsed tenders, in separate envelopes for each school, to be sent by October 17th to C. Dauncey, secretary, county council offices, Newport, Mon.

Oct. 19. DILTON MARSH, WESTBURY, (Wilts).—Erection of four pairs of Cottages at Dilton Marsh, Westbury, Wilts., for the Westbury and Whorwellsdown Rural District Council. Persons desirous of tendering can inspect plans, specifications, and general conditions at the office of the council's architect, Gerald Stanley, Market House, Trowbridge. Copies of the bill of quantities can be obtained from the architect, on the payment of one guinea. Sealed tenders endorsed "Tender for Cottages" to be delivered by noon on October 19th to John Callaway, clerk to the council, Westbury, Wilts.

Oct. 19. BANGOUR (Scotland).—Works required in the extension of a greenhouse at Bangour, for the Edinburgh District Board of Lunacy. Plans, specifications, and general conditions of contract may be obtained on application to the architect, Hippolyte J. Blanc, R.S.A., 25, Rutland Square, Edinburgh. Offers to be lodged by 10 a.m. on Oct. 19, with James Kyd, clerk and treasurer, Edinburgh District Board of Lunacy, Castle Terrace.

Oct. 19. CASTLETON MOOR, ROCHDALE.—Erection of branch baths at Castleton Moor, for the Corporation of Rochdale. Plans, specifications, etc., prepared by Wallis and Bowden, architects, may be seen and quantities, form of tender, and all other particulars obtained at the town hall, Rochdale, on payment of one guinea. Tenders, endorsed "Branch Baths," must be delivered by Oct. 19 to Wm. Henry Hickson, town clerk, town hall, Rochdale.

Oct. 19. DUBLIN.—Erection of two four-roomed gatekeepers' cottages, in masonry, between Armagh and Keady, masonry tank house at Keady, one four-roomed gatekeepers' cottage at Drumclay Crossing near Enniskillen, for the Great Northern Railway Company (Ireland). Parties wishing to tender may see the drawings and specifications at the office of W. H. Mills, engineer-in-chief, Amiens Street terminus, Dublin; or copies at the office of the district engineer, Belfast, and can obtain at the said offices forms of tender on payment of one shilling each (not returnable). Tenders, made out on the forms supplied to be delivered, under sealed cover, endorsed "Tender for ——," to T. Morrison, secretary, Amiens Street Terminus, Dublin, by 10 a.m., on October 19th.

Oct. 20. AMMANFORD.—Erection of bank premises and two shops adjoining in Quay Street, Ammanford, for Joseph Phillips. Plans and specification can be seen with Joseph Phillips, The Square, Ammanford, and quantities obtained upon payment of £2 2s., at the offices of Arthur S. Williams, M.S.A., architect and surveyor, Llandilo, to whom sealed and endorsed tenders are to be sent by October 20th.

Oct. 20. DURHAM.—Erection of a new infants' school at Cornsay Colliery, and alterations to the present school for the county council. Plans, specification, and general conditions of contract may be seen and bills of quantities obtained at the Office of the County Education Architect, Shire Hall, Durham. Sealed tenders (endorsed with name of school) to be sent by October 20th to A. J. Dawson, clerk to the education committee, Shire Hall, Durham.

Oct. 20. DURHAM.—Alterations and improvements at Flint Hill, Marley Hill Colliery, Croxdale, and Hetton girls' and infants' council schools, for the county council. Plans, specifications, and general conditions of contract may be seen and bills of quantities obtained for Flint Hill and Marley Hill Colliery council schools only at the office of F. E. Coates, A.R.I.B.A., Shire Hall, Durham. Sealed tenders, endorsed with name of school, to be sent to A. J. Dawson, clerk to the education committee, shire hall, Durham, not later than Oct. 20.

Oct. 20. LEICESTER.—(1) Pulling down nine tenements, etc., in Colton Street, and (2) erection of six cotages on the site thereof, for the Corporation. Particulars may be obtained at the office of E. George Mawbey, M.Inst.C.E., borough surveyor, town hall, Leicester. A deposit of £1 will be required in respect of quantities for Contract No. 2 only. Sealed tenders on the forms supplied, addressed to "The Chairman of the Watch Committee," must be delivered at the town hall, by noon on Oct. 20, endorsed "Tender for Pulling Down, or Cottages," or as the case may be.

Oct. 22. MORLEY. — Various works except mason's required, in addition and alteration to Glen Mills, Morley, for Albert Glover. Quantities to be obtained at the office of T. A. Buttery, Exchange Buildings, Queen Street, Morley, on Oct. 15. Tender to be sent to the proprietor, Glen Mills, Morley, on Oct. 22.

Oct. 23. SHREWSBURY.—Erection of elementary schools at Coleham, Shrewsbury, for the education committee of the corporation. Persons desirous of tendering are requested to send their names to the architects, A. B. and W. Scott Deakin, 12a, Pride Hill, Shrewsbury, by Oct. 23. Quantities will be supplied on deposit of one guinea.

Oct. 23. GLANTON, near Alnwick.—Demolishing existing offices, and erecting new latrines, etc., at Glanton schools for the managers. Plan, specifications, bills of quantities, and forms of tender are deposited with the schoolmaster at the school house, Glanton. Tenders, endorsed, to be sent to H. W. Walton, clerk to the managers, Fenkle Street, Alnwick, by October 23rd.

Oct. 23. LONDON.—Extension of the Royal Courts of Justice (first contract), for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Sir Henry Tanner, I.S.O., F.R.I.B.A., at Storey's Gate. Bills of quantities and forms of tender may also be obtained there on payment of one guinea. Tenders must be delivered before noon on Oct. 23, addressed to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Royal Courts of Justice Extension, First Contract."

Oct. 19, 28. LAINDON (Essex).—Erection of iron buildings, and additions and alterations to existing buildings, and other works at the Laindon branch workhouse, Essex, for the Poplar Board of Guardians, in accordance with drawings and specification prepared by the architects, J. and W. Clarkson, 136, High Street, Poplar, E. Drawings and conditions of contract may be seen at the offices of the architects, and specification and form of tender obtained upon payment to the architects of three guineas. Persons desirous of tendering for the work must send their names to the architects, by Oct. 19. Tenders, sealed and endorsed "Tender for Additions and Alterations at the Laindon Branch Workhouse," must be delivered by 6.30 p.m. on Oct. 28, to G. Herbert Lough, clerk to the guardians, 45, Upper North Street, Poplar, London, E. Parties tendering will be required to name two sureties, each of whom must be willing to be bound in half the amount of the contract for the fulfilment of same. The successful contractor must only employ the men whose names are on a list supplied by the Poplar distress committee, or the Poplar Employment Exchange. The contractor is at liberty to choose and employ a foreman. Fair wages clause.

Oct. 21—Nov. 14. BRENTWOOD.—Erection and completion of a new central kitchen, etc., at Brentwood asylum, for the visiting committee of the Essex county lunatic asylum. Drawings, specifications, conditions, and form of contract may be inspected at the office of the county architect, Frank Whitmore, 73, Duke street, Chelmsford, between 10 a.m. and 4 p.m., any day except Saturday. Contractors desirous of tendering must

send their names and addresses to the county architect, by noon on Oct. 21, enclosing £5 deposit. Sealed tenders, on the form supplied, endorsed "Tender for New Kitchen, Brentwood Asylum," must be delivered by 10 a.m. on Nov. 14, to W. P. Gepp, clerk to the committee of visitors, Chelmsford. The contractor whose tender is accepted may be required to find security in the sum of £500, for the due performance of contract.

Oct. 24. NORWICH.—Erection of a secondary school, with alterations to existing buildings, at Eaton Road. Personal application must be made at the offices of C. J. Brown, architect and surveyor, Cathedral offices, The Close, to inspect the drawings, specification, etc., after which form of tender, etc., can be obtained at the city accountant's office, Municipal Buildings, upon depositing Bank of England notes of the value of £25.

Oct. 26. WILMSLOW (Cheshire).—Erection of new council schools, to accommodate 700 scholars, at Wilmslow, Cheshire, for the Knutsford and Wilmslow administrative sub-district committee. Plans, specifications, etc., prepared by Herbert H. Brown, architect, may be inspected at his offices, 17, Dickinson Street, Manchester. Persons desirous of tendering must send their names to the architect, accompanied by a deposit of two guineas, before Oct. 9. Tenders, enclosed in sealed envelopes, endorsed "Tender for Council Schools at Wilmslow," must be delivered by 10 a.m. on Oct. 26, to George Leigh, clerk, union offices, Knutsford, Cheshire.

Oct. 29. SCUNTHORPE.—Erection of a fire station, highways depot, cart sheds, and public convenience at the corner of Mary Street, E., and Cole Street, for the U.D.C. Plans, sections, and details may be seen, and any further information given upon application to Walter F. Bickford, engineer and surveyor, Engineer's and Surveyor's Office, Home Street, Scunthorpe. Form of tender, general conditions, specifications, and bill of quantities may be obtained upon payment of two guineas. Tenders, sealed and endorsed "Tender for Fire Station, Buildings, etc.," to be addressed to F. C. Hett, clerk, 2, Trafford Street, Scunthorpe, and delivered by noon on Oct. 22.

Oct. 31. LEEDS. — Erection of the firemen's dwellings and hose tower, in Park Street, for the Corporation. Contractors desirous of tendering must send their names, accompanied by a deposit of one guinea, to the architect, Percy Robinson, F.R.I.B.A., Yorkshire Post Chambers, 53, Albion Street, on Oct. 31, when bills of quantities will be forwarded. Tenders, endorsed "Firemen's Dwellings," must be delivered by Nov. 18, to Robert E. Fox, town clerk, town hall, Leeds.

No date. WEST LYNN.—Alterations to cottages at West Lynn, for Wm. Wing. For bill of quantities and all information apply to Walker and Walker, architects and surveyors, Wisbech and Terrington.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. BRADFORD.—Erection of new wheelwright's workshops, in Bowland Street, Bradford. Plans may be seen and quantities obtained upon application to H. Hardaker, architect, Ivegate Chambers, New Ivegate, Bradford.

No date. GLOSSOP.—Works in connection with new Conservative club and shops, Norfolk Street, Glossop. Contractors may see plans and obtain bills of quantities on application to John Eaton, Sons and Cantrell, architects and surveyors, Stamford Street, Ashton-under-Lyne.

No date. OLDHAM.—Erection of thirty-eight houses on the Hollin Hall Estate, Oldham, for the Oldham Equitable Co-operative Society, Ltd. Specifications, etc., may be obtained of the Society's architect, F. Thorpe, 7, Clegg Street, Oldham, on deposit of £2 2s.

No date. BRIXWORTH (Northants).—Erection of a bakery at Brixworth, for the Provident Co-operative Society, Ltd. Bills of quantities will be posted to contractors on application to A. H. Walsingham, architect, or C. E. Roberts and Co., bakery engineers, 62, Market Street, Manchester. Drawings may be seen at the Society's office.

ENGINEERING.

Oct. 16. CELEBRIDGE.—Sinking and walling a well, for the rural district council. Persons desirous of tendering may obtain further information upon application to F. Shortt, clerk.

Oct. 17. CARDIFF.—Providing a steam radiator, etc., at the Cardiff Workhouse, in accordance with specification prepared by S. W. Allen, M.I.M.E. Form of tender to be obtained from the clerk, and returned not later than 10 a.m. on Oct. 17, to Arthur J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff.

Oct. 19. DERBY.—Carting, laying and jointing cast iron mains from Uttoxeter Road, opposite Derby workhouse, to the county asylum at Mickleover, consisting of about 2½ miles of pipes, together with the necessary valves, hydrants, etc., for the Corporation. Plans, etc., may be seen, and printed specification, schedule of quantities, and form of tender obtained, on deposit of one guinea, at the offices of John Ward, M.Inst.C.E., borough surveyor and waterworks engineers, borough surveyor's office, Babington Lane, Derby. Sealed tenders, with quantities fully priced out, endorsed "Tender for Laying Main to Mickleover," to be sent to the town clerk, 15, Tenant Street, Derby, by noon on Oct. 19.

Oct. 21. WIGAN.—Boring for water at Green Slate Farm, Billinge, near Wigan, for the guardians. Separate tenders to be made for 4in. diameter and 6in. diameter holes, and prices to be given per yard upto a depth of 50 yards, 75 yards, and 100 yards. Tenders to be received by Henry Ackerley, clerk, 9, Victoria Buildings, Kingstreet, Wigan, marked "Tender for Boring," by October 21st. For further particulars apply to the clerk.

Oct. 22. GOOLE.—Constructing and sinking in the bed of the river Ouse a cast-iron casing cylinder (about 55 tons), for a new accumulator, and construction of an accumulator house, etc., at Goole swing bridge, for the North Eastern Railway. Plans may be seen, and specification, detailed quantities, and form of tender obtained on personal application at the office of W. J. Cudworth, the company's engineer at York. Sealed tenders, marked "Tender for Cast Iron Casing Cylinder, etc., at Goole Swing Bridge," to be addressed to R. F. Dunnell, secretary, and delivered at his office at York by Oct. 22.

Oct. 26. HAYFIELD.—Extension of the waterworks, for the R.D.C., as follows:—Part 1.—Providing and laying about half-a-mile of 3-in. cast-iron water main along the Glossop Road between Hayfield and Little Hayfield. Part 2.—Construction of a break-pressure tank on kinder bank, and providing and laying about three-quarters of a mile of 4 in. and 3 in. cast-iron mains in Hayfield, with all necessary connections and apparatus. Specification and drawings may be seen at the council offices, 16, High Street, New Mills, and schedule of quantities obtained from the engineers, George and F. W. Hodson, MM.Inst.C.E., Loughborough, on deposit of cheque for £2 2s. Tenders to be sent by Oct. 26 to J. R. Bowden, clerk to the council.

Oct 27. LONDON.—Supplying 12 water-tube boilers, with mechanical stokers and superheaters, etc., each boiler capable of evaporating 15,000lbs. of water an hour, for the L.C.C. Persons desiring to tender may obtain drawings, specification, bills of quantities, form of tender, and other particulars from the clerk of the council, upon payment to the cashier of £2. Tenders to be delivered in a sealed cover, to the clerk of the London County Council, Spring Gardens, S.W., marked "Tender for Water-tube Boilers," by 11 a.m. on Oct. 27. Fair wages clause.

Oct. 27. MIDDLESBROUGH.—Construction of a new bridge and approaches at South Bank, Middlesbrough, for the directors of the North Eastern Railway. The work comprises about 20,000 cubic yds. of earthwork, altering and erecting about 70 tons of existing steelwork to be provided by the company, and providing and fixing about 56 tons of new steelwork, and constructing the roadway over the bridge and the approaches. Plan and specification may be seen and detailed quantities and form of tender obtained on personal application at the office of W. J. Cudworth, the company's engineer at York, on and after Oct. 19. Sealed tenders, marked "Tender for Bridge and Approaches, at South Bank, Middlesbrough," must be sent by 9 a.m. on Oct. 27, to R. F. Dunnell, secretary, York.

Oct. 30. HALTON (Chester).—Construction of new Sewerage Works in the parish of Halton, Chester, for the Runcorn R.D.C. The works will comprise about 2½ miles of 6in. to 12in. earthenware pipe sewers, together with all manholes, lampholes, and other appurtenances. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind-hill-street, Heywood, or at the office of the clerk, on payment of two pounds. Sealed tenders endorsed "Tender for Halton Sewerage Works" to be sent by October 30th, to Geo. F. Ashton, clerk to the council, 71, High Street, Runcorn.

IRON AND STEEL.

Oct. 17. REDDITCH.—Supplying about 5 miles of gas-mains varying in diameter from 8 in. to 4 in., for the Redditch Gas Company. Form of specification prepared by the company's engineer, A. E. Layton, may be had upon application and payment of 10s. Tenders must be enclosed in sealed envelopes and addressed to the chairman and directors, Redditch Gas Company, Redditch, and endorsed "Tender for Mains." Tenders must be sent to Ralph A. Layton, secretary, Redditch, by Oct. 17.

Oct. 17. STOCKPORT.—Supplying valves, pipes, sluices, miscellaneous ironwork, etc., in connection with the Kinder reservoir, for the Corporation. Drawings can be seen, and copies of specification obtained, at offices of G. H. Hill and Sons, civil engineers, Albert Chambers, Albert Square, Manchester, and 3, Victoria Street, Westminster, upon receipt of cheque for £1 1s. A limited number of sets of the drawings, uncoloured, are available, and will be lent to persons tendering in priority of application on receipt of the sum of £2 2s., which sum will not be returned.

Oct. 19. LONDON, E.C.—Supplying and delivering (a) 50 lb. rails and fishplates; (b) dog spikes, as per specification, to be seen at the company's offices, for the directors of the Rohilkund and Kumaon Railway Company, Ltd. Tenders, marked "Tenders for Rails," or as the case may be, to be lodged by noon on Oct. 19, with Alexander Izat, managing director, 237, Gresham House, Old Broad Street, London, E.C. For each specification a fee of 10s. will be charged, which cannot be returned.

Oct. 20. LONDON (for India).—Supplying wheels and axles, for the Secretary of State for India. Conditions of contract may be obtained on application to the director-general of stores. Tenders to be delivered by 2 p.m. on Oct. 20, to E. Grant Burls, director-general of stores, India Office, Whitehall, S.W.

Oct. 21. LONDON. — Supplying point rod, trestles, levers, wheels, pulleys, disc signals, signal lamps, cranks, and other cast and forged point and signal fittings, for the directors of the L.B. and S.C. Railway. Conditions of contract and forms of tender can be obtained, and patterns inspected, upon application to the Company's Storekeeper, F. J. Baldwin, New Cross, S.E., and payment of £1, one half of which will be returned.

Oct. 20. LONDON (for India).—Supplying (1) steel rails and fishplates; (2) bolts, nuts, rivets, and washers, as per specifications and drawings which may be seen at the offices of the company, for the board of directors of the Madras and Southern Mahratta Railway Company, Ltd. The charge for each specification is one guinea, which will not be returned. Tenders must be sent, marked "Tender for Steel Rails and Fishplates," or as the case may be, by noon on Oct. 20, to Edw. Z. Thornton, secretary, 91, York Street, Westminster, S.W.

Oct. 20. TOTTENHAM.—Making up Beechfield Road, for the U.D.C. Plans can be seen and general conditions, specifications, bills of quantities, schedule of prices, and forms of tender obtained on application to W. H. Prescott, A.M. Inst.C.E., engineer to the council, at the council buildings, The Green, Tottenham, any day during office hours. Half-a-guinea deposit is required for the quantities. Persons tendering will be required to deposit with the treasurer, when handing in tenders a Bank of England note, or cash, £5, to be forfeited by the person whose tender is accepted if the contract be not executed within seven days from the date ready for signature. Sealed tenders on the form supplied, endorsed "Tender for Beechfield Road," to be delivered by noon on Oct. 20, to, Edward Crowne, clerk of the council, Tottenham. Security will be required for the due performance of the contract. Fair wages clause.

Oct. 26. LONDON (for India). — Supply-Supplying about 4,700 tons of 80 lb. Bessemer acid steel rails and angle fishing plates, for the Crown Agents for the Colonies, acting on behalf of the Government of Ceylon. Forms of tender and all particulars may be obtained on application at the office of the Crown Agents for the Colonies, between 10 a.m. and 4 p.m. (Saturdays 10 a.m. to 1 p.m.), on deposit of £1. Tenders to be delivered in sealed envelopes, addressed to the Crown Agents for the Colonies, Whitehall Gardens, S.W., endorsed "Tender for Rails and Fishplates, Ceylon Government Railways," by noon on Oct. 26.

Oct. 27. ISLINGTON.—Supply and delivery of galvanised wrought-iron shingle bins and cast-iron orderly bins, for the corporation. A specification and drawing of the shingle and orderly bins may be seen, and form of tender obtained, upon application to the borough engineer, J. Patten Barber, at the town hall, and deposit of £2 2s. Sealed tenders, endorsed "Tenders for Bins," must be delivered by 4 p.m on Oct. 27, to Wm. F. Dewey, town clerk, town hall, Upper Street, N.

PAINTING.

Oct. 19. HOLBECK, LEEDS.—Painting, etc., the board room and offices at Lane End, Holbeck, for the union guardians. Forms of specification can be obtained from the clerk, and must be returned by noon on Oct. 19, to Geo. Diment, clerk, Poor Law Offices, Holbeck, Leeds.

Oct. 19. BROWLOW HILL (Liverpool). — Painting exterior wood and iron work of the Brownlow Hill buildings and internal painting at the workhouse church and the parish offices, for the select vestry of the Liverpool Parish. Specification may be seen and all necessary information had at the parish offices. Tenders, sealed, to be left by Oct. 19 with H. J. Hagger, vestry clerk, parish offices, Brownlow Hill.

Nov. 4. HAMPSTEAD.—Painting and cleaning work to be done to the interior of the workhouse premises situate at New End, Hampstead, for the guardians. A copy of the specification can be obtained upon application and payment of one guinea, to the clerk. The premises can be viewed by making an appointment for the purpose with the Master of the Workhouse. Tenders, marked

"Tender for Interior Work," must be sent in not later than 4 p.m. on November 4th, to H. Westbury Preston, clerk to the guardians, guardians' offices, New End, Hampstead.

No date. CARLISLE.—Painting to be executed at the Court Houses, Carlisle. Persons desirous of tendering may inspect the specification and obtain all information upon application to Geo. Dale Oliver, F.R.I.B.A., county architect, Carlisle.

PLUMBING & SANITARY

Oct. 16. CHADDERTON.—Construction of 23 bacterial filters, storm filters, sedimentation tanks, etc., for the U.D.C. Drawings and specification may be seen, and quantities, form of tender, and all other particulars obtained, on application at the offices of James Diggle and Son, civil engineers, Hind Hill Street, Heywood, on payment of £2. Tenders, endorsed "Tender for Bacterial Filters, etc., Contract No. 20," to be delivered by noon on Oct. 16, to Henry Hoyle, clerk of the council, town hall, Chadderton.

Oct. 19. SHARDLOW.—Providing, laying and jointing about 1,750 lineal yds. of 9-in. and 12-in. stoneware pipe drains, together with manholes and other incidental works, in accordance with the drawings and specification prepared by the engineers, for the R.D.C. Drawing: and specification may be seen, and bills of quantities and form of tender obtained at the offices of the engineers, Willcox and Raikes, 63, Temple Row, Birmingham, on deposit of three guineas. Sealed tenders, in envelopes supplied, endorsed "New Sawley Surface-Water Drainage—Contract No. 3," to be delivered by noon on Oct. 19, to J. W. Newbold, clerk to the Shardlow rural district council, Becket Street, Derby.

Oct. 21. SOYLAND.—Construction of (a) about 800 yds. of main pipe sewer, (b) bacteriological tanks and filters, and appurtenant work within the district, for the U.D.C., in accordance with plans to be seen and form of tender obtained at the offices of Fred. Gordan, engineer, Clifton, Brighouse. Sealed tenders to be sent by Oct. 21, to L. H. Longbotham, solicitor and clerk to the Council, Carlton Street, Halifax.

Oct. 21. CHORLTON.—Work in connection with laying drains for the purpose of diverting the rain water from main drains at the Styal cottage homes, Cheshire, for the guardians of the union. Plans may be seen at the office of J. W. Beaumont and Son, architects, 10, St. James's Square, Manchester, from whom specifications and plans may be obtained on and after Oct. 1, on deposit of £1 1s. Sealed tenders, endorsed "Tender for Drainage at Styal Homes," are to be delivered not later than Oct. 21, to David S. Bloomfield, clerk to the guardians, union offices, All Saints, Manchester.

Oct. 24. DORKING.—Construction of an extension sewer in St. Paul's Road, Dorking, about 311 yds. of 9 in. stoneware pipes, manholes, and flushing tank, etc., for the U.D.C. Plan, section, specification, and form of tender may be seen at the town surveyor's office, 64, South Street. Sealed tenders, endorsed "Sewer," to be delivered by noon on Oct. 24, to W. J. Hodges, clerk, council offices, 64, South Street, Dorking.

Oct. 28. WEM.—Installation of a new drainage system at the union workhouse, for the Guardians. Plans, specifications, etc., may be seen at the office of the clerk, upon deposit of £3 3s. Tenders must be delivered by 4 p.m. on Oct. 28, to W. F. Tait, clerk to the guardians, Noble Street, Wem.

ROADS AND CARTAGE.

Oct. 16. BEXHILL.—(a) Making up Sutherland Avenue (length about 1,830ft.) under Private Street Works Act, and (b) Laying down about 3,250 yards superficial of tar macadam in Sackville Road, for the Corporation. Plans may be seen and specifications, bills of quantities and forms of tender obtained upon application to the borough surveyor, George Ball, Assoc.M.Inst.C.E., town hall, and payment of one guinea. Tenders under separate cover, endorsed "Sutherland Avenue," or "Sackville Road," must be delivered by noon on October 16th to T. E. Rodgers, town clerk, town hall, Bexhill.

Oct. 19. DOVER.—Supplying and delivering 1,500 tons of Broken Guernsey Granite; 250 tons of ¾in. Granite Chippings; 300 tons of ¾in. Granite Siftings; 500 tons of Cherbourg Quartzite, for the Corporation. Forms of tender and specification may be obtained at the office of the town clerk on and after October 7th. Tenders, endorsed "Tender for Road Materials," to be sent by October 19th to R. E. Knocker, town clerk, town clerk's office, Castle Hill House, Dover.

Oct. 19. BRISTOL. — Supplying stone for macadamised roads during the year ending Oct. 31, 1909, for the sanitary and improvement committee of the City Council. A copy of the specification and form of tender may be obtained at the office of the city engineer, on payment of 10s. Sealed tenders must be delivered, enclosed in the envelopes provided, by 10 a.m. on Oct. 19, to Thos. Henry Yabbicom, city engineer and surveyor, 63, Queen Square, Bristol.

Oct. 20. BARNET.—Supplying materials and labour in making-up and formation of Clarendon and Malden Roads, Boreham Wood, for the R.D.C. Drawings and specifications may be seen at the office of the council's surveyor, T. England, "Fernlea," Furze Hill Road, Boreham Wood, where forms of tender may be obtained. The contractor will be required to give security, in accordance with the Public Health Act, 1875, for the due performance of contract. Local labour where possible must be employed. Sealed tenders, endorsed "Street Works," to be delivered on or before October 20th, to G. D. Byfield, solicitor, clerk to the council, 12, High Street, Barnet, Herts.

Oct. 21. KINGSTON-ON-THAMES.—Supplying about 5,000 tons of Guernsey, quenast, or other granite, for the Corporation, suitable for road-making, to be broken to pass through a ring 1½-in. internal diameter. Deliveries spread over a period of twelve months. Tenders to be on forms obtainable of the borough surveyor, R. Hampton Clucas, at the municipal offices, where samples must be left. Sealed tenders, endorsed "Granite," to be delivered by Oct. 21, to Harold A. Winser, town clerk, municipal offices. Kingston-upon-Thames.

Oct. 22. BISHOPS STORTFORD.—Supplying not less than 1,200 tons of 2½in. and 1¾in. Broken Granite, and not less than 120 tons of ¼in. Granite Chippings for the U.D.C., to be delivered at the Bishops Stortford railway station in quantities of about 20 tons per day, as the surveyor may require. Forms of tender can be obtained on application to the clerk. Tenders, accompanied by samples of the material to be sent by 4 p.m. on October 22nd, to Thos. Swatheridge, clerk, council offices, 7, North Street, Bishops Stortford.

Oct. 22. SOUTHEND-ON-SEA.—Making up the following streets and parts of streets in the borough, for the corporation: Belle Vue Palace, Cromer Road, and parts of North Avenue, Southchurch, Lovelace Gardens, and Claremont Road. Plans, sections, and specifications may be seen, and bills of quantities and forms of tender obtained on deposit of cheque for £1 1s. in respect of each street, and application to E. J. Elford, M.I.M.E., borough surveyor. Sealed tenders, endorsed with the name of the street and marked "Tender for Private Street Works," to be delivered by noon on Oct. 22, to William H. Snow, town clerk, town clerk's office, Southend-on-Sea.

Oct. 27. SHEPPEY.—Supplying blue rag stone and pit flints (quantities likely to be required being 1,220 yds. of blue rag stone and 370 yds. of pit flints), for the R.D.C. Forms of tender can be obtained on application to John Copland, clerk, Sheerness.

Oct. 28. BLAYDON-ON-TYNE.—Making up part of Railway Street, Blaydon-on-Tyne, for the U.D.C. Plans and specifications may be seen and quantities and form of tender obtained on application to the surveyor, George Symon, and deposit of one pound. Sealed tenders endorsed "Tender for Paving, etc.," must be delivered by October 28th, to Henry Dalton, clerk, Blaydon-on-Tyne.

Oct. 28. HAMPSTEAD, N.W.—Repairs to roads at the North-Western fever hospital, Lawn Road, Hampstead, N.W., in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, for the Metropolitan Asylums Board. Drawing, conditions of contract, specification, and form of tender may be inspected at the office of the board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the offices of the Board, by 10 a.m. on Oct. 28.

MISCELLANEOUS.

Oct. 15. ROCHDALE.—Erection of an overhead bare copper cable at the workhouse, for the guardians. Specifications, etc., to be obtained of the union clerk. Tenders, sealed and endorsed "Cable," to be delivered by Oct. 15, to R. A. Leach, union clerk, union offices, Rochdale.

Oct. 16. BLAENAVON.—Supplying—(1) about 800 yds. of five-bar fencing; (2) about 17 field gates and posts, with fittings complete, for the U.D.C. Specification may be inspected by appointment. Tenders to be sent by Oct. 16, to R. S. Widdowson, town surveyor, Blaenavon.

Oct. 19. BLEAN (Canterbury).—Emptying all cesspools in the parishes of Blean, Chislet, Hackington or St. Stephen's, Hoath, Reculver, St. Dunstan Without, Sturry, and Westbere, for the Blean R.D.C. Full particulars can be obtained and form of contract inspected at Rose Cottage, Herne Street, near Canterbury. Tenders, endorsed "Cesspool Emptying," to be forwarded to J. E. Burch, clerk, 39, Castle Street, Canterbury, by Oct. 19.

Oct. 28. WOOLWICH, S.E.—Tar paving work at the Brook fever hospital, Shooter's Hill, Woolwich, S.E., in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, M.Inst.C.E., M.I.Mech.E., engineer-in-chief, for the Metropolitan Asylums Board. Drawing, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon deposit of £1. Tenders, addressed as noted on the form, must be delivered at the office of the Board, by 10 a.m. on Oct. 28.

Late News.

Derby.—Sir Henry Bemrose on Saturday laid the foundation stone of a Men's Institute in connection with St. James's Church. The new building, which is to be called The Olivier Institute, in memory of the late Canon Olivier, the founder and a great benefactor of St. James's and St. Thomas's Churches, will be on land adjoining the former church in Dairy House Road, and the total cost will be about £1,000.

Leicester.—The contract for the technical and art schools extension, Leicester, amounting to £11,090, has been let, the successful contractor being Mr. Thomas Herbert, of Leicester. The new buildings consist of a four-storey block along the south side of the site, forming, with the existing building, half the quadrangle, which it is hoped will be made complete at some future time. Provision in the new buildings is made for engineering workshops, building trades classes and workshops, physical laboratories and lecture-rooms, chemical laboratories and lecture-theatre, balance and store rooms, etc., and also class-rooms for commercial and science subjects. The heating and ventilation will be by the Plenum system, and the construction generally is of a fire-resisting character. The present school was erected about twelve years ago. The architects for the extension are Messrs. Everard, Son, and Pick, of Leicester, and this firm designed the original building.

London, Fulham.—The tower and belfry of the Parish Church have been repaired, and the bell rehung, at a total cost of more than £700.

Paddock, Yorks.—Four memorial stones were laid on the 10th inst. at the Paddock Adult School Institute. The institute is to be erected at the north end of a plot of ground enclosed by Cowslip Street, Robin Street, and Raven Street, and the main approach will be from the last-named street. The ground floor will comprise reading-room and library 24ft. by 18ft. 6in., committee-room, conversation-room, secretary's office, lavatories, bath-rooms, etc. On the first floor will be an assembly hall 44ft. by 30ft., with raised platform at one end, a well-lighted billiard room 44ft. by 24ft., games room, vestibule and entrance hall, lavatories, etc. The building will be lighted by electricity, and heated by radiators on the low-pressure system. The following are the contractors for the various works:—Masons, Messrs. W. S. Firth and Co., Crosland Moor; joiners, Messrs. W. and J. Singleton, Paddock; plumbers, Messrs. E. Bould and Son, Huddersfield; plasterers, Messrs. Robinson and Shaw, Paddock; painters, Messrs. W. and P. Holroyd, High Street; slater, Mr. Alfred Bower, Crosland Moor; concreter, Mr. John Cooke, Huddersfield; and electricians, Messrs. E. Bould and Son, Huddersfield.

Redcar, Yorks.—The new police station, erected at a cost of £6,000, has been completed, and the constabulary entered into possession on Saturday. The scheme includes residences for an inspector and a sergeant, quarters for ten single constables, and all modern police requirements.

Walsall.—The Queen Victoria Memorial organ has been formally opened in the Town Hall. The instrument, which has been constructed under the supervision of Mr. C. W. Perkins, city organist, Birmingham, has cost £2,300.

Appointments Wanted.

The charge for Advertisements under this heading 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

ADVERTISER requires situation in south of England; experienced in all branches of land and building surveying, levelling, quantities, dilapidations, 5 years with Urban Council, near London; good draughtsman; qualified P.A.S.I.—Box 4538, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant seeks engagement; has had nine years' experience in good offices (London and the provinces); just completing engagement with City firm; excellent testimonials; moderate salary.—Box 4636, BUILDERS' JOURNAL Office.

ARCHITECT (practising) is willing to assist others in all kinds of architectural and office work, at own office, or elsewhere.—S., 143, Cannon Street, E.C. 4528

ARCHITECT and surveyor's assistant (22), wide experience, working drawings, details, and full sizes; specifications, measuring and supervising, etc.; excellent refs.; salary 30s.; trial willingly.—Box 4596, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT'S Assistant, fully qualified, wide experience; excellent testimonials, desires London engagement, whole or part time. — Box 4601, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's Assistant (24); 9 years' London exp.; working drawings, specifications, superintendence, quantities and land surveying; prizeman, architectural drawing, and quantities; medallist building construction; excellent testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4592

ARCHITECT'S and Surveyor's Assistant (21) requires engagement with good architect, 3½ years' student in architect, construction and kindred subjects, land surveying and levelling. Board of Education qualifications; prelim. R.I.B.A., refs.—Apply Box 4572, BUILDERS' JOURNAL Office.

ARCHITECTURAL Improver, or junior assistant (21), excellent knowledge in good design, very neat and clever draughtsman; assist quantities, surveying, perspectives; moderate salary; specimens.—Box 4635, BUILDERS' JOURNAL Office.

ASSISTANT, A.R.I.B.A. (29), thirteen years' London experience, working drawings, perspectives, specifications, supervision; office work; well up in management; salary 2 guineas; London preferred.—Apply Box 4622, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant (21) seeks re-engagement (abroad if required); 5 years' all-round exp.; ecclestical, domestic and public buildings; prepare, working and detail drawings from rough sketches; surveying, leveling, etc.; P.R.I.B.A.; honours in construction, etc.—Box 4639, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant (23), over 7 years' London and Provincial experience; excellent references. Inter.R.I.B.A. Exam.—H. J. Wilson, 17, Clifton Road, Crouch End, N. 4612

ARCHITECT'S and Surveyor's Assistant desires change; 6 years' varied general experience; assist quantities, good refs.—Box 4617, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade.—Apply Box 4585, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S or Architect's Assistant (24), seeks re-engagement; drawing, typewriting, shorthand, correspondence, accounts, and general office routine; also assist in quantities; 9 years' references; moderate salary.—Apply Box 4626, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

BUILDER'S Assistant desires situation. Sixteen years' experience in office routine, estimating, measuring, accounts, etc. Also experienced in outdoor management. Moderate salary.—W. P., 65, Leicester Road, East Finchley. 4569

BUILDER'S and decorator's clerk seeks situation, well up in all trades; ten years' experience; age 26; Midlands preferred; wages moderate.—Apply Box 4599, BUILDERS' JOURNAL Office.

BUILDER'S assistant desires change, 29, abstainer, experienced, quantities, plans, surveying, estimating, book-keeping, shorthand, typewriting, measuring, variation accounts, supervise jobs; excellent references; moderate salary.—Box 4604, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (24), seeks situation; 7½ years' London experience. P.C. jobbing, wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4608

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or Provinces; 12 years' experience, calculations, quantities, designs, detail drawings, bridges, structural steelwork, prepared, reinforced concrete.—Box 4579, BUILDERS' JOURNAL Office.

FOREMAN Painter (working); life experience; good colourman; do any class of work; manage any number of men; life abstainer; non-smoker; good references.—T., 39, Northbrook Road, Croydon, Surrey. 4625

GENERAL Foreman, just completed West-end job; experienced and capable.—Reply J. L., 20, Wellington Avenue, Lower Edmonton. 4618

GENERAL Foreman shortly disengaged, just finishing large job; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable; first-class testimonials.—W. R., New Council Schools, Biddulph Moor, Congleton. 4621

GENERAL Foreman, long and varied experience in town; thoroughly practical; good at reinforced concrete work; trade joiner; moderate wages; good references.—50, Peel Road, Wembley. 4565

GOOD Classic Details. Architect's Assistant with 10 years' thorough experience in good offices on important classic and renaissance work, disengaged. Give part evenings to competition work; age 28; salary £2 5s.—Apply to H. G., Box 4638, BUILDERS' JOURNAL Office.

IMPROVER, surveyor's or builder's office (21), technical student, four years' practical knowledge, supervise, neat draughtsman; abstainer; good references.—Marfleet, Totland Bay, I.W. 4581

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

LATE Pupil (22), four years' experience, requires berth as surveyor's or architect's assistant, drawing, surveying, levelling, qualified Stage III., Building Construction and Architecture.—J. W. D., Laurelwood, Hare Lane, Godalming. 4582

MANAGER of masonry works or general foreman, well up in management of men and machinery, London and country experience; practical in all trades. — Thomas, 38, Napier Road, Tottenham. 4602

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

QUANTITY Surveyor, Member Q.S.A., 32, eight years' practical building experience, eight years' office practice, desires post as senior or managing assistant.—Box 4610, BUILDERS' JOURNAL Office.

SLATE MERCHANTS AND BUILDERS' MERchants.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STUDENT R.I.B.A., 23, well trained man, desires situation as assistant; 1½ guineas. — Box 4607, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

Property & Land Sales

By EDWIN FOX AND BOUSFIELD.

At the Auction Mart.

On Wednesday, October 21, at Two o'clock.

To be let on Building Leases, in Four Lots.

CITY OF LONDON (on the verge of).—FREEHOLD BUILDING SITES advantageously situate, being Nos. 1 and 3 and 2 to 18 (even) Clifton Street, Nos. 31 to 37 (odd) Sun Street, Nos. 32 to 38 (even) Earl Street, and Brown's Buildings, with access also to Appold Street, close to Finsbury Square and the railway termini at Liverpool Street and Broad Street. The property possesses the extensive fontages of 175 ft. to Clifton Street, 82 ft. to Sun Street, and 72 ft. to Earl Street, and covers the total area of about 30,000 superficial ft., and is admirably adapted, both from the extent and position, for the erection of manufacturing warehouses or other commercial premises suited to the various trades carried on in the locality.

Building leases for 99 years from December 25, 1908, will be granted at rents to be determined by competition, subject to an allowance of one year's peppercorn.

Lot 1.—8,800 super. feet.
Lot 2.—7,500 super. feet.
Lot 3.—12,600 super. feet.
Lot 4.—1,100 super. feet.

Particulars at Messrs. Edwin Fox and Bousfield's office, 99, Gresham Street, Bank, E.C., and of the vendor's solicitors, Messrs. Kinsey, Ade and Hocking, 9, Bloomsbury Place, W.C.

CITY OF LONDON.—FENCHURCH STREET.—LETTING by AUCTION of an important BUILDING SITE of 3,000 square feet, being Nos. 1 to 5 NORTHUMBERLAND ALLEY, situate one door from Fenchurch Street and next to Lloyd's Avenue.

MESSRS. NORTON, TRIST and GILBERT will LET by AUCTION, at the AUCTION MART E.C., on TUESDAY, November 3, 1908, the above SITE on BUILDING LEASE for 90 years from Xmas, 1909.

Particulars, with plan, etc., of Messrs. Dawson Bennett and Co., Solicitors, 2, New Square; or Messrs. Waterhouse and Co., Solicitors, 1, New Court, Lincoln's Inn, W.C.; at the Mart; and of the Auctioneers, 70, Queen Street, Cheapside E.C.

October 21, 1908 Volume 28, No. 715.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Hearth and Home.

An interesting discussion took place in the House of Commons on October 12th on the necessity for the provision of guards to open firegrates. It will be remembered that clause 14 of the "Children's Charter" provides that where a person having the custody of a child who is under seven years old allows the child to be in any room containing an open firegrate that is insufficiently protected, and the child is killed or suffers serious injury, the custodian of the child is liable to a fine not exceeding £10. Mr. Rawlinson, the member for Cambridge University, moved to omit this clause *in toto*. Mr. Samuel, the Under-Secretary of the Home Department, who has throughout had this Bill in hand, in replying, said that the Government attached the greatest importance to retaining this particular portion of the Bill, and instanced in support of it that some 1,400 children were burned to death every year in England and Wales in consequence of unguarded fires; also that he had been shown a simple but excellent fire-guard which could be bought at the price of 1s., so that the expense could not be said to press heavily upon anyone. Mr. Samuel might perhaps have carried his argument a little further. It is an axiom that a demand will cause a supply, and it is obvious that the demand for a fireguard could also be met by the supply of a guarded firegrate. It is probable, too, that the demand would be made principally by the occupants of the cottage properties and smaller flats. Surely, the owners of such properties might be counted upon to supply any legislative requirement that would enhance the letting value of their tenancies, providing, first, that the expense was nominal, and, secondly, that it did not need frequent renewal. The most reputable owners of these properties do now, as a matter of fact, make an allowance when calculating their percentages for all reasonably required fittings and repairs, and probably they would not raise any serious objection to an addition of this character. What is wanted, then, is a guarded firegrate. Many improvements in open fireplaces have been recently made, but they have been chiefly directed towards the creation of more thorough combustion of the fuel. It should not be beyond the powers of inventors to devise a safety arrangement that could be put into or out of use at will, and that at the same time would not disfigure the fireplace.

Fair Wages Clause in Contracts.

This question is attracting special attention, owing to the activity which the representatives of labour are now displaying in their endeavours to increase the stringency of existing clauses in municipal and Government contracts. A Departmental Committee of the Treasury has been considering this question as affecting Government contracts, and our Federation reports in last week's issue contain references to what is being attempted in regard to municipal contracts in Oldham and Bristol. The clauses suggested by the Labour representatives show an endeavour to procure, under cover of a fair wages clause, privileges and advantages which have no real connection with the matter, as, for example, at Oldham, where the clause suggested demands liberty for workpeople to fulfil the usual conditions of membership, such as paying or collecting subscriptions, at any place or time required by the workpeople, "provided that the duties of workmen are not thereby interfered with." Obviously this is a question that should be dealt with in framing the trade rules governing the relations between employer and employed, and it is not the business of municipal authorities to pull the chestnuts out of the fire for the workmen by enforcing, under the guise of a fair wages clause, a privilege which the employers would probably not willingly concede to a direct demand on the part of the men. The remaining clauses of the Oldham demand are equally inadmissible, making them, as they would, parties to contracts for the execution of which they incur no responsibility, and permitting an intolerable amount of inquisition and interference on their part. In the case of Bristol, much of the suggested clause was supererogatory, the conditions sought to be imposed being already adequately provided for in the general clauses of all building contracts. It is of much importance that builders' associations everywhere should keep a watch on all such attempts to modify accepted fair-wages clauses, and that such associations should at once take up the question with any corporation which is approached by the workmen with such insidious designs. It is also essential that some general form of clause should prevail throughout, and it is therefore advisable for builders' associations to consult their Federation, whose officers are experts in such matters, before committing themselves to any suggested revision of existing accepted fair-wages clauses.

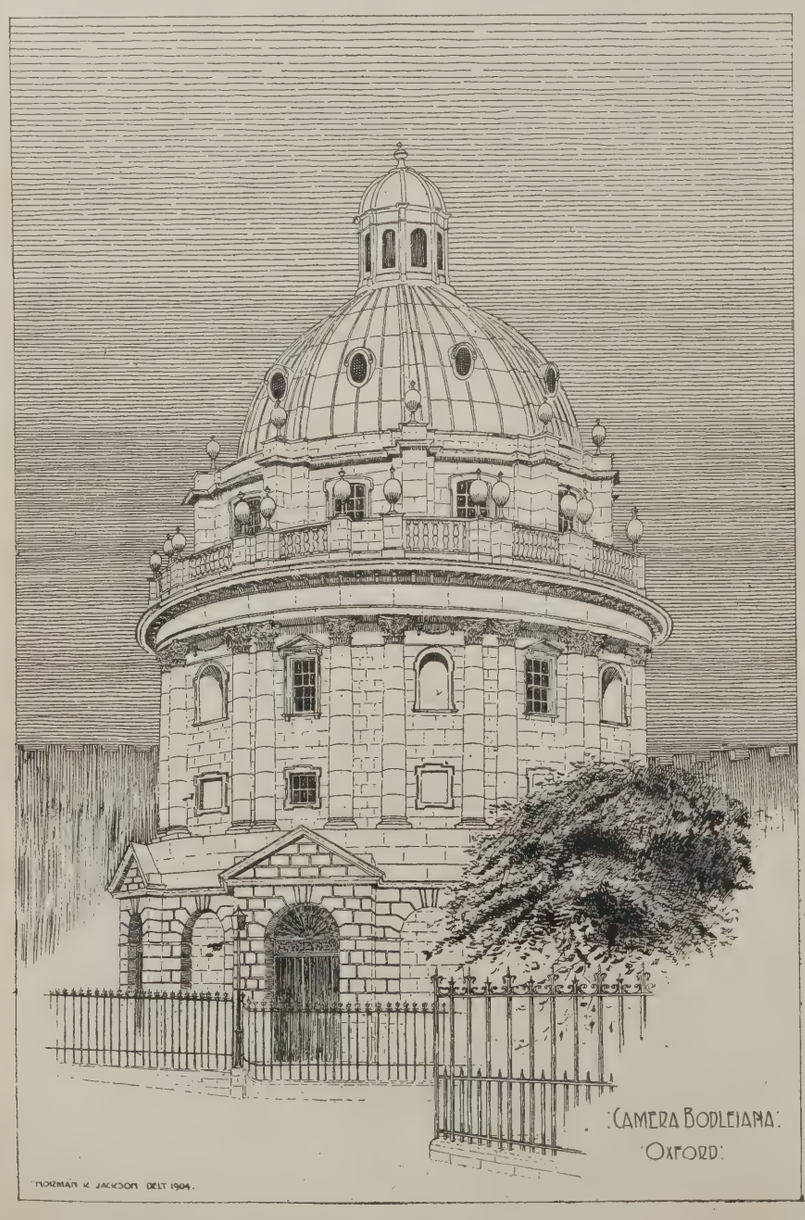
Captious Quacks.

According to a somewhat cryptic proverb, "there is reason in roasting eggs." Mr. Paul Ogden, F.R.I.B.A., president of the Manchester Society of Architects, seems to think that there is usually manifest far less reason in "roasting" architects. In his lecture on "Architectural Aims," delivered at the Municipal School of Art, Manchester, on October 14th, Mr. Ogden declared that architecture suffers to an almost unimaginable extent from meaningless criticism, both by laymen and even by practitioners. The captious critic, it is contended, should be compelled to give a sound reason for the faith that in in him before it can be admitted that his criticism is valid, or is in the least degree worthy of attention. Thus would "the tongues of busybodies and quacks be silenced, and schools of art, technical schools, and universities, would not be worried for detailed explanation of their teaching methods." Possibly Mr. Ogden's meaning has been obscured by condensation of the report. Otherwise it would appear that we are to insist on reasons from our critics, but are to give none ourselves. We cannot believe that this is one of Mr. Ogden's "Architectural Aims." And why should architects allow themselves to be worried by ignorant criticism? Much, surely, may be learned from it, even when it is the worst kind of claptrap or quackery. As for "silencing the busybodies and quacks," that consummation seems to be neither possible nor altogether desirable, pending the millennium. Art and character should rise superior to it all; and if, in the nature of things, they cannot "by opposing end it," they may at least make it the whetstone of truth. That, one vaguely discerns, is its peculiar function in the cosmic scheme. Wherefore let us suffer fools gladly, and be not frighted with the false fires exhaled or kindled by busybodies and quacks.

"This Desirable Dwelling."

An auctioneer's opinion on house property should be valuable to builders. The man who "puts 'em up" may often derive very serviceable hints from the man who "knocks 'em down"; the latter's point of view affording the larger opportunities of examination and comparison. Auc-

tioneers, as a class, are uncommonly astute men of business; and the president of their Institute is—at any rate, for the nonce—at the head of his profession. Hence the presidential address delivered on October 14th by Mr. Arthur George Dilley to the Auctioneers' Institute of the United Kingdom commands our respectful attention. His address necessarily dealt with the topical aspects of Britain's two greatest industries, agriculture and building. His remarks on agricultural holdings need not trouble us for the moment. We are more closely concerned with what he had to say about the exodus from towns, and the consequent slump in flats. He seems to think that there are signs of a revulsion from this movement. "People of all classes are asking why they should waste time in daily journeys to what becomes really a dormitory, and is situated a long way from all the central institutions which cater for amusement and instruction." He believes that the skill of architects may eventually evolve a type of flat that, differing essentially from what, with the facile eloquence of the rostrum, he stigmatises as "the huge vertical slums styled 'Dwellings,'" shall be of moderate height, extensive air-spaces, abundant light, and some artistic quality, and that, by their situation, shall enable the toilers to walk to their work. He has not much faith in garden cities. They are either "the abiding places of faddists," or, where they are connected with industrial concerns, they place the worker in a position of dependence. He believes in the healthy development, by independent effort, guided by something on the lines of an equitable town-planning scheme, of the nearer suburbs. This seems to him to be a better way, and to offer a more practical and more rational solution of present-day building problems, than any combination of the faddism, philanthropy, and five-per-cent. order; and builders are but little likely to say him nay. On the contrary, they will probably envy the professional felicity with which he has expressed their inmost thoughts.



Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Oct, 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct. 31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street Strand, London.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos. Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street Preston. Deposit £5 5s.
Dec. 31	CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council. Bodmin. Deposit, £1 1s.

* *This competition has been unfavourably reported upon by a Correspondent.*

The Ilford Emergency Hospital Competition.

The designs submitted in this competition were exhibited on the 8th and 9th inst., but pressure on our space has prevented us, up to the present, from drawing attention to the fact that the selected design departs considerably from the conditions laid down in the original conditions, and also in the supplementary answers to questions from competitors.

The Ilford Emergency Hospital must be classed among the already heavy list of mismanaged competitions. The Governors first of all appointed a doctor to be assessor, and we presume that the original conditions were drawn up by him. Under pressure from the R.I.B.A., the Governors agreed later to appoint an architect assessor in conjunction with the doctor, but the latter withdrew, leaving the nominee of the Institute, Mr. H. Percy Adams, F.R.I.B.A., to assess the competition alone. That Mr. Adams had no very high opinion of the original conditions is evidenced by the remark, in his report:—"I think it a little unfortunate that the instructions to the architects were not more explicit in some details, and a little less vague in others; and I think a quite unnecessary amount of work has been imposed upon the competitors." How

Mr. Adams decided to assess the competition we have no means of knowing; he acknowledges having read "the instructions issued to competing architects and the answers sent to their questions." This seems to prove that he had nothing to do with drawing up the original instructions, or answering the very formidable list of questions received from competitors as a result of the defects in those instructions.

It would seem, however, that the assessor either decided that the original instructions were valueless, and therefore proceeded to select what he considered the best design; or that, recognising that the sum the Governors desired to spend was hopelessly inadequate, he selected the design that, being generally meritorious, was most economical. In either case, we cannot but think that the decision grievously wrongs those competitors who endeavoured to comply with the ideals of the original assessor.

To take just a few of the discrepancies between the selected design and the instructions:—

(a) It was desired (but not obligatory) to have the wards on one (the ground) floor. The selected design has them on two.

(b) The floor area per bed in the wards was fixed as "not less than one hundred and thirty-three feet." This allowance was queried as unusual and excessive, but was affirmed. "The assessor says it may be unusual, but it is not excessive." The selected design allows 118 square feet.

(c) Sculleries were stipulated for in addition to the nurses' duty rooms. The selected design omits these.

(d) Four rooms were required for the two medical officers—presumably two bedrooms and two sitting-rooms. The selected design gives three rooms only—two bedrooms and one sitting-room.

(e) The board-room was required to accommodate thirty people. The selected design provides a room 20ft. 6in. by 18ft., which hardly seems sufficient for the purpose.

We do not wish to be misunderstood in this matter. We do not contend that the selected design is a bad piece of planning; on the contrary, the assessor himself, well-known as an expert and experienced hospital planner, says the design "is admirably worked out," and any required modifications "could easily be effected by so skilful a designer." But what we do wish to say is that this selected design deliberately disregards a number of the conditions laid down, however unreasonable or unsatisfactory they may have been; and if, as seems probable, the assessor regarded them as unsatisfactory, we think he should have drawn the attention of the promoters to that fact upon his appointment. It would then have been possible either to amend or redraft the conditions; or to select a limited number of the best designs sent in for a second competition under revised instructions and conditions. In any case, it was wholly unwise and inadvisable for architects to enter a competition for which no professional assessor had been appointed: and to that extent the disappointed competitors have themselves to blame.

Building Exhibition Poster.

We have pleasure in drawing particular attention to the competition for a poster for the Building Exhibition at Olympia, April 17th to May 1st, 1909, which has been instituted by Mr. H. Greville Montgomery, M.P. The competition is open to architects and architectural students only. Mr. Ernest George, Pres. R.I.B.A., Sir Aston Webb, R.A., and Mr. George Frampton, R.A., are the judges.

MANCHESTER AND SHEFFIELD SOCIETIES OF ARCHITECTS.

The Kalendar for 1908-9 of the Manchester Society of Architects contains the forty-fourth annual report, in which it is shown that the Society consists of 109 Fellows, 89 Associates, and 59 Students; total, 257. In addition to the opening meeting, which occurred on October 8th, when the presidential address was delivered by Mr. Paul Ogden, F.R.I.B.A., the syllabus includes the following arrangements:—November 12th, Mr. C. Clement Hodges, on "Norman Architecture in the Northern Counties of England"; December 10th, Mr. Edward S. Prior, M.A., F.S.A., on "English Parish Churches, chiefly of the Fifteenth Century"; January 28th, Mr. Arthur T. Bolton on "The Dome as the Basis of an Architectural System"; February 12th, Professor Beresford Pite, M.A., F.R.I.B.A., on "The Growth of Design and Craftsmanship in English Masonry and Woodwork"; March 11th, discussion on students' drawings. Twenty-nine prizes are offered to students for drawings, sketches, designs, and an architect's note-book.

The annual report—the twenty-first—of the Sheffield Society of Architects and Surveyors states the membership at 123, as compared with 121 last year. The programme for the session includes, besides the president's address, which was given at the opening meeting on October 8th, the following arrangements:—December 11th, Councillor John S. Nettlefold, of Birmingham, on "Housing Reform and Town Planning"; February 11th, 1909, Professor C. H. Reilly, M.A., on "The Grand Manner in Architecture"; March 11th, Mr. Temple Moore, F.R.I.B.A., on a subject to be announced. The lecturer and subject for a general meeting that is to be held on January 14th are not yet announced. The annual meeting is to be held on April 8th.

ROYAL COMMISSION ON ANCIENT MONUMENTS.

The King has been pleased to appoint a Royal Commission to make an inventory of the ancient and historical monuments and constructions connected with or illustrative of the contemporary culture, civilisation, and conditions of life of the people in England from the earliest times to the year 1700, and to specify those which seem most worthy of preservation. The Commission is constituted as follows:—Lord Burghclere (chairman), the Earl of Plymouth, Viscount Dillon, Lord Balcarres, Sir Henry Hoyle Howorth (president of the Royal Archæological Institute), Sir John Francis Fortescue Horner, Mr. E. J. Horniman, M.P., Mr. Francis John Haverfield, LL.D. (Camden Professor of Ancient History in the University of Oxford), Mr. Leonard Stokes (vice-president of the Royal Institute of British Architects), Mr. James Fitzgerald (assistant secretary to the Office of Works), and Mr. J. G. N. Clift (hon. secretary to the British Archæological Association). The secretary of the Commission is Mr. George Herbert Duckworth, 35, Charles Street, Berkeley Square, W.

THE ARCHITECTURAL PROFESSION OF TO-DAY.—VI.

In the brief references, occurring in our former articles, to the over-crowded state of the profession, no attempt was made to discriminate between the various component influences which have brought about the unfortunate congestion from which architectural practitioners are now suffering. But, after careful study of the old and ever-recurring problem of cause and effect, we have arrived at the conclusion (which we fear will not be palatable to some architects) that the constant increase in the number of applicants desirous of becoming members of the architectural fraternity is due, in a very large measure, *to an initial mistake made from within the profession itself*. We allude to the latent weaknesses observable in the scheme of examination qualifying for registration, as probationer and student, and for candidature as Associate, prepared under the auspices of the Royal Institute of British Architects, which has now been in operation for many years. Notwithstanding the disorganised condition of the architectural profession, there is not, and so far as we are able to judge there never has been, any cogent reason why architects, to their own detriment and undoing, should have persisted, for so long a period of time, in the policy of assisting and encouraging undesirable students to enter the ranks of the profession. Yet the examinations of the R.I.B.A. seem to be framed, almost exclusively, with this very object. To put it briefly: the examinations, qualifying respectively for the grade of probationer, student, and Associate, and known as the Preliminary, the Intermediate, and the Final, are in no instance of a *sufficiently severe, thorough, or exacting nature*. For example, under the scheme of professional qualification now in vogue, it is possible for an architectural student of the immature age of twenty-one year to pose—by virtue of the Associateship of the R.I.B.A.—in the eyes of the public, as a fully qualified architect! How many medical men, how many lawyers, are permitted to commence practice (or in other words to complete their education, at the expense of the public) at that age? Further, have we not often been told, by past presidents of the R.I.B.A. and other prominent members of the architectural profession, that a good "liberal education" and a considerable degree of "culture" are *essential* to the welfare of every architect? Yet, under the ridiculous scheme organised by the R.I.B.A. for testing the qualifications of the architectural student, no provision *whatever* is made for examining him in these "essentials." We learn that the examinations "have been so arranged as to induce the gradual development of artistic and scientific powers to secure a systematic training in the art and science of architecture from the entry into an office until the commencement of actual practice."

We are also told that "they afford guidance in professional studies, and opportunities for testing, at well-marked intervals, the progress made." So far, so good, for, theoretically at least, the views expressed by the organisers of the examination scheme—up to this point—are excellent. Unfortunately the concluding paragraph of the preamble is not so satisfactory, albeit its frankness is highly commendable.

It informs the student that "a *minimum* standard of knowledge may be thus attained by all who enter the profession, serving as a basis for future studies, necessary to the fuller development of architectural ability." But it does not tell him how, under the operation of his scheme of examination, he has to obtain the requisite leisure to perfect himself in the "essentials," viz., "culture" and advanced education. Let us examine, stage by stage, the details of the scheme for testing, by "progressive examinations," the systematic course of education" to which reference is made; although, so far as we know, *no* systematic course of education of a thoroughly sound nature is at present to be obtained within the boundaries of the United Kingdom.

In the Preliminary Examination, framed with the object of testing the general knowledge of candidates in ordinary subjects of school education and other subjects described as being of a "technical character," such as elementary mechanics and physics, geometrical drawing, perspective and freehand drawing, from the round, the "minimum standard of knowledge" required has assuredly been fully maintained. We are aware that it is intended that the subjects comprised in this first examination should be studied by the would-be architectural probationer before he enters an architect's office; in other words, it is considered that this remarkably easy examination is in itself a sufficient test of the embryonic architect's possession of the requisite "general education" and "culture." A very brief examination of the syllabus suffices to prove that, as a matter of fact, it is nothing of the kind. With perhaps the possible exception of the one hour's examination in English composition, the scheme of examination (*final* as far as any test of "general education" and "culture" is concerned) appears to be one that it would be not unfair to expect the average schoolboy of 14 or 15 to pass *without* any special preparation whatever. But, apart altogether from the question of the efficiency or otherwise of the test sought to be imposed by the examination, we should like to know who is responsible for the inanities of its curriculum. For example, why should the candidate's historical researches be restricted (in the case of the history of his own country) to the period commencing "with the Norman Conquest and ending with the extinction of the Tudor dynasty," or why, regard being had to the close connection between the history of architecture and the general political history of the world, does the examination offer no encouragement to the young architectural student to obtain a sound and comprehensive knowledge of the progress of civilisation and the consequent evolution of art? Surely this subject is one of the *first* importance to the man who is expected to aspire to the attainment of a considerable, or indeed to any degree of "culture?"

We are glad to hear, although we confess that in the course of our experience we have not had occasion to become greatly impressed with the necessity, that "clear and well-formed handwriting, correct spelling, and grammar and punctuation are indispensable to the architect," but our very soul revolts at the degradation inflicted upon the man of "culture" by requiring him to "write out" and punctuate a short passage read by the examiner. If it be alleged that this preliminary examination is only intended to be one of a nature that the ordinary Council school boy might be expected to pass, we may well ask how men of "culture" and "liberal education" are to be attracted to a profession whose obligatory entrance examination is one of so elementary a nature? In any case, whilst the preliminary examination remains in its present state (and thus admittedly throws the door of the profession wide open for the reception of illiterate students), the great leaders of their profession might reasonably be expected to cease to draw attention to the difference observable between their precepts and practice by discontinuing their demands (on behalf of the architectural profession) for the acquisition of cultured and well-educated recruits.

Strangely enough, although the architectural profession has proved itself incompetent to deal efficiently with the great subject of the general education of the future architect, yet it is, apparently, determined to oppose any educational movement emanating from outside designed *inter alia* to further that end. Thus, when the University of Cambridge produced its well-meaning, but not altogether satisfactory, scheme for founding a school of architecture, the proposal was opposed in a most intolerant and bigoted manner. The disapproval of that august body, the Board of Examiners of the R.I.B.A. was upheld and strengthened(?) by the appearance, in *The Times*, of some very voluminous and silly letters on the subject, contributed by three "eminent" architects whose arguments, if we understood them rightly—and they were so enshrined in verbosity that it is conceivable we may not have done so—were to the effect that an architect should be a man of the highest education and culture, that uner the proposals put forward by the University Syndicate undergraduates intending to take their degree in architecture, necessarily could not receive the *best* possible *general* education, and *therefore* it was the duty of the profession to oppose the movement. It seems remarkable that whilst these doughty opponents of the University's proposal formerly held such "advanced," not to say absolutely unpractical views, they should now be content to fall into line with the present examination scheme of the R.I.B.A., under which their former *sine qua non*, i.e., "the best possible general education," has been absolutely abandoned, for no one can say that evidence of the possession of even a modicum of general culture is required from the candidates offering themselves for the preliminary and, so far as their general education is concerned, the *final* examination conducted by the R.I.B.A.

After remaining thirty years almost a ruin, the historic church house at Crowcombe, Somersetshire, has been completely restored, in keeping with the ancient character of the building, at a cost of £550. The upper floor has been adapted for the parish room and the men's institute of the parish. At the opening ceremony the Ven. Archdeacon Askwith, of Taunton, said in the history of that parish they could look back to the year 1246, when Godfrey de Crocumbe gave to the Prioress of Studeley, Oxfordshire, the revenue accruing to him in connection with the church house.

Notes and News.

The jubilee of "the finest parish church in England" (it would not be surprising to hear that there are several to dispute this proud claim), that of Doncaster, has just been celebrated. Doncaster's first parish church was built at the beginning of the thirteenth century. It was burned down in 1853. A year afterwards, the foundations of the present church were laid, and the building was completed and opened on October 14th, 1858. It cost £43,000, and was built from the designs of Sir George Gilbert Scott, R.A.

* * *

Sheffield's new city architect, Mr. F. E. P. Edwards, is to have a staff of eleven persons, of whom five are being transferred from the architectural staff of the city engineer's department, and five from the building department at the Education Office, while Mr. G. E. Whitaker, of Bradford, is to be chief clerk. Mr. T. W. Newbold, of the city engineer's staff, is to be the city architect's chief assistant.

* * *

The Northern Architectural Association, of Newcastle-on-Tyne, has now entered upon its fiftieth session, and, in order to celebrate the occasion, it is proposed to hold a dinner, at a date not yet fixed, and to invite the presence of distinguished architects and others as guests. It is also proposed to hold an exhibition of architectural drawings, etc., illustrating the work executed during the last fifty years, with special reference to the district covered by the association.

* * *

During the course of a presidential address at the Architectural Craftsmen's Society in the Technical College, Mr. J. Campbell Reid, A.R.I.B.A., expressed the opinion that the present-day architect is far more skilful in the planning of buildings with regard to health, convenience, and comfort, than his confrère of any previous generation. The desire of the public to obtain a maximum of building at the minimum of cost has a depreciative effect upon architectural embellishment. Mr. Reid believes that the rudiments of architecture should be taught in schools, and that until the public are educated to realise the best, mediocre architecture is inevitable.

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It appears that the further construction of skyscrapers in New York is to cease. The New York Building Code Revision Commission intends recommending the limitation of future buildings to a height of 15 storeys. It is anticipated that the proposed reform will be met with opposition chiefly in the business area at the lower end of Manhattan Island, where lateral extension is prevented by the Hudson and East Rivers, and the harbour.

* * *

Excavations in the Forum at Rome are now going on in front of the Arch of Titus, with the object of tracing the remains of the fortifications of the sixth century after Christ—the period of the great struggle for Rome between the Byzantine Empire and the Goths. Signor Boni has already found a great number of clay vessels and fragments in the trench which he has opened there, and it is hoped that these investigations may furnish a new and valuable clue to the little-known social history of the Gothic period.



PRIZE DESIGN FOR A VILLAGE CHURCH. W. ARTHUR RIGG, ARCHITECT.

This is a perspective view and plan of a design for a small village church on a sloping site. The tower has a stone staircase to belfry and roof, and is so arranged that the bottom portion serves as organ chamber. The clergy and choir entrance may be used as an emergency exit. There is a heating chamber under the vestry. The walls are of local squared rubble, with freestone quoins and dressings, with tiled roof. The design is by Mr. W. Arthur Rigg, and is one of two with which he won the Donaldson Silver Medal at University College, Gower Street, last session.

The monument to the late Crown Prince Rudolf was unveiled at Budapest, on October 10th, by the Emperor Francis Joseph, who personally expressed his thanks to M. Molnar (Secretary of State for Public Instruction) and to M. Ligeti, the sculptor.

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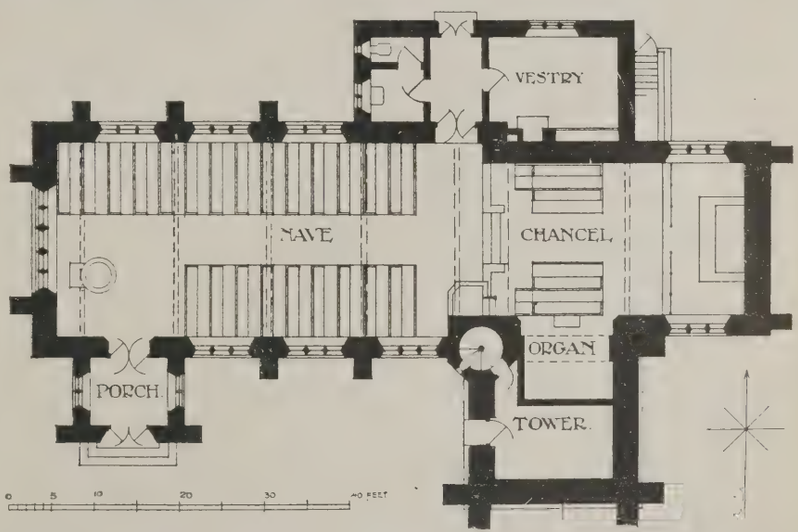
Spray baths for an elementary school have been decided upon by the Norwich Education Committee. The cost of the experimental installation will be £300, and maintenance is estimated at £105 per annum. Three batches of children will pass through the baths in an hour, so that 80 can be dealt with in a day, or 400 per week. Dressing-rooms will be provided, and the bath divided so as to deal with ten children at a time. No other elementary school in the country has yet had an installation of the kind, so that there is no experience to guide the committee, but the scheme was strongly recommended by the newly appointed school medical officer, Dr. Mathieson, who explained that in a spray bath the water falls in a shower upon each child, and immediately runs away by the waste pipe, removing any chance of infection.

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Mrs. E. A. Freeman has presented to Manchester University a collection of pen-and-ink sketches of English and Continental churches by the late Professor Freeman. These will be placed in the Freeman Library, where they may be seen by anyone interested.

* * *

The "Air-pit Fire" (Sherwin's patent) is explained and illustrated in a booklet that has been sent to us for notice by Mr. W. B. Clarke, of Saracen's Head Buildings, Snow Hill, E.C., who is, we understand, agent for the manufacturers.



Messrs. Sherwin and Cotton, of Hanley, Staffs. Nearly fifty patterns are shown, and the makers undertake to supply special designs and to work to architects' orders.

* * *

Mr. F. Bennett Smith, F.R.I.B.A., of 17, Brazenose Street, Manchester, informs us that he has taken sole charge of the practice in which he formerly had for a partner the late Mr. Alfred Darbyshire, F.R.I.B.A., and will continue it under the style of Darbyshire and Smith.

* * *

Vulcanite, Ltd., manufacturers of patent Vulcanite roofing and sheet asphalt for roofing, sarking, and dampcourse, 118, Cannon Street, London, E.C., Old Ford, London, E., and Laganville, Belfast, inform us that their Manchester address is now 41, Corporation Street, and not as formerly.

* * *

At the fortnightly meeting of the Brampton Rural District Council, Lady Carlisle moved that the final approval of all building plans be submitted to the Council. She explained that at present the building surveyor did not forward plans until they complied with the by-laws. She desired to enable builders to appear before the Council to state any hardship that might arise. The Council could then waive certain points if they thought fit, which at present the building surveyor could not do. At present the Council did not get the plans until the building surveyor certified that they were in strict conformity with the by-laws. After discussion, the matter was adjourned.

Proposed New Works.

The Local Government Board has decided to hold, or has recently held, as the appended dates may indicate, inquiries into proposed expenditure by public bodies as follows:—Water supply works and plant: Okehampton R.D.C., £1,000 for South Zeal, Ramsley, Shelley, and Prospect (October 22nd); Ampthill and Newport Pagnell R.D.C., £7,700 and £4,973 for Aspley Guise, Aspley Heath, and Woburn Sands (including the construction of a reservoir wtih a capacity of 390,000 gallons, etc., at Bow Brick Hill) (October 20th). Electric lighting and power supply works and plant: Watford U.D.C., £1,830 (October 20th); Nuneaton B.C., £2,500 (October 21st). New bridges and renewals: Salford B.C., strengthening Palatinit Bridge, u.a.s. (October 21st). Street improvements, new roads, public walks, and pleasure grounds: Mansfield B.C., £1,080 (October 20th); Hanwell U.D.C., £320 and £5,400 (October 20th); Wollaston R.D.C., £500 for cemetery (October 24th); Nuneaton B.C., £4,300 (October 21st). Sewerage, drainage, and sewage disposal works and plant: Wolstanton United U.D.C., £7,000 (October 23rd); Mold U.D.C., £3,500 (October 22nd); Brentford U.D.C., £4,794 (October 23rd); Mossley B.C., £9,000 (October 22nd); Mansfield B.C., £36,718 (October 20th); Wembley U.D.C., £1,000 for storm water filters (October 22nd); Richmond (Surrey) B.C., £5,350 (October 21st); Hoddeston U.D.C., no amount stated (October 21st); Hanwell U.D.C., £1,350 (October 20th); Uphill R.D.C., £1,300 for Weston-super-Mare (October 21st); Chelmsford B.C., £1,093 (October 20th); Ampthill and Newport Pagnell R.D.C., £7,224 and £4,774 for Aspley Guise, Aspley Heath, and Woburn Sands (October 20th); Bacup B.C., £2,525 and £645 (October 21st).

Acton.—The Local Government Board has given its sanction to the borrowing of the following amounts for public works at Acton:—£5,000 for new sewerage works, £4,700 for acquiring further properties in connection with the Acton Improvement Act, £18,098 for the erection of new schools at Acton Vale, £1,135 for furniture and fittings for those schools, and £20,600 for new public offices.

Bolton.—The Corporation have accepted the offer by Mr. Andrew Carnegie of three branch libraries at a cost of £5,000 each.

Broadstone, Dorset.—It is proposed to add an aisle and enlarge the vestry of the parish church (St. John the Baptist), at a cost of about £700.

Burslem.—Plans for a new central school in Moorland Road have been prepared by Mr. A. R. Wood, and approved by the Town Council.

Camberwell.—The Borough Council have accepted the estimate of the borough engineer (£1,500) for the erection of seven cottages in Pitman Street.

Cardiff.—An enquiry has been held at the City Hall, Cardiff, with regard to an application for a further loan of £45,000, to defray extra costs in connection with the new City Hall and Law Courts, and also for approval of the sale of the old Town Hall and municipal buildings, to the Co-operative Society, Ltd., for £60,000. The matter is to be reported to the Local Government Board in due course.

Dundee.—Foundation stones of the new physics and electrical engineering laboratories at Dundee University College, which are estimated to cost about £16,500, were laid on October 11th.

Eastbourne.—The church of Holy Trinity is to be enlarged and completed, at an estimated cost of £7,000.

Edinburgh.—The governors of George Heriot's Trust have decided to accept the offer by the War Office to purchase the estate of Redford, near Edinburgh, for the erection of cavalry barracks. The price is £15,500.

Golder's Green, N.W.—A new church is proposed for this rapidly growing district. Mr. Wills has been appointed architect, and tenders are to be invited as soon as the necessary plans have been prepared and passed. The site in North End Road has been presented to the vicar by the Ecclesiastical Commissioners.

Great Crosby.—At a recent meeting of the Urban Council, the following plans were approved:—Plan of detached villa on the west side of Coronation Drive, for Messrs. Lawson and Rimmer; plan of three pairs of houses on the east side of Sherwood Road, for Mr. W. Wright; amended plan of drainage to the Great Crosby elementary schools, for the County Council; drainage plan of two houses on the north side of Moor Lane, for Mr. Charles Townsend.

Harrogate. — Chancellor Tristram, K.C., D.C.L., conducted a Consistory Court at St. Mary's Church, Harrogate, on October 14th, when a petition was presented for the building of a new church at Westcliffe Grove and Harlow Terrace. The petition for a faculty for rebuilding was presented in consequence of the old church having been condemned by the Harrogate Corporation as unsafe. The faculty was granted.

Hereford.—Improvements to the church of St. Nicholas, at an estimated cost of £1,300, are in contemplation.

Ilford.—At a recent meeting of the Ilford Urban District Council, plans and estimates for a dust destructor were submitted by the surveyor (Mr. H. Shaw). The estimated cost, with the necessary buildings, is £15,000, and it was decided to apply for sanction to borrow £8,115 for the erection of the buildings.

Kingston-on-Thames.—Owing to the continued delay in taking steps for the widening of Kingston Bridge, the Kingston Corporation have requested the local member to draw the attention of the Surrey County Council to the matter. The widening has been under discussion now for several years.

Leeds.—Mr. Edgar Dudley, an inspector from the Local Government Board, held an inquiry at the Leeds Town Hall on October 14th with respect to applications by the Corporation for leave to borrow £48,000 for the purchase of Kirkstall Grange and part of the estate for the purpose of a training college, and to borrow £8,022 for street improvements.

Newport, Mon.—Two blocks of artisans' dwellings are to be built here, at an estimated cost of £1,400.

Newport, Mon.—For the erection of a technical institute here, the Education Committee have accepted the tender of Mr. W. E. Blake, Plymouth—£36,130.

Newquay, Cornwall.—A scheme has been inaugurated to build a new church here, at a cost of £10,000, to seat 1,000 people. A site has been secured for £545, and it is proposed to build the nave section first, which is estimated to cost £5,000.

Scarborough.—At a meeting of the Town Council, the borough engineer having submitted a plan showing the construction of an apron to the damaged portion of the Marine Drive sea-wall, leaving spaces where excavations could be made into the shale, if necessary, and an estimate of the cost of such apron amounting to £2,000, it was resolved that such plan and estimate should be approved, and that the borough engineer should proceed with the work forthwith.

Southampton.—The foundation stone of a new sailors' home here was laid on October 15. The building has been designed in Georgian style by Mr. A. F. Gutteridge, of Southampton. Mr. W. E. Blake, of Plymouth, is the contractor.

Tipton.—Mr. W. A. Ducat held a Local Government Board inquiry, on October 13th, with reference to an application by the District Council to borrow £1,000 for extension of the public offices.

Wallasey.—The U.D. Council are looking for a site for their Carnegie Library.

Wilmington, Kent.—The old Parish Church, part of which was erected in pre-Norman days, is in need of urgent repair, the tower especially, which is the oldest portion, being unsafe. Mr. Robert Marchant, A.R.I.B.A., has prepared a survey of dilapidations, and funds are to be collected, the work being started immediately.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

Architects' Responsibilities to Clients.

LEEDS.—R. S. writes: "A contractor (joiner) receives notice under Clause 26 of the R.I.B.A. contract form, that owing to his default the work of completing his contract will be taken from him and given to another contractor. The justice of this is not questioned. The first contractor A has given to the architect on signing a priced schedule in compliance with special condition in contract. The architect certifies strictly according to these prices, and when the contractor A is turned off, has certified for £160, whilst the work done priced on the above schedule comes to £250. The rate of payment inserted in clause 30, R.I.B.A. form, is 80 per cent., but, owing to the defective character of the work, the architect withheld the additional amount. The cost of repairing and making this work satisfactory has amounted to, say, £50, leaving £40 nominally due to contractor A. The new contractor brought on to the job at the request and recommendation of the proprietor, completes the work satisfactorily, but at much great cost, so that when completed the building costs the proprietor, say, £100 more than the amount of the original contractor's estimate. It will be seen that in certifying the architect has in hand, so to say, £40 when the contractor A is dismissed after repairing his bad work. The prices in all cases being based on the above schedule, presumably this shows sufficient care on the part of the architect. The proprietor, who considers himself a judge of such things, informs the architect that contractor A is, in his (the proprietor's) judgment overpaid, and he will claim some indefinite amount from the architect (who has all measurements of material in job priced according to





TOWN HALL CHAMBERS, 374—8, OLD STREET, LONDON, E.C. LOVEGROVE AND PAPWORTH, ARCHITECTS.

schedule), and will also claim from the architect damage for delay owing to the trouble with contractor A, although he has previously admitted in his letters that the contractor has caused the delay. (*a*) Will the priced schedule stand good, and has the architect acted correctly—*i.e.*, will he, under these conditions, be considered to have certified correctly and not excessively? (*b*) To whom should certificates be made out? The architect has given ample personal inspection to the work—in fact, more than was really necessary. (*c*) Is there any claim whatever on the architect?"

The proprietor should recollect that the building contract is between himself and the builder (or builders), and that the architect is not in any way a party to that contract. The architect is engaged by the proprietor to execute certain duties; and provided he carries out those duties honourably, and is guilty of no negligence, he is under no personal liability whatever. To make him liable for damages, the proprietor must prove either fraud or negligence on the part of the architect, and in my opinion there can be no question of either charge being justly made under the circumstances detailed. The answers to your queries are therefore (*a*) Yes, (*b*) Yes, (*c*) No. F. S. I.

Best Book on Materials.

LONDON.—N. H. C. writes: Can you advise me as to the best technical book dealing with materials?

Rivington's "Notes on Building Construction," vol. iii.

Our Plate.

Town Hall Chambers, 374-8, Old Street, E.C., has been erected by the owner, employing direct labour, and is of fire-resisting material throughout. The street front is faced with sand-faced red bricks, the arches and aprons being in brighter coloured gauged brickwork and Portland stone dressings. The building is let off as offices, each floor being divided differently to suit the tenants' requirements, the irregular frontage to Loyne's Buildings generally dictating the arrangement of the rooms. The cost was 8¾d. per foot cube. The architects were Messrs. Lovegrove and Papworth, of 374-8, Old Street, E.C.

LONDON FACTORIES RECENTLY ERECTED.

A correspondent having asked for a list of the factory premises that have been erected in or near London during the past year or so, we referred the question to the Factory Department of H.M. Home Office, and have been favoured by Mr. Knyvett, H.M. Superintending Inspector, with the following reports, which have been prepared by various district inspectors, and which are published in the belief that the information may be found useful by others besides the correspondent at whose request it has been obtained. The list may be taken as being representative rather than complete.

North London District.

Eagle Pencil Co., Tottenham Hale, Tottenham, N., pencils; Cadett and Neale, Ltd., Wealdstone, Middlesex, dry plate; Caley and Co., Ltd., Chenies Street, W.C., mineral waters; The White Co., Carlow Street, Arlington Street, N.W., motor cars; Metropolitan Railway Co., Neasden, N.W., electricity; Stavers, Messrs., Angel Road Edmonton, N., sawmill.

South London District.

Moore and Nettlefold, Anchor and Hope Lane, Charlton, glass bottles; Kirby and Sons, Peckham Grove, Camberwell, corsets; Hayes and Sons, Coldharbour Lane, Lambeth, laundry; Harvey and Co., Kenbury Street, Lambeth, bookbinding; Cross and Blackwell, Ltd., Nine Elms Lane, Lambeth, preserves.

West London District.

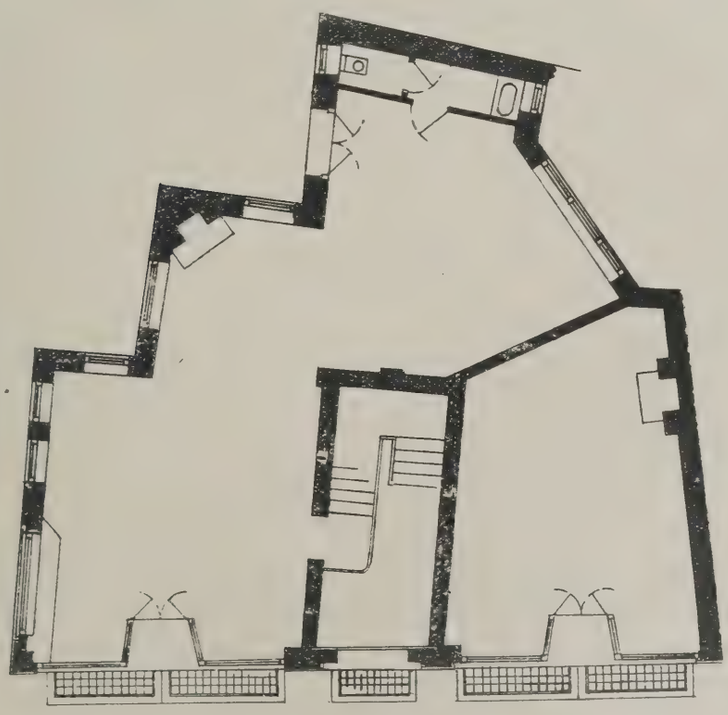
Line and Sons, Ltd., Southall, wall-paper manufacturers; The Gramophone Co., Ltd., Hayes, gramophone records; Horlick's Malted Milk Co., Ltd., Slough, malted milk; The Direct Supply Aerated Water Co., Ltd., 135-137, Fulham Palace Road, S.W., aerated waters; Renault Frères, Ltd., Seagrave Road, S.W., motors; The "Morning Post," Strand, W.C., newspaper production; S. Oborne and Co., Warple Way, Acton, printing, etc.

North-East London District.

Three new repair sheds for motor omnibuses—London Road Car Co., Ltd., Redclyffe Road, Upton Park, East Ham; Great Eastern London Motor Omnibus Co., Ltd., Lea Bridge Road, Leyton, and also at 234, Green Street, Upton Park, West Ham. Several large firms in this district are greatly increasing their works. The Co-operative Wholesale Society, Ltd., have erected a soapworks at their group of factories off the North Woolwich Road at Silvertown, in West Ham; J. Rank, Ltd., and W. Vernon and Sons, are doubling their flour-mills at the Victoria Docks; Conrad Schmidt, Carpenter's Road, Stratford (paints), has acquired large premises adjoining present factory, which will no doubt double original capacity. There are three small new places of a rather unusual character which it may be worth while to mention, namely, Dusmo, Ltd., West Ham Lane, Stratford, dust-laying material; Dustabaters, Ltd., Hartmann Road, Silvertown, dust-laying material; and Cast Iron Brazing Co., Station Street, Stratford, engineering repairs. The Lamson Paragon Supply Co., Ltd., have found it necessary to remove the carbon paper branch of their work to a large new factory in Etloe Road, off Church Road, Leyton. T. W. Ward, Ltd., have abandoned several scattered depots, and concentrated at a large new site off the North Woolwich Road, at Silvertown. Their occupation is the breaking-up of scrap metals. The following five factories are of recent construction: Burgoyne Burbidges and Co., High Street South, East Ham, drugs: London Butchers' Hide and Skin Co., Ltd., Creekmouth, Barking; Midland Cattle Products Ltd., Creekmouth, Barking; British Coalite Co., Ltd., Creekmouth, Barking; Oowana Soap and Candle Co., Ltd., High Street, Stratford, West Ham.

East London District.

Co-operative Wholesale Society, Ltd., Leman Street, E., now in course of construction for coffee, butter-blending, etc.; Princepts Patent Lighting Co., Narrow Street, E., brass foundry; The Micanite and Insulator Co., Blackhorse Lane, Walthamstow, now in course of construction: and a factory near Stoke Newington Station, N.E.



GROUND FLOOR PLAN

OLD STREET

Scale of Feet 0 1 2 3 4 5 10 20 30

TOWN HALL CHAMBERS, 374-8, OLD STREET, LONDON, E.C.
LOVEGROVE AND PAPWORTH, ARCHITECTS. (See Centre Plate.)

Correspondence.

Relations Between Architects and Insurance Surveyors.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Undoubtedly, as *Audi Alteram Partem* states, instances might be quoted of unsatisfactory treatment of Insurance Surveyors by Architects, and while such treatment is reprehensible either on the one side or the other, may it not be occasioned by some underlying grievance against the action of the Surveyor? The architect, presumably being a conscientious man, is desirous of doing the best for his client, and to this end would gladly consult with the insurance surveyor preparatory to the erection of his building if he thought any benefit would be derived by his client thereby. What are the advantages of such a consultation? A greatly improved fire risk from the insurance man's view, but a negative result so far as the client is concerned. If, as the result of such an interview, it were possible to obtain from insurance surveyors a schedule of rates applicable to certain grades of fire-resistant constructions, then the architect, or at any rate his client, would gladly welcome it, but if it be that the only result is an increased cost of building without a reduction in the insurance, your correspondent can barely wonder that the conferences he suggests are not welcomed. *Audi Alteram Partem* seems to know the insurance surveyor's side, and perhaps he could tell us what benefit in actual insurance rates would accrue to an intending builder if on the one hand he confers with the insurance surveyor, and embodies his suggestions in, for example, a reinforced concrete construction, and on the other hand, without reference to the insurance surveyor, he puts up a building which, while complying with the fire insurance rules, could not be considered as a first grade building from a fire resistant view. The comparison would be all the more interesting if it applied, say to the Cripplegate area.

Yours (from the view of)

THE MAN WHO PAYS.

Art in the Countryside.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Re Mr. Delissa Joseph's letter to the "Times," which you quote in a recent isue, where he advocates the establishment of a Minister of Fine Arts and Local Committees of Taste, with powers to control the design of rural buildings, in order that the country-side may not be disfigured, and incidentally provide hundreds of capable architects with work. The idea, not strikingly novel, is too Utopian for this commercial age. In the first place, the better class country houses are very frequently designed by more or less capable architects, leaving to others those erected for the benefit of aagricultural and poorer classes. We all appreciate the exceedingly difficult problem of providing well-built hygienic cottages to suit the pockets of the latter class and at the same time to bring in a fair return to the building owner. However, if we add to the already arbitrary powers of the Rural Councils, the whims of a Crown Minister, and the fads of a Local Committee of Taste, the cost of adequate rural housing would inevitably rise, and many capable architects would find themselves without the small country jobs they now obtain, and, further, the already overburdened agricultural classes would have to pay an increased rental for the privilege of providing an improved outlook for the artistic few. Should the time be ripe for creating a Minister of Fine Arts, with his attendent satellites of good taste, surely London would provide an excellent field for the exercise of their good offices.

F. C. W.

Thrusts and Moments.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Referring to the detailed explanation, in your issue of September 23rd, of the thrusts and moments given in the answer to query in the issue of July 8th, has not the answer neglected one very important point? The resultant given would be the same if there were no collar beam at B, or if the joint at B were hinged. Would not the resultant thrust depend entirely upon the stiffness of the joint B, or if this point were quite rigid, then upon the elastic deflection of the cantilever A—B and the extension under stress of the collar beam? Of course, the assumption of a frictionless joint at B is on the safe side, but to neglect large factors in order to simplify calculations often means ugly proportions by calling for masses of material in situations where it is really unnecessary and wasteful. Please forgive this criticism, which is not necessarily for publication, but as a guarantee of interest.

PERCY J. WALDRAM.

London, W.C.

[The contention made by your correspondent with reference to the thrusts in a collar-beam truss is, in the main, correct. There is, I believe, no known simple method of calculating accurately the thrusts in a collar-beam truss, and for this reason I preface all the replies to enquiries of this kind with a statement that the stresses and thrusts cannot be found accurately. I would welcome any work on the subject which would clear the matter up. One could, of course, work on the elastic theory of Rigid Arches, but such treatment would be very involved, and would not I think, be followed by the majority of your readers. The method I have adopted, which I agree tends to make the scantlings rather on the large side, is practically to design the truss so as to be strong enough if the walls should yield, and also to design the walls so that they should not yield. Your correspondent states that the resultant given would be the same if there were no collar beam; this is true as far as the maximum thrust on the walls goes, but as regards the truss itself, this is greatly strengthened by the collar beam. If one could please oneself, collar-beam trusses would never be designed, because the calculations are so unsatisfactory. A.]

Unemployment Insurance for Architects' Assistants.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Apart from the question of unemployment itself, is the question of the maintenance of the unemployed, which is, perhaps, of more importance and is fairly easy of solution, if all, or a large percentage of, architects' assistants were unanimous in their interest in and appreciation of the difficulty.

The question presents itself in this manner:—Unemployed assistants must either be maintained (1) by their savings, accumulated whilst in work, (2) If these are exhausted (or non-existent) by their friends, that is to say by charity, or (3) by the ratepayers. If the assistants of the United Kingdom formed an association to promote a system of unemployed insurance, to which every member should contribute, they could then support such of their number as were out of employment or unable to find work.

Such an organisation should prove of great value to employers, for it would involve the creation of unemployment bureaux, and the division of the unemployed into classes in accordance with their capabilities, thus rendering it an easy matter for an employer to find a capable assistant without delay, and leading up to the ultimate exclusion of those assistants who are quite useless. I think it unnecessary and impracticable to mention State aid of any description at the present moment. I believe that architects' assistants have sufficient capital, energy, and intellect to manage their own affairs in their own way and to suit their own convenience without any appeal to any outside influence whatever. I may point out that it is only by means of organised effort that the question of unemployment can be dealt with, and *only* by a thoroughly efficient organisation that it can admit of a solution. This will appear dogmatic to many, but a little consideration will show that the means of dealing effectively with any problem involving thousands of detached units is by association of some kind. Meanwhile we require particulars as to the state of unemployment in the various centres, the number of the unemployed, and, at least approximately, the number of assistants who would be prepared to join such an organisation as I suggest. I should be pleased to hear from anyone interested in the proposal, or its objects, with a view to the formation of a committee to obtain the necessary information, and to consider any proposals for immediate action. I shall be agreeably surprised if I obtain any response to this request, as I do not think that the main body of architects' assistants are sufficiently interested in their welfare as a class (possibly regarding themselves as mere birds of passage destined for a future paradise of lucrative practice), and prefer to rely wherever possible on individual effort; but individual effort has been recognised by every trade and profession (with few and doubtful exceptions) to be a failure in all questions of this nature; and, in the face of the combinations for mutual help and economy continually being formed around us, the anarchic position of the architects' assistant is quickly becoming an anachronism. I feel confident (a confidence based on the experiences of other trades, professions, and industries) that if some such proposal is not adopted voluntarily, architects' assistants will be forced into combination in the near future by sheer stress of circumstances.

ERNEST J. DIXON, A.R.I.B.A.

23, Idmiston Road, Stratford, E.

[We are pleased to give publicity to our correspondent's suggestion, which we trust will meet with a better response than he anticipates. Certainly "the stress of circumstances," of which he writes, is already present. But any suggestion of a combination among architects is greeted with the cry of "trade-union," as if a "trade-union" were something horrible and abominable instead of a very desirable and reasonable development under modern social conditions. We hear praise enough from our leaders of the old trade unions which we call craft gilds, but they will not tolerate the idea of a modern craft gild. It is a reproach to many of our artizans' trade unions that

they are more interested in promoting the financial interests of their members than in producing educated and skilled workmen. But that is no reason why architects should not be enrolled in a modern craft gild of more enlightened aims, while not disdaining those financial matters which their ancient prototypes took due account of.—Editor B.J.]

Experimental Investigation of Materials.

SIR,—I have read with great interest the article, in the last Concrete and Steel Section of THE BUILDERS' JOURNAL, on "Theory and Experiment." I must agree with the author when he says that the number of persons engaged upon experimental work, in connection with the materials and methods of construction used in building, is small. But I cannot agree with him when he says that "Insufficient means are provided for experimental investigation." There are very few districts in London, and very few towns in the provinces that are not provided with technical colleges, and many of these, particularly in London and in towns like Birmingham and Leeds, are very completely equipped for carrying out experiments to determine the physical properties of materials. It is not because the heads of the engineering departments of these colleges are "mechanical or electrical engineers" that research work of this kind is not undertaken, but because there are so few students who take enough interest in the work to come forward and do it. The trouble is not to induce the authorities to lend their laboratories to the building students, but to induce the students to use the laboratories. When I read the paragraph in which the writer of the article advises the members of the architectural and civil engineering professions to go to the head of the college engineering departments and instruct them in what to look for, I was astonished; it would be very interesting to know how many members of the architectural profession could go to the professors at, say, the City and Guilds Institute, or University College, and tell them what they should look for in experimenting, for instance, with a buckled plate with fixed edges, to discover the principal stresses and their direction.

For the past five years I have been a student at a London Engineering College, one of two "building" students amongst about two hundred mechanical engineering students, and we have the unrestricted use of the whole of the apparatus in a very completely equipped testing laboratory, which includes a Buckton Wicksteed testing machine with autographic recorder, Ewing's extensometer, deflection microscopes, and a complete testing equipment for cement, as described in the specification of the Engineering Standards Committee. There are about one hundred and fifty students attending lectures in building construction at this college, but I have not seen one of them in the testing laboratory during the whole of the time I have been a student there, and this I think is the condition of things in nearly all technical colleges. The lecturers in Building Construction prepare their students for the Board of Education examinations in this subject, and this body require so much time to be spent in drawing and theory that there is no time for practical experimental work, and until they require a certain number of hours' laboratory work as an essential part of the course to gain a certificate in each stage, so long will the majority of architects and builders in this country remain without a practical knowledge of the physical properties of the materials that they use.

Plaistow. G. N. KENT.

The Architectural Profession To-day.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In order to bring about union in the architectural profession, and avoid jealousy and other factors of disunion, why not begin at the bottom and work up, instead of waiting for the word from the shining ones at the top? Out-of-work architects and assistants would gladly subscribe their signatures to a broadly-worded declaration to help on work of reform in the profession, and others would also, no doubt, join in the face of such universal depression. There are few who would not favour reform. The campaign would be conducted after the manner of other campaigns, but for the purpose of sifting out those who would not be a source of strength to the movement, each member would bind himself to work for the cause, and would have to send a periodical report to headquarters. Every member not working would be struck off the rolls. An official organ would be run in order to keep members all in touch. The moral force of such a body of men would be very considerable. The method of working would be for members to bring their cause before at least one suitable person in a given time, and as a test get him to become a subscriber to the official organ. This would serve to keep those won, and enable members to get introductions or other help from them when needed. Councillors and all those having the power of passing plans, etc., would be the chief people to approach, but many others of the public would also be useful. Then the Union would also direct its attention to all and sundry minor matters connected with the profession, and thus deal with the matter piecemeal till the whole matter had been dealt with. For instance, the local bye-laws in each district might be altered, and, if possible, a clause inserted to the effect that all plans submitted to the local authorities should be prepared by architects. And architects might make a rule that builders getting out their own plans should not be asked to tender for work under any architect. Possibly makers of building materials might be approached in the interests of the profession. Might not a pillory be started, as in "Truth," for publishing petty meannesses and spites against the profession? It is certain that such a policy—starting at the bottom and working piecemeal—contains some prime factors of success, in which union and enthusiasm would not be lacking. A REGULAR READER.

Biggleswade.

The Architectural Profession in Western Canada.

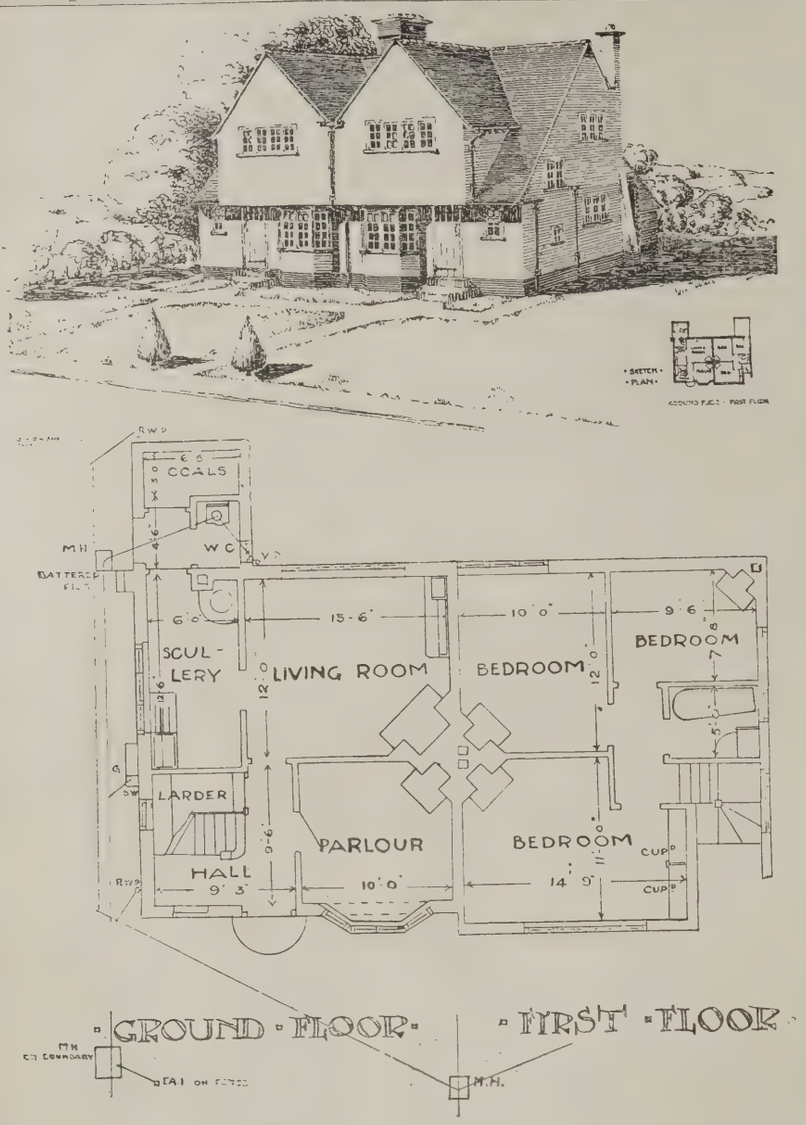
To the Editor of THE BUILDERS' JOURNAL

SIR,—I am writing this letter in the hope that it may save trouble and expense to any of your readers who may contemplate going to the western part of Canada, more particularly British Columbia, either as practising architects or as assistants. I arrived here ten or twelve months ago, as the result of glowing newspaper and other reports, and have since been gradually learning that it is possible to make a mistake in leaving England, even with the present congested state of the architectural profession in that country, and will attempt to briefly state my reasons for saying so. The most boomed town in Western Canada at the present time is Vancouver, the population of which is between 70,000 and 90,000. For the last few years I think that there is no exaggeration in stating that over half the business premises in the town have been occupied by real estate agents, whose sole aim is to boom the district, so that they may sell land. Not only is the town boomed in Great Britain, but also in the United States, Australia, New Zealand, Africa, and Eastern Canada, and at the present time there are practising, architects and assistants from all these different countries, the largest part of whom are without work. Statements appear from time to time in building and other papers showing that building permits issued in the western towns, especially Vancouver, are very numerous in proportion to the size of the towns, but as information for architects' use they are most misleading, for with very few exceptions they represent licences to erect frame houses where the builder who erects the work makes his own drawings, as his client, who in nearly all cases knows nothing of art and good planning, and cares less, is happy to think that he saves the architect's fee. As yet the population is very migratory in character, and the people of the class who, if they finish building a house for themselves to-day, are prepared to sell it to-morrow, if they can make a few dollars out of the transaction. The principal north-westerly town of the United States is Seattle, with a population of about 400,000, and only a few hours' journey distant from Vancouver. Many of the industries and enterprises in Vancouver are supported by capitalists from Seattle, and as a consequence most of the buildings erected, having any pretence to size, are designed by non-resident architects. Then, again, competitions, which might prove a means for an outsider to occasionally obtain work, are usually conducted under such conditions that it is a sheer waste of time to submit drawings unless an architect has, and is willing to resort to, what is called the pull. For example, a competition was held recently, for a city council building, to cost £1,500 (fifteen hundred pounds), and below is a summary of procedure:—(a) Plans to be deposited within ten days of advertisement first appearing; (b), plans sent by Council to fire chief and building surveyor to report upon; (3), fire chief and surveyor recommended plans of Architect A at next meeting of Council; (d), the matter was postponed again until the following meeting of Council, but before this meeting had arrived two other competing architects, B and C, had submitted amended plans, and, to cut a long story short, the amended plans of Architect B were accepted, and he is now advertising for tenders

This is the account as told by the newspapers week after week, for I have not yet heard that the other competing architects have been officially informed of the award, nor have their drawings been returned. In connection with this affair, a certain alderman said that "he had never seen so much leg-pulling in connection with any civic work as was being done by architects." SCOTCHMAN.

Vancouver, B.C.

[We trust that the publicity afforded to our correspondent's letter may have the effect he desires.—ED. B.J.]



WOLVERHAMPTON MODEL HOUSING EXHIBITION.

First Prize Design, Class 1A. Pepler & Allen, Architects.

WOLVERHAMPTON MODEL HOUSING EXHIBITION.

Preliminary List of Awards.

The judges of this exhibition, which is being held at Fallings Park, Wolverhampton, and of which our report is unavoidably held over for want of space, have authorised the following announcement of awards.

CLASS 1A.—The best cottage containing not less than three bedrooms erected at a cost not exceeding £250. Gold medal: (Nos. 89 and 90), architects, Pepler and Allen, Croydon. Builders: Fallings Park Gardens Suburb Tenants, Ltd., Heath Town. Silver medal (Design): (Nos. 303 and 304), architect, A. W. Worrall, Wolverhampton. Commended (construction): (Nos. 303 and 304). Builders: Geo. Cave and Sons, Wolverhampton. Highly commended: (Nos. 322 and 323), architect, F. W. Chapman, Sheffield. Builders: R. Charlesworth, Sheffield. (Nos. 79 and 80), architect, Basil Stallybrass, New Brighton. Builders: Fallings Park Garden Suburb Tenants, Ltd., Heath Town. Commended: (Nos. 305 and 306), architects, Benton and Roberts, Sheffield. Builder: F. W. Beard, Heath Town.

CLASS 1.—Gold medal: (Nos. 11, 12, 13, and 14), architect, W. J. Oliver, Wolverhampton. Builders: Fallings Park Garden Suburb Tenants, Ltd., Heath Town. Silver medal: (Nos. 317 and 318), architect, C. M. Crickmer, London. Builders: Geo. Cave and Sons, Wolverhampton.

CLASS 2A.—Gold medal. (Nos. 78 and 81), architect, Basil Stallybrass, New Brighton. Builders: Fallings Park Garden Suburb Tenants, Ltd. Gold medal: (Nos. 1 and 4), architect, A. Randell Wells, Hastings. Builders: Fallings Park Garden Suburb Tenants, Ltd., Heath Town.

CLASS 3.—No gold medal. Silver medal: (Nos. 309 and 310), architect, F. T. Beck, Wolverhampton. Builders: Geo. Cave and Sons, Wolverhampton. (Nos. 8, 9, 16 and 17), architect, W. J. Oliver, Wolverhampton. Builders: Fallings Park Gardens Suburb Tenants, Ltd. (Nos. 77 and 82), architect, Basil Stallybrass, New Brighton. Builders: Fallings Park Garden Suburb Tenants, Ltd., Heath Town.

CLASS 4.—Best cottage in exhibition. Gold medal and £20 (Nos. 89 and 90), architects, Pepler and Allen, Croydon. Builders: Fallings Park Garden Suburb Tenants, Ltd., Heath Town. Silver medal: (Nos. 303 and 304), architect, A. W. Worrall, Wolverhampton. Builders: George Cave and Sons, Wolverhampton.

CLASS 5.—Special prize for excellency in design of back elevation. Bronze medal: A. Randell Wells, Hastings. Basil Stallybrass, New Brighton.

CLASS 6.—Designs Competition.—Best design of houses to be erected containing not less than three bedrooms, and at a cost not to exceed £200. First prize: Robert Bennett, A.R.I.B.A., and Wilson Bidwell, Letchworth. Second prize: W. J. Oliver, Wolverhampton.

CLASS 7.—Best design of house containing three bedrooms and not to exceed £150. First prize: A. W. Worrall, Wolverhampton. Second prize: Leonard Tracey, Birmingham.

CLASS 8.—Best design of house containing not less than three bedrooms, to be erected at a cost not to exceed £400. First prie: Geoffry Lucas, A.R.I.B.A., London. Second prize: H. L. Paterson, Sheffield. Third prize: Geoffry Lucas, A.R.I.B.A., London.

The following is a list of the judges: — The Mayoress of Wolverhampton; Mrs. A. Baldwin Bantock; Mrs. Medley (nominated by Trade Council); C. E. Bateman, F.R.I.B.A. (nominated by Birmingham Architectural Association); C. H. Barnsley, builder, Birmingham; Detmar Blow, F.R.I.B.A., London; William Edwards, President of Wolverhampton Architectural Association; Henry T. Hare, F.R.I.B.A., London; T. Medley (nominated by Trade Council); Halsey Ricardo, F.R.I.B.A., London.

Obituary.

Mr. Thomas Winn, architect, of Leeds, who died at his residence in Shire Oak Road, Headingley, recently, had enjoyed a large practice in the building and more particularly in the valuation, of licensed premises. The recent extensions of Leeds Union Workhouse were also planned by him. He was a prominent Freemason, and his geniality and generosity had redered him one of the most popular of Leeds worthies.

Professor Friedrich Adler, the well-known German authority on the history of architecture, and an architect of considerable merit, died at his residence in Berlin, last month, in his 81st year. Dr. Adler, who received his training at the Berlin Academy of Architecture under Strack, Drewitz, and Stueler, became professor at this institution in 1863, and received a variety of distinctions and decorations until his retirement five years ago. In addition to a number of churches in Berlin and in the provinces for the plans of which he was responsible, he designed the new Church of the Redeemer at Jerusalem. When the Berlin Technical High School was opened Dr. Adler joined the academical staff, and in 1877 he was appointed consulting adviser to the Prussian Ministry of Public Works. He took a prominent part in the excavations at Olympia, and, in conjunction with Professor Curtius, wrote an account of the results. His numerous technical publications included monographs on the Stoa of King Attalos at Athens, the Pharos of Alexandria, the Mausoleum of Halikarnassus, and the Church of the Holy Sepulchre, while among the best known of his larger treatises were "A History of the Architecture of Berlin" and "The Architecture of some of the World's Historic Cities." Dr. Adler was a member of a large number of learned and archæological societies, both at home and abroad.

Mr. John Wilson Bland, who died at his residence in Trafalgar Square, Scarborough, on September 21st, in his sixty-seventh year, was a member of the firm of Messrs. W. J. Bland and Co., builders, and had been associated with many important contracts.

The body of Mr. William Waterson, builder, of Darlington, was found in the reservoir at Bushel Hill, about a mile and a half from that town, on September 26th. At the subsequent inquest the jury returned a verdict of "suicide while temporarily of unsound mind." Mr. Waterson, who was sixty-five years old, is described as having been one of the most successful speculating builders in Darlington.

The Council of the Junior Institution of Engineers inform us with deep regret of the death of the president of the Institution, M. Gustave Canet, the eminent French artillerist, which took place at La Tourelle, St. Aubin-sur-Mer, on October 8th.

Mr. Francis Adams Sprules, A.R.I.B.A., of Sheffield, who, with his brother, died on Scawfell last Thursday, became an Associate of the R.I.B.A. in 1906. He was just past the twenty-seventh year of his age. He was an experienced mountain climber, and was a member of the Derbyshire Pennine Club.

FIRE-RESISTING CONSTRUCTION SECTION.
(MONTHLY.)

FIRE AT THE PARIS TELEPHONE EXCHANGE.

We are presenting some important photographs of this fire, which we consider to be one of the most interesting from the fire-preventive point of view that have occurred on the Continent of Europe for many years.

Apart entirely from the importance of the fire as such, which entirely disorganised the Paris telephone service, and has involved the French Government in heavy financial loss, this fire stands out as a characteristic one amongst those in a building which has been erected regardless of expense, and in which, nevertheless, the very elements of fire-resistance have been overlooked.



Photo: Topical.

VIEW SHOWING METAL-FRAMED FRONT.

The Paris Telephone Exchange was a modern building of architectural pretensions, covering an important site opposite the General Post Office, and having a frontage of about 220ft, to a depth of about 35ft. It had a basement, a very high ground floor, three storeys of considerable height, and a fourth floor of moderate height. It was lighted at the back from a large courtyard, and it is also well lighted from its two sides. Its planning was simple in the extreme, each floor practically comprising a single room, and there being a spacious staircase at each end. The structure was filled from top to bottom with the most expensive and elaborate telephone equipment, in wood casings, and wood furnishings, and the whole of the wiring is of a very highly wax-taped type. We believe the service has been recently turned into one on the central battery system, and we observe that the voltage used was 440. A rough estimate describes the contents of the building as being worth about £700,000, the building with its contents having cost the Government close on a million sterling. From a fire point of view, the building is well situated, and has the advantage of also being close to a fire station of the Paris Fire Brigade.

Now, it may be scarcely believed, but this structure, which has substantial brick rear and flank walls, and substantial brick walls to contain its staircases, has some 150ft. of its main frontage entirely of metal construction, and this metal construction is in no way protected by any fire resisting material. The floors which rest to the rear on the brick wall, rest to the front on this unprotected metal construction, and there is further on each floor a row of central supports in the form of unprotected cast iron columns. The floors themselves are well made of concrete of good quality, with a kind of porous brick centering slab, but the bottom flanges of the metal joists on which these slabs rest are unprotected, whilst the main girders which carry the metal joists and floors were also either entirely unprotected, or only had a light coating of plastering.

Whatever the cause of the fire may have been originally, it could have easily been stopped, had there not been wide ducts carrying the cables from floor to floor, which ducts had no fire resisting coverings, and which ducts were not even broken in their extent at the floor levels.

The fire broke out in the basement, it spread with great rapidity from floor to floor, and resulted in the absolute gutting of the whole installation, except the fittings on the first floor. The destruction of the second, third, and fourth floors was particularly complete. The temperatures on the second and third floors, although not of great severity, were sufficient to fuse many of the columns, and cause breakage of several. Thus the unprotected girders have sagged in places, and the floors, good in themselves, are now so out of the level, that they will have to be entirely reconstructed.



Photo: Topical.

A SWITCHBOARD BEFORE THE FIRE.

Some of the photographs we present indicate the state of several of the columns.

It is difficult for those conversant with fire-resisting construction to understand how this form of construction should have come about, and yet it is not perhaps as remarkable as one would think, if we remember that much nearer home than France, we have telephone exchanges with excellent floor and roof construction, but with similar entirely unprotected columns, girders, and metal roof trusses.

Paris has certainly had to suffer very severely in its conduct of business and financially, from the constructional blundering in its Telephone Exchange building; we only trust that London will not be put to the same inconvenience through similar blunders. But as the true elements of fire resistance are frequently



PARIS TELEPHONE EXCHANGE FIRE. VIEW SHOWING CORNER.

See also the steel frame building in course of erection in the roadway to form a temporary Exchange.



Photo: Topical.

A PARIS SWITCHBOARD AFTER THE FIRE.

not known to those whose duty it should be to be properly informed on such matters, wonder need not be expressed if a similar *contretemps* were to befall our own metropolis.

The illustrations, we think, all explain themselves, but we would add that a temporary telephone exchange is now being erected, and will be seen on one of the photographs, on the road that lies between the General Post Office and the Exchange building destroyed.

Where there is so much to condemn, perhaps we should however add, that there is one point deserving of all praise, and that the staircase arrangements at the Paris Telephone Exchange were quite excellent, and that the stampede of the operators thus did not result in loss of life.

FERNIE CONFLAGRATION.

The conflagration at Fernie, in south-eastern British Columbia, may be said to have been due to the manner in which some timber limits in the vicinity had been cut over. The timber growth in that district is very rank, and in the forests there are several varieties of trees. It has been the habit of the lumbermen to go through a portion of their limit, cutting out only that kind of tree which they desire to saw into lumber, leaving in the bush the tops, branches, and other debris incident to their cutting operations. At a distance the forest does not seem to have been much cut into, but after a time the ground becomes littered in many places with a mass of dry bush, while numerous small openings have been made in the dense forest.

It was in a limit cut over in this way that, on the afternoon of Saturday, August 1st, a very strong wind suddenly fanned a small fire into a fierce blaze, which fed upon the brush and swept rapidly through the openings made in the forest, burning embers being carried a



PARIS TELEPHONE EXCHANGE.
View showing an upper Floor with fused (unprotected) Central Columns.



Photo: Topical.

PARIS TELEPHONE EXCHANGE. VIEW OF THE THIRD FLOOP, SHOWING BROKEN COLUMN.

long way and igniting buildings some distance ahead of the main fire.

When this wave of flame reached Fernie, which was built upon a plateau 100ft. above the Elk River, the wind apparently divided at the face of the hill and left about fifteen dwellings standing, but swept everything on each side and beyond in the remaining part of the town. The embers and flames were then swept onward by the gale through the forest, destroying all in its path save some timber limits which had not been touched, the dense growth of which apparently turned the wind as if it were a wall.

The catastrophe in Fernie was almost inconceivably sudden. There were few business men who had time to get to their homes to look after the safety of their families. There were delivery waggons which had to be abandoned in the streets. In numerous instances people attempting to save some article of special value had to drop it on the street and run for their lives. There were hundreds of families where the husband was unable to get word of his family, or the family of the husband, for two or three days after the conflagration, some being taken to safety to the east, and others to the west of the town, so that the accounts of the suffering incident o the disaster have not been overdrawn.

The waterworks were untouched, and after the main fire had passed, the water supply was made good use of in saving the buildings left at the first onslaught.

The insurance loss sustained by companies licensed by the Dominion Government will be over $1,300,000, nearly every company doing business bearing some share of the loss. In addition to this sum probably $400,000 more was sustained by English Lloyds and American companies, which wrote some lumber and saw-mill insurance; also the insurance of the Canadian Pacific and the Great Northern Railways, the latter of which lost five bridges and three hundred freight cars loaded with coal and coke.

There were some newly organized companies which suffered losses very much out of proportion to their assets. In one case a company had been organized with very small capital, and had sold stock with the promise that the stockholder would receive a discount of 40 per cent. from the tariff rate for his own insurance. The company's adjuster had not arrived three weeks after the conflagration, and it was said that they had losses amounting to over $25,000. This is a case where cheap insurance will probably prove to have been very dear.

TESTS OF THE BRITISH FIRE PREVENTION COMMITTEE.

There have already been three testing days at the British Fire Prevention Committee's Testing Station since the commencement of the autumn session. The tests undertaken were with extinguishing gear, and one of the appliances so tested should probably have the attention of architects engaged in country house practice. There has generally been a great dearth of water under pressure at country house fires, and the appliances put forward for test are intended to obviate this lack of water under pressure. A cylinder of 125 gallons was under test. It stood at 40lbs. pressure. By an automatic device, the moment a sprinkler comes into operation, or a hydrant is put into force, the pressure in the tank is materially increased to over 100lbs. pressure. The appliance, which is an American invention, was under test for two afternoons, and is at present still under duration tests, so that the report can scarcely be expected until the end of the year.

As is customary at these tests, there was a Sub-Committee of the British Fire Prevention Committee in charge, and Mr. Ellis Marsland acted as directing member, supported by Mr. Fulkes, Chief Officer Dyer, Chief Officer Henderson, and others. The Council were represented by Major-General Festing and Mr. Edwin O. Sachs. There was a considerable attendance of members, and more particularly on this occasion, the Insurance Surveyors.

Another appliance under test should have the attention of architects engaged on the construction or alteration of motor garages. This was an appliance intended mainly for the extinction of petrol fires, and the appliance, if it succeeds in its tests, should be a most valuable acquisition with the increasing motor traffic.

The tests are being continued during this week, and during the following month



Photo: Topical.

PARIS TELEPHONE EXCHANGE. VIEW OF WRECKED SWITCHBOARDS AFTER FIRE.

a report may be expected, i.e., towards the end of November. A most extensive series of tests are being undertaken with this particular appliance. The invention is a Danish one, and it has been put forward by an English concern. In this case there was the usual sub-committee in charge, with Mr. Percy Collins, J.P., as directing member, and there was an exceptionally large attendance of members and visitors, having special regard to the importance of the subject, the Admiralty, War Office, Home Office, and other Public Departments, being strongly represented.

Of other reports shortly expected from the committee will be one with regard to non-inflammable textiles, and one on ordinary buckets of water as fire extinguishers. Of tests expected during the next few weeks are an important series with doors and fire-resisting shutters.

Bournemouth.—On October 13th, the Bishop of Winchester consecrated the new church of St. Andrew's, Boscombe, erected at a cost of £9,000. On the following day, the bishop dedicated the new tower which has been built at St. Stephen's Church at a cost of £6,300. On the third day, the bishop was present at the opening of a new parish hall, costing £2,000, at Holy Trinity Church. Another new church, to be called St. Alban's, in connection with St. Augustin's Church, is also in course of erection, at a cost of £9,000.

THE PARKER BUILDING FIRE, NEW YORK.

So much has been heard of this fire, that a correct statement of what occurred should be of value. This statement, which we present, is the official version issued by the insurance companies concerned, through the medium of their joint office. The building, as is well-known, was of steel frame, with dense terra cotta floor building, and an unsatisfactory form of dense terra-cotta protection for the steel work. Certain floor sections fell bodily during the fire, and fatalities resulted. There were twelve storeys to the building, if we include the ground floor and three basements.

The structure was on a corner site, with two frontages of 121ft. and 150ft. respectively, covering an area of 17,750ft., and the roof ridge was 175ft. above street level. We present some photographs taken almost immediately after the fire.

The official statement reads as follows:

Start and Progress of the Fire.

The fire started in the eastern portion of the fifth storey, in the vicinity of the rear stairway. No reliable information regarding its origin was obtainable. It was discovered between five and ten minutes before eight in the evening by Mr. C. J. Spalding, of the Detmer Woollen Company, who, with another employee, was at work in the sixth storey. These people first noticed an unusual number of mice running about the premises, and shortly afterwards heard glass cracking, and saw a bright glow through the glass in the east stairway partition. Mr. Spalding placed the books in the safe, saw his companion out, and afterwards went back into the sixth storey several times, meeting the firemen in the south hall way the last time he left. The fire broke through the glass in the east stairway partition soon after it was discovered, and ignited a stock of empty packing cases and some supplies of stationery located near the stairs. The packing boxes were well afire a few minutes after eight o'clock, and about six to eight minutes after the sixth storey was so full of smoke that it was impossible to enter the rear portion. The night watchman, who passed through the halls, and did not enter the lofts, is reported to have been in the engine-room about 7.25, and to have discovered the fire in the east stairway about the same time it was discovered by Mr. Spalding.

The watchman first turned in the alarm from special building signal box No. 3, 892, located in the south hall way on the first storey, which, in common with similar boxes in other buildings, was directly connected with Fire Department headquarters by private circuit. He afterwards turned in the alarm from street box No. 361, at the corner of Fourth Ave., and Eighteenth Street.

The first alarm was received by the Fire Department from special box No. 3, 892, at 8.01 p.m., followed by street box No. 361 at 8.02. A second alarm was received from street box No. 362 at 8.12, and other other alarms were sent in from the same box at intervals until 9.51 p.m., when the fifth alarm was given. Twenty-five engine companies and five truck companies were engaged at the fire.

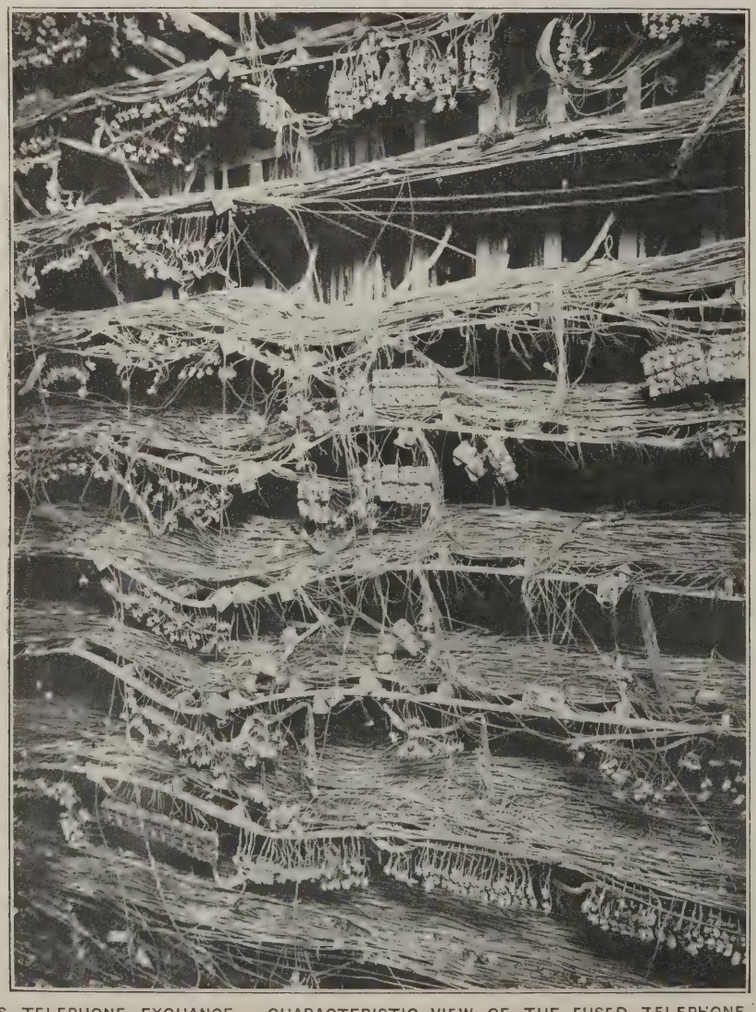
The Fire Department responded promptly. The first company coupled up to the Siamese stand-pipe connection on the Fourth Ave. side of the building, and took off the first lead of hose in the south hall-way on the sixth storey. Both fifth and sixth storeys were found to be on fire and filled with smoke, the fire being located in the rear or eastern portions.

The firemen were soon forced to retreat from the sixth to the fifth storey, and afterwards withdrew from the south hall-way on account of lack of water and the dense smoke. No effective inside streams were applied during the early stages of the fire, which was also entirely beyond the control of the outside streams finally brought into service.

The south stairway was inaccessible above the sixth storey, on account of smoke, and the east stairway above the fourth storey on account of fire. The building was not provided with outside fire escapes.

Probably about eight or ten minutes elapsed from the time of the first discovery until the alarm was turned in, and it is reasonable to believe that the fire had gained considerable headway on the fifth storey before it was discovered. It spread rapidly to the upper storeys through the rear stair well, and gained great headway in the eastern portions of the fifth and sixth storeys, the fifth burning slightly more rapidly than the sixth. At about 8.40 the fire burst out on the Fourth Ave. side on the fifth storey, followed almost immediately by fire on the sixth.

Soon after nine o'clock the fire had extended quite generally over the seventh and eighth storeys, the twelfth taking fire a little later, and it was next noted on the ninth, eleventh, and tenth in the order named. All storeys above the fourth burned fiercely, but the fire was appar-



PARIS TELEPHONE EXCHANGE. CHARACTERISTIC VIEW OF THE FUSED TELEPHONE WIRES.



General View of Building after Fire.



View showing column protection dismantled and floor panels collapsed.

FIRE AT THE PARKER BUILDING, NEW YORK, U.S.A.

ently hottest on the sixth, eleventh, and twelfth, particularly in the north and east portions.

Although the wind was not high, the fire extended well out into Nineteenth Street. The records of the Weather Bureau show the wind to have been west and south-west, the velocity being six miles at eight o'clock, and gradually falling to one mile per hour at seven o'clock on the following morning. The temperature was 28 to 29 degrees.

Shortly before ten o'clock all floors of a section of the building approximately 40 by 24ft., next to the rear court, suddenly collapsed, killing three men, seriously injuring fourteen, and slightly injuring many others. The collapse was said to be without warning, no falling of floor arches or portions of the building being previously heard or observed.

The collapse of a section of the twelfth floor, roof and roof house, approximately 60 by 30ft., and located about the centre of the north side, occurred later, knocking out many of the arches in the floors of the lower storeys. Most of the heavier material falling in this collapse was retained by the steel framing of the eleventh floor.

Heavy safes and machinery on several floors broke through the arches at intervals during the later progress of the fire.

The fire was carried into the basement and lower storeys by the first collapse, the damage by fire and to the structure below the fifth storey being due to this collapse. The large, open well holes and openings through the floors formed by the failure of the various sections mentioned, caused the fire to burn with increased intensity. During the more advanced stages, the fire communicated from storey to storey through the exterior windows, being drawn in after the glass was broken by the flames issuing from lower windows. This was most noticeable in the angle of the exterior court in the rear, but occurred to some extent on the Fourth Ave. side. The fire was not under control until seven o'clock on the following morning, about eleven hours after it started, and it continued to burn in the various storeys for several days.

Subsequent examination shows that only the two upper storeys, the large roof house on the north side of the ninth and west end of the seventh storeys were fire swept, practically everything combustible being consumed in these localities. Large quantities of partially burned stock, sections of wood flooring, furniture, etc., next to the rear court windows and to some extent along the west wall, show the effect of the streams applied from the outside. The streams from the building across Fourth Ave. washed the cinder fill-up into piles in several storeys. These streams struck the floor twenty-five to thirty feet back from the windows.

Temperatures Developed.

Careful examination of the metals and materials in the various storeys shows that the maximum temperatures reached in this fire were seldom lower and often higher than those developed in the average fire-proof building in the Baltimore and San Francisco conflagrations.

Glass, brass electric fixtures, and lighter brass parts on typewriters and machinery fused freely at many points in most all storeys above the fifth. (Temperatures estimated at 1,400 to 1,800 degrees Fahr.) Copper wire was not so generally fused, but incipient fusion (slightly in excess of 1,900 degrees Fahr.) was noted in several places in the seventh, eighth, and ninth storeys, and a fairly large stranded copper cable was melted by heat from the fire at several points in the rear of the eleventh storey.

The highest temperature noted in any storey (estimated at slightly in excess of 2,000 degrees Fahr.) was in the N.W. corner of the eighth, where the cast-iron frame of a typewriter was fused. This was the only case where any signs of fusion were observed in cast-iron, although presses and machines were examined wherever accessible. Brass castings having heavier sections were rarely fused, although steam valves had reached the brittle point in a number of places, and brass fixture arms were broken into short sections by their own weight and were melted in several storeys. The temperatures were more uniformly higher in the eleventh than in any other storey in the building. The south stairs and elevators were subjected to comparatively little heat, but the condition of the steel in the east stair and elevator shafts show the effect of temperatures quite as high, if not higher, than in any other part of the building.



FIRE AT THE PARKER BUILDING, NEW YORK, U.S.A. VIEW LOOKING UPWARDS, SHOWING FLOOR PANELS COLLAPSED.

THE DISCOURAGEMENT OF PREVENTABLE FIRES.

By James C. Bayles, Ph.D.

(From Cassier's Magazine).

The annual chart prepared under the direction of the New York Board of Underwriters, showing that through the past year the fires in Manhattan and the Bronx have averaged twenty-three a day, with a loss aggregating about ten millions of dollars, would fail of its purpose if regarded as merely interesting. Such statistics should at least be suggestive of plans of practical reform looking to the better safeguarding of property against injury or destruction from preventable fires. That they are not likely to do so may perhaps be explained by what has become our national habit of thought on this subject. We do not say Kismet, but, if we did, it would perhaps express our attitude. We have accepted the conclusion, quite unwarranted by the facts, that in some mysterious way fire insurance, by distributing fire losses, repays them, and that to keep "well insured" is wiser as a business policy than to take precautions against fires. Hence, the reluctance with which the average policy-holder gives even perfunctory compliance to the few and simple requirements which the companies carrying fire risks have found the courage to prescribe. The elementary economic truths, that insurance creates no wealth to replace that destroyed, and that as a system it penalizes prudence to make good the consequences of imprudence, carelessness and crime, should not be difficult of comprehension; but if comprehended it would perhaps be easier than it now appears to be effectual to discourage preventable fires.

Carried far enough, an analysis of fire statistics would show that only a small percentage of the fires result from causes which properly admit of classification as accidental. The number having their origin in causes which might easily have been foreseen and guarded against by such vigilance as it is proper to demand of those responsible for life and property, is probably 90 per cent. of the total. The remaining ten per cent. would include all that are really accidental, as due to unknown causes or to unusual effects of known causes, besides a good many impossible of thorough investigation. Most fires result from carelessness involving specific violations of laws or ordinances, and on the part of those responsible should be regarded as crimes or misdemeanors, according to the gravity of their consequences. It is impossible to discover and effectually to discourage carelessness in such matters, and to enforce with adequate penalties, impartially applied, the laws and ordinances which are designed to make preventable fires infrequent and unimportant? The discussion of this subject is not wholly academic.

Let us suppose that when a fire occurred it was the immediate duty of a person properly qualified and vested with authority, to learn at once all that could be learned as to the cause or causes of it. This is assumed to be done in cases where incendiarism is suspected, but is done so tardily and clumsily, and with so little intelligence, as to be of very little value. That, however, is another phase of the subject. We are not at the moment discussing incendiary fires, but those which result from preventable causes. If in the investigation of such fires violations of law or criminal negligence are found, it should be the duty of the investigating officer to file an information against the owner, tenant, and any one else involved, or all of them collectively. The next step would obviously be a summons for such persons to appear before the officer, commission or court vested with jurisdiction, and their examination. When the blame was finally focussed, and especially if a violation of the building or fire laws was established, or gross carelessness shown, why should not the person responsible meet the prescribed penalties of such violation, compensate the community for the service he made necessary, and stand, *prima facie*, accountable in damages to those who have suffered injury? Such a procedure would not be unduly drastic, in view of the fact that each resident of a city is in a sense responsible not alone for his own life and property but for those of others. It costs a great deal to maintain a fire department in a high condition of efficiency. Even to respond to a false alarm is said to involve an expense averaging fifty dollars in wear and tear of apparatus, and not infrequently the cost is much greater. If a fire is to be dealt with, the cost may rise to very large figures. Why should not the city recoup itself as far as it can from those who make this waste of public and private property necessary? More than all, why should not the carelessness which invites conflagration be discouraged by measures calculated to implant in the mind of the average citizen a wholesome respect for the law, if not for the rights of others?

One does not need to visit a city lying somewhere between Altruria and Utopia to find the same principle exemplified in a very practical and successful way. An American gentleman living with his family in Berlin was one morning awakened by the smell of smoke in his apartment, and found that a fire originating in a room overhead was eating its way down through the ceiling of his dining-room. He dressed, went to the street, and turned on an alarm, which in due course was responded to by the fire department. Such response is never what might be called precipitate in Germany, but is as prompt as circumstances seem to require. What is known in America as "red tape" seems to a foreigner very much in evidence in every German official proceeding, but I was never able to observe that it interfered with getting official work done in the best and most thorough way. The fire I am describing was extinguished with chemical apparatus without any water damage, and without needless destruction of walls or furniture; and before the firemen left they had removed every trace of debris and scrubbed the floors of the rooms in which they had worked.

Meanwhile, a careful investigation was made by officers equipped with note books, not by asking questions of tenants or gossipping with servants, but from personal observation. Next morning the gentleman who had turned on the alarm was sent for, and conducted before a fire marshal, or equivalent officer, with inquisitorial powers. That he had important engagements elsewhere counted for nothing. Public business never waits on private convenience in Prussia. He was asked all sorts of questions, which he was able to answer satisfactorily. The fire was known to have originated in a coal which has dropped from a laundry stove in the attic, and rolled upon an unprotected wooden floor. The tenant showed that the stove was an appointment of the building, provided by the landlord, and that it was neither his duty nor his privilege to change it. Then the landlord was called. He showed that he had but recently purchased the building, under the usual guaranty that all laws and ordinances had been complied with in construction and appointments; that he had neither set nor moved the stove in question, and that his attention had not be called to any conditions involving a fire risk. This was not considered quite satisfactory, and he was told to await further instructions. Then the builder from whom the landlord purchased, was called. He had to admit that he, as builder, was responsible for the setting of the stove as the police had found it, and that he had violated the law in neglecting to provide a suitable metallic hearth, of the required kind and dimensions, between it and the floor. For this he was held culpable. The assessment against him began with the estimated cost to the city of responding to the alarm and extinguishing the fire, included the damage to the furniture and property of tenants, and was rounded by an exemplary fine of 500 marks, as a reminder that the laws are enacted for a purpose, and carry substantial penalties for their violation. The damage to the building was not included in the assessment against the builder. It was held that while the owner had not committed the violation of law which caused the fire, he had been negligent in not discovering it and correcting it, and for this reason he should pay for his own repairs, and stand charged with knowledge of his duty in like cases. That he escaped a fine was deemed a cause for congratulation among his friends. Had he owned the building longer, he would undoubtedly have had to pay a fine for neglect of duty in permitting a violation of law to exist on his premises.

Well, why not? Perhaps we cannot expect in American cities to do things as they are done in the capital of which the late Abram S. Hewitt once said: "If we could forget all we know about municipal government it would be no misfortune, since we might learn it much better in Berlin." But if we could even approximate the Berlin standard of intelligence and thoroughness in dealing with those responsible for preventable fires, he would cut down the annual fire loss to a very small percentage of what it is. In Berlin it pays those responsible in such matters to be careful to do nothing and neglect nothing for which, in the event of fire, they will be held responsible. Consequently, fires there are relatively infrequent and rarely serious. During some three years' residence there, I recall but one which attracted attention—an old market building, the destruction of which was regarded generally with satisfaction. In the United States we insure—and leave the rest to the fire department. The natural result is that fires are both numerous and costly. There are plenty of very good laws and ordinances, but they are of little practical value, since no one pays attention to them. They would enforce themselves if the penalties they describe were made great enough, and were impartially exacted of those who incur them. Whether public opinion is ready for a movement in the direction of a reform so important and so obvious is another question.

BIRMINGHAM BUILDING TRADES EXHIBITION.

At the opening of the Birmingham Building Trades Exhibition on October 12th, the Lord Mayor of Birmingham, who performed the ceremony, congratulated the management on having brought together such a large and representative kind of exhibition. British manufacturers, he said, were proverbially modest compared with foreigners, who boomed goods that were frequently of inferior quality. The British manufacturer relied too much on the quality of his goods for advertisement, and in this he made a great mistake. He understood that 5 per cent. of the receipts of the exhibition were to be given to charity, and he suggested that the money should be given to the City Aid Society, to help those who were at present out of work. In proposing a vote of thanks to the Lord Mayor, Lieutenant-Colonel J. Barnsley remarked that the building trade was in a more depressed state that it had known for forty years, and the unemployed of that trade would certainly have reason to feel grateful for the Lord Mayor's dedication of the percentage of receipts. The exhibition remains open until October 21st. Many exhibits were described in last week's issue. Further notices are now given. Readers are again reminded that our stall (No. 79), where copies of our publications may be purchased, is freely available to visitors. for the receipt of parcels, for the keeping of appointments, writing of letters, etc.

The following Exhibits at the Exhibition were not noted in our issue last week:—

THE ASSOCIATED PORTLAND CEMENT MANUFACTURERS (1900), LIMITED.

This firm, whose offices are at Portland House, Lloyds Avenue, London, E.C., have, at the Building Trades Exhibition, Bingley Hall, Birmingham, a large and handsome stall (of which we are able this week to show an illustration), at which the products of the firm are shown at all stages of preparation and manufacture. Samples of their raw materials employed in the manufacture of Portland cement are shown, as well as samples of slurry, and of clinker at various stages, and of the finished cement. Samples of the company's special "Ferrocrete-" brand, for reinforced concrete construction, are attracting special attention; and there is an interesting display of a quantity of briquettes of various ages for testing tensile strain and complete testing apparatus in conformity with the requirements of the British standard specification. The practical tests that are being carried out at the stand are watched with close attention. Mouldings, etc., in plaster of Paris, Keene's Parian, and Roman cements lend an artistic interest to a thoroughly attractive and quite educational series of exhibits. Pamphlets descriptive of the A.P.C.M. Co.'s works and process of manufacture can be had on application at the stand. It may be here opportunely recalled, in the year 1900, this company acquired the works and businesses belonging to twenty-two firms or companies, including the oldest-established and best known in the world. Amongst these were:—John Bazley White and Bros., Ltd.; Hilton, Anderson, Brooks and Co., Ltd.; Knight, Bevan and Sturge; Burham Brick Lime and Cement Co., Ltd.; Francis and Co., Ltd.; London Portland Cement Co., Ltd.; Gibbs and Co., Ltd.; Robins and Co., Ltd.; The Arlesey Lime and Portland Cement Co., Ltd. The various properties owned by the Company in the valleys of the Thames and Medway alone cover 4,000 acres. The river frontages with their extensive docks and wharves are more than nine miles in length, and a fleet of 200 vessels (steam tugs, lighters, and barges), owned by the Company, is daily employed for the transport of materials and products to and from the various works. Several of the works have equal facilities for delivery by rail and water. The cask-making machinery at the company's cooperages is capable of turning out upwards of three million barrels a year, chiefly for export, the greater part of the cement for the home trade being supplied in sacks. At the numerous factories, every approved method of mixing the raw materials and burning and grinding the cement may be seen in operation, and careful experiments are being continually made to test any new process which may lead to improvement in quality or economy of production. The largest works on the Thames are situated at Northfleet, Swanscombe, and Grays, and on the Medway at Rochester, Halling, and Burham. The company employs fully 6,000 people, and the annual capacity of its works will shortly be brought up to approximately one and a half million tons. At Gravesend the central offices and laboratory are in telephonic communication with each of the works, and their respective laboratories and testing rooms, from which daily reports of chemical and other tests are received and registered. There is constant communication between every department and the London offices at Portland House, Lloyd's Avenue, E.C., where the whole of the sales, finance and general organisation are controlled.



THE ASSOCIATED PORTLAND CEMENT MANUFACTURERS' STALL AT THE BIRMINGHAM EXHIBITION.

MAENOFFEREN SLATE QUARRY COMPANY, LTD.

This Portmadoc firm, the main part of whose workings are in the "Old Vein," at Blaenau-Festiniog, have roofed their stand with slates from this quarry. They show also other samples of their products, as well as an interesting series of photographs illustrating quarry scenes.

OAKELEY SLATE QUARRIES COMPANY, LIMITED.

This firm, whose London offices are at 53, Parliament Street, S.W., and whose quarries are at Blaenau-Festiniog, show samples of their "Old Vein," blue roofing slates, which, it is stated, are in high favour for engine sheds and gas works, on account of their ability to withstand the fumes from locomotives and gas retorts.

MESSRS A. BOULTON AND CO.'s BRICKS AND TERRA COTTA.

This firm, whose office is at Central Chambers, Shrewsbury, show a selection of their stock of terra-cotta goods and beaded and moulded bricks, as well as some red and white chimney-pots

LOCKERBIE AND WILKINSON, LTD.

This firm, whose address is Exeter Street, Birmingham, show, in addition to various kinds of door furniture, fanlight gearings, and miscellaneous metalwork goods, some fine examples of architectural ironwork, such as gates, railings, and grilles.

STOTHERT AND PITT'S "SMITH" CONCRETE MIXER.

Stothert and Pitt, Ltd., Bath, exhibit their "Smith" concrete mixer, which, we understand, is widely and favourably known in America, and is no doubt destined to become equally popular in this country. It deals swifty and efficiently with any material, and its 3,000 users will no doubt be greatly augmented as a result of inspection at the present exhibition, where, in view of the enormously increasing use of concrete, the machine is allocating a great deal of attention.

The SILICATE PAINT COMPANY (Messrs. J. B. Orr and Co., Ltd.), of Charlton, London, S.E., show examples of what can be done with their well-known "Duresco" washable water paint.

The recent improvements and additions to the "Guardian" offices, Warrington, were under the supervision of Messrs. W. and S. Owen, architects, Warrington, and the constructional steelwork and fireproof floors were carried out by Messrs. Homan and Rodgers, Manchester.

Federation News.

THE INSTITUTE OF BUILDERS.

Annual Dinner.

The annual dinner of the Institute of Builders took place at the Whitehall Rooms, Hotel Metropole, on Wednesday last, Mr. James Carmichael, the President, occupying the chair. Among those present were Messrs. C. H. Barnsley, President, National Federation of Building Trade Employers; Wm. Laurance, President, London Master Builders' Association; and M. H. Pocock, Master of the Carpenters' Company; Messrs. Joseph Bell, Frank May, J. Howard Colls, H. H. Bartlett, B. J. Greenwood, J. Randall, T. J. Dove, William Shepherd, F. L. Dove, and Charles Wall, past Presidents of the Institute; Messrs. W. F. Wallis, J. S. Holliday, Fredk. Higgs, and H. Arthur Bartlett, Vice-Presidents of the Institute; and Messrs. Howell J. Williams, F. G. Minter, R. J. Holliday, C. H. Mabey, W. Higgs, and W. M. Higgs, and Mr. Thomas Costigan, Secretary of the Institute. The architects and surveyors present included Sir Aston Webb, R.A.; E. Guy Dawber, F.R.I.B.A.; Sidney Young, F.S.I.; J. S. Gibson, F.R.I.B.A.; William Woodward, F.R.I.B.A.; Professor Beresford Pite, F.R.I.B.A.; Ralph Knott; Edwin T. Hall, F.R.I.B.A.; Henry T. Hare, F.R.I.B.A.; H. Steward, F.S.I.; G. Corderoy, F.S.I.; E. Gabriel, F.R.I.B.A.; W. D. Pite, F.R.I.B.A.; R. L. Custis, F.S.I.; H. J. Leaning, F.S.I.; Ernest Runtz, and Fernand Billerey.

After the loyal toasts had been honoured, Mr. William Laurance, President of the London Master Builders' Association, proposed the toast of "The Architects and Surveyors," with which he associated the names of Sir Aston Webb, R.A., and Mr. Sydney Young. He noted the number of distinguished architects and surveyors present, and wondered if it was a foretaste of that future state when the lion and the lamb should lie down together. They felt great respect for the architects, and thought, as Englishmen, they should be proud of their architecture. They had great reason to be proud of the graceful beauty of our South Kensington Museum; though he wondered if such a building could ever be reproduced in reinforced concrete. The surveyors were a great guidance and help to the builders, and he was glad to mention that that day was the jubilee of Mr. Sydney Young, with whose name his toast was associated, Mr. Young having commenced his articles on October 14th, 1858.

Sir Aston Webb, R.A., replying for the architects, said he hoped and believed his was a modest profession, and that they would not compare present work with that which had stood and excited admiration for centuries. Of all men he knew, builders were the ones who paid most attention to their business and to carrying out the work. While he was in America he heard of a builder in Boston who carried that principle too far—so far that his wife objected to this exclusion of all other interests; and persuaded him that he might have a hobby, or take up a course of reading. It being Sunday she suggested the Bible as a suitable volume, and one that could be commenced wherever opened. The builder acted on this advice, and soon became very absorbed. Presently he began figuring on sheets, covering quantities of foolscap with diagrams and calculations. A call to lunch was disdained, and in the middle of the afternoon, his wife, extremely puzzled at his behaviour, came to ask him to find out what he was doing, and if he had really not finished. "Yes," he said; "guess if I had to build that Temple I'd do it in half the time and for half the money!" If he might speak seriously for half-a-minute, he wished to say how architects appreciated and sympathised with builders over the great difficulties with which they had to deal at the present time. They needed the qualifications of great generals—organisation, foresight, and courage. He regretted that the workmen should be organised against them, and taught to regard them as enemies instead of friends. He thought the workmen were to blame for much of the unemployment, and there would be more unemployment if builders did not frequently take work at little or no profit, in order to keep their staffs going. The extraordinarily low price at which work was being done would, he thought lead them to consider the necessity of adopting American methods. He instanced the Scotch crane which we used here in addition to outside scaffolding; but the Americans, like the Scotch, dispensed with the outside scaffolding. He was not there, of course, to teach them their business; but he felt that they were all members of one fraternity, hoping to produce good buildings, which he trusted might be beautiful.

Mr. Sydney Young, responding for the surveyors, called to mind many of the surveyors he had known during the time of his articles, most of whom had now passed away, and said that quantity surveyors in those days gave better work and got better pay. They had not then the elaborate drawings to take off—drawings frequently lacking very necessary details—and they never then received less than 1½ per cent. He thought Sir Aston Webb's Boston builder a remarkable man, for his remembrance of the details of the Temple were that they were far too scanty to take out quantities from.

Mr. J. S. Gibson, proposing the toast of "The Institute of Builders," coupled with the name of the President, said he supposed they might all regard themselves as comrades in the great army of the unemployed, and he thought, to use an Americanism, that "they would have to get on a bit of a hustle before they got through with it." The Institute of Builders had a great work in controlling the work of architects. Builders relieved the latter of much of the difficulties of building which they had neither the time or the inclination to deal with. The Royal Institute was concerned not merely with the interests of architects, but with the encouragement of good building. There were many phases of good building, and they valued the hearty co-operation of the Institute of Builders in the practical aspects, in dealing with sanitary laws, and so on. With respect to their President, he thought that by the building up of a great business in London he was doing a work of great value to the country. The Institute of Builders, during his term of office, would be carried on with the tact and shrewdness necessary to such a great institution.

The President, Mr. Carmichael, returned his thanks for the cordial manner in which the toast had been received, and said he would waive aside the references to himself which Mr. Gibson had been kind enough to make; but he wished to endorse all that he had said in support and commendation of the Institute of Builders. It had now been established 35 years, carried on its work in a quiet and unostentatious manner, and was steadily growing in power, numbers, and influence. It was the only incorporated association of builders in the country. When he mentioned that its work was done in a quiet and unostentatious manner, he meant that they had no part in the strife or disputes with workmen in the country; all those matters were carried on by the Federated Associations and by the National Federation of Building Trades Employers, whose President, Mr. Barnsley, was with them that evening. The work of the Institute of Builders, he explained, was to keep a watchful eye upon legislation and a sympathetic eye upon education. He thought he heard someone say it was a big job. Well, perhaps at the present time they ought to keep both eyes on much of the vexatious legislation that was being promoted. He thought they ought to follow the example of the builders of the Temple—to which reference had that night been made—and keep swords girded at their side, ever watchful of the movements of the foe. With regard to education, two of their members, Mr. Rice and Mr. F. Higgs, had been appointed examiners to the City and Guilds of London Institute. So successful have their efforts been that the Council has granted sums of money for medals and prizes for the students. He was glad to see and to have the support of so many of the fathers of the Institute of Builders, who added a dignity and grace to their meeting. He thanked the Council for their efforts and support, and Mr. Costigan for his unwearied efforts and help, often given while suffering from bodily weakness. To every member of the Institute he tendered his hearty thanks.

Mr. Edwin T. Hall said the difference in the functions of the Institute of Builders and the National Federation, though well known to their hosts, were not known to many until the President had defined them that evening. Reference had been made to the lion and the lamb, which he at the time did not understand; but it had since been pointed out to him that the letters l—a—m—b were those of the London Association of Master Builders, so that he supposed he had the pleasure of proposing the toast of the lion—the National Federation of Building Trades Employers coupled with the name of its president, Mr. C. H. Barnsley. The National Federation was composed of the various associations of building employers all over the country, and they were associated for mutual support, help, and consultation. Their friends in the north probably saw more of the antagonism between capital and labour than they of the south. He wondered why there should be this antagonism. What was the good of capital if it was not expended? If it was stored up it could not fructify; and where then was the money coming from to pay the wages of those employed? Capital and labour were so mutually interdependent that they should work together in harmony. They were all members of a great world confederation of building, and when they came to realise the history of building they would recognise to what a noble craft they belonged.

Mr. C. H. Barnsley, responding, said the work of the Federation increased every year—not so much in regard to their relations with the workmen, as with legislation—which was often vexatious, and prevented them from carrying out their contracts. Mr. Young had made a humorous reference about getting out quantities, but he found that there were surveyors and surveyors, and it would puzzle the fertile brain of the most experienced contractor to get out costs from many of the quantities frequently supplied to builders. That showed the necessity for them trying to get all surveyors interested in the Quantity Surveyors' Institution, so that they would get quantities they could understand. It was not only difficult to analyse quantities; but they must have a basis of experience and knowledge as to pricing them. In many cases, when they came to the end of a contract, the basis on which they had been working was found to be wrong. The desire of the Federation was to make their workmen understand that their interests were inseparably bound up with those of the employers. The Institute of Builders and the Federation were working hand in hand, and the relations with their workmen were never better than they were to-day. That good feeling they hoped to increase and strengthen.

Mr. H. Arthur Bartlett briefly proposed the visitors, and Mr. William Woodward, responding, remarked that they were said to be of the great army of unemployed; but when he looked round that assembly, so happy, so well nurtured, and so well-dressed, he saw no evidences of it. He concluded some humorous remarks by saying that it was to the workmen that they must look for improvement in trade. With less labour interference there would be more work, and the client would unbutton his pocket and start building, which would lead to the general revival of trade which they all desired.

Contractors' Notes.

The "Times" is responsible for the statement that Mr. George Dew, L.C.C., having failed to retain the support of the Carpenters' and Joiners' Society, has relinquished his Parliamentary candidature for the Attercliffe Division of Sheffield.

The Guildford Town Council have received a letter from Mr. A. W. Hall, secretary of the Guildford and District Master Builders' Association, asking their kind consideration in providing bills of quantities for building works to be carried out and tendered for in open competition from time to time. It was felt that such an appeal was desirable on the fact that builders should not be expected to bear the expense and be put to the inconvenience of taking off their own quantities in competitive tendering. Further, they suggested that bills of quantities and forms of tender should be provided for all future works of a more or less extensive character; and that names and addresses of sureties usually inserted in the form of tender should not be demanded except in the case of the successful competitor, and even then not until after the acceptance of his (or their) tender. The matter was referred to the General Purposes Committee without discussion.

Matters of Opinion.

No. 1.—The Increasing Employment of Specialist Contractors.

(Continued.)

The following further opinions have been received in addition to those published last week:—

MESSRS. BREWILL AND BAILY, F F.R.I.B.A., Nottingham.

In connection with the complaints of contractors regarding the selection by architects of specialists to execute various works for which provisional sums are included in the quantities, we would point out that in the provinces there are very few builders with fully-equipped shops, or who employ workmen in all trades, it is, therefore, absolutely necessary to sublet a very large amount of the work and it would never do to rely upon the builder's selection. It is customary in the Midlands for a master bricklayer or master joiner to undertake a general contract, and he sublets the other trades (in case of a master bricklayer) joinery, plastering, plumbing, etc., and in order to prevent inferior tradesmen being employed it is necessary for the architect to approve the name of such tradesmen. It is also obvious that where specialists employ a staff of workmen carrying out only the work described, that they are better able to execute such work than the builder, who probably only does small quantities and whose workmen are therefore not accustomed to the same.

MR. H. C. CORLETTE, F.R.I.B.A., London.

The point you refer to as having been raised by general contractors is important. But the cases must be few indeed where 40 per cent. of the work under a contract is covered by p.c. provisions. The instance referred to was, no doubt, one where special furniture fittings and decorations not ordinarily done by a general contractor, and of considerable value in proportion to the total amount of the general contract were required. And, presumably, the general contractor was allowed a percentage as profit on all the work done by specialists for which he was held responsible, a compensation being thus provided to meet his accepted liability in respect of it. Possibly this compensation in certain cases would be inadequate, and a claim for a higher percentage might be preferred. Architects could consider such cases on their merits, and arrange a fair provision. The profit allowed to a contractor would no doubt be kept as low as possible in the client's interests. But contractors would ordinarily claim what they considered an adequate profit on p.c. provisions. It may become desirable also to define what work can with reason be reserved for specialists. Many contractors are able to undertake certain work themselves as specialists. But where particular crafts are concerned, and where the individuality and personal capacity of the workers in these are an essential element in that co-operation which an architect must secure for the benefit of the work as a whole, the principle of p.c. provisions could not be dispensed with. It is conceivable that financial interests may clash unless fairly provided for and controlled by adequate stipulations. The responsibility of each principal for his own special work and for workmen directly employed by him is necessary. Those specialists whose work can be provided for through the general contractor, as sub-contractors, could be held responsible to him, he himself being responsible to the architect. But those specialists who are called in direct, and not as sub-contractors in this sense, would be separately responsible. The sole reason why architects employ specialists is for the purpose of getting the best work and material required in every branch. If general contractors specialise to a greater degree than at present in certain directions, it will not be necessary for architects to seek elsewhere than among their own skilled men for the craftsmanship they require. But from the nature of the case architects would still have to accept the responsibility of deciding how and by whom the work may be done in each particular case. And it is only reasonable to suppose that contractors would themselves agree that specialists have always been, and will continue to be, necessary in works of importance. The difficulty is to discover how to take advantage of their skill without detriment to their interest, or those of the general contractor, and without the risk of damaging the efficiency of a building or losing the chance of realising an architectural ideal. And, speaking in a general sense, it seems too much to expect that a contractor should be made responsible for work which he does not control, unless he is prepared to accept the responsiblity in consideration of some compensation in the form of profit allowed on the cost of the work dealt with under the p.c. provisions. Legal liabilities under the Workmen's Compensation Act are, no doubt, provided for by insurance. If these are equitably distributed in agreements as between principal and contractor, sub-contractors would indemnify their principal in each case, and be responsible for their own staff alone.

Coming Events.

Monday, October 12, to Wednesday, October 21.
MIDLAND COUNTIES BUILDING TRADES EXHIBITION, Bingley Hall, Birmingham.

Thursday, October 22.
ROYAL SANITARY INSITUTE.—Mr. H. D. Searles Wood, F.R.I.B.A., on "Sanitary Building Construction and Planning: Soil and Local Physical Conditions," 7 p.m.

Friday, Oct. 23.
ARCHITECTURAL ASSOCIATION.—Prof. Beresford Pite, F.R.I.B.A., on "Michael Angelo as an Architect," 7.30 p.m.

Monday, October 26.
ROYAL SANITARY INSITUTE.—Mr. W. C. Tyndale, M.Inst.C.E., on "Sanitary Appliances," 7 p.m.

Tuesday, October 27.
ROYAL SANITARY INSTITUTE.—Mr. J. Osborne Smith, F.R.I.B.A., on "Ventilation, Warming, and Lighting," 7 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND. — Mr. W. A. Scott, A.R.I.B.A., on "Celtic Romanesque Work in Ireland."

Wednesday, October 28.
ROYAL SANITARY INSTITUTE.—Mr. J. Wright Clarke on "Details of Plumbers' Work," 7 p.m.

Wednesday, November 4.
INSTITUTE OF SANITARY ENGINEERS.—Sessional Meeting. Mr. J. Lawrance on "Modern House Drainage," 8 p.m.

Thursday, November 5.
BUILDERS' BENEVOLENT INSTITUTION.—Annual Dinner, Whitehall Rooms, 7 p.m.

Monday, November 9, and Tuesday, November 10.
ROYAL INSTITUTE OF BRITISH ARCHITECTS. — Preliminary Examination.

Monday, November 9, to Thursday, November 13.
ROYAL INSTITUTE OF BRITISH ARCHITECTS. — Intermediate Examination.

Thursday, November 12.
MANCHESTER SOCIETY OF ARCHITECTS. — Mr. C. Clement Hodges, on "Norman Architecture in the Northern Counties of England," 6.30 p.m.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—General Meeting. Mr. W. H. Allen, on "The Manufacture of Glazed Bricks, Terra-cotta, and Pottery," with limelight illustrations.

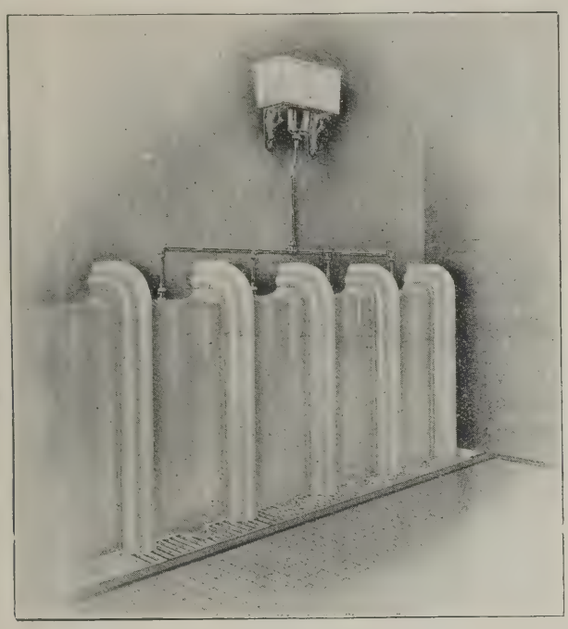


Fig. 1534.—THE "SOLITO."

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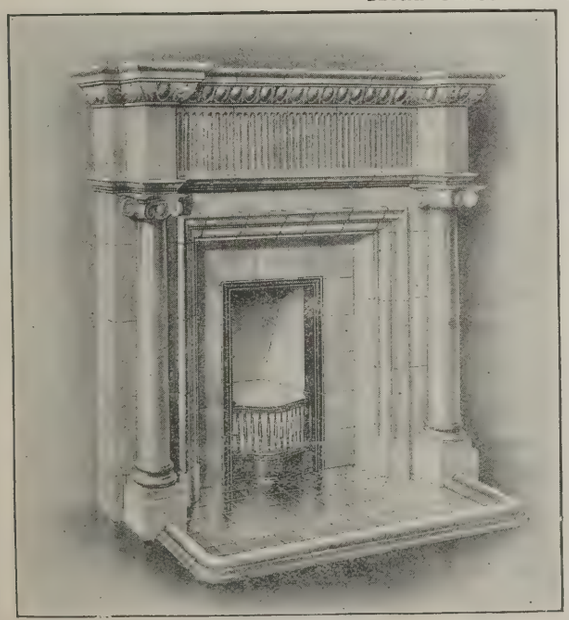
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Publisher's Notices.

Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

	s.	d.
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By post in the United Kingdom	10	10
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Colchester.—Accepted for erection of superstructure of new asylum at Colchester, for the Essex County Lunatic Asylum Committee:—

Waring and White, Cockspur Street, S.W.	£191,545

Ebbw Vale (Mon.).—For erecting a surgery and certain alterations at Beaufort, for Ebbw Vale Doctors' Fund Committee. Mr. H. Waters, architect, Market-chambers, Ebbw Vale:—

S. Beavan	£837 0 0
J. Watkins	569 12 0
D. Morgan,* Beaufort	503 2 6
W. Davies and Co.	498 18 0

Guildford.—For the erection of certain buildings over the gas producer plant and machinery at the waterworks, Millmead, for the Town Council. Mr. G. C. Mason, A.M.I.C.E., borough engineer and surveyor:—

Swayne and Son, Guildford	1,248
A. and F. Gammon, Guildford	1,243
Robert Smith, Guildford	1,221
Stanley Ellis, Guildford	1,218
Tribe and Robinson, Guildford	1,205
David Fry, Godalming	1,188
R. Wood and Son, Guildford	1,177
W. Bullen, Guildford	1,176
F. Deacon and Son,* Addlestone	1,049

*Accepted.

London, N.E.—For providing and laying creosoted yellow deal and Aberdeen granite carriageway paving (with cement concrete foundations) at Lea Bridge Road, from Cornthwaite Road eastward to Lea Bridge, for the Hackney Borough Council. Mr. Norman Scorgie, M.I.C.E., borough engineer and surveyor:—

E. T. Bloomfield, South Tottenham, N.	£4,725 0 0
Wm. Muirhead and Co., Queen Victoria Street, E.C.	4,469 19 0
Geo. Porter, Hackney, N.E.	4,422 10 5
G. J. Anderson, Poplar, E.	4,214 13 8
The Acme Flooring and Paving Co. (1904), Victoria Park, N.E.	4,036 0 5
The Improved Wood Pavement Co., Ltd., Queen Victoria Street, E.C.	3,883 4 0
Wm. Griffiths and Co., Ltd., Bishopsgate Street Without, E.C.	3,833 11 8
W. Manders,* Leyton, E.	3,827 2 3

*Accepted.

Leyton.—For making up, kerbing and paving certain private streets within the district for the Leyton Urban District Council. Mr. William Dawson, M.I.C.E., surveyor:—

T. Free and Sons, Maidenhead	£2,180 12 9
W. Griffiths and Co., Bishopsgate Street	2,160 3 10
T. Adams, Wood Green	2,176 17 9
F. J. Coxhead, Leytonstone	2,068 0 0
Seymour and Hanson, Wanstead	2,002 13 11
G. J. Anderson, Poplar	1,982 3 2
W. Manders, Leyton	1,959 10 0
McLean and Co., Isleworth	1,931 2 7
O. T. Gibbons,* Leytonstone	1,899 7 6

Surveyor's estimate, £2,080 2s.

*Accepted.

London, W.—For alterations to the Packhorse and Talbot public-house, High Road, Chiswick, W. Mr. Charles W. Callcot, architect, 557, Birkbeck Bank Chambers, Holborn, W.C.:—

Hedges	£1,554
W. J. Fensom	1,531
A. Sparksman	1,505
Courtney and Fairbairn	1,497
Goodall and Son	1,473
J. Whitaker and Son	1,459
Lovett and Co.	1,456
Millman and Green	1,442
Lascelles and Co.	1,433
O. S. Plumridge	1,407
T. Bendon, Ltd.	1,329
W. H. Cooper	1,318

Counter and Pewtering.

W. Paddon	£98

Gas and Electric Lighting.

H. Steadman	£124

Wallingford.—For erection of four villas, Wantage Road, Wallingford, for Mr. T. A. Simmons. Mr. Edwin A. Headness, architect, Wallingford:—

Brasher and Sons	£1,231 0 0
J. Smallbone and Sons	1,086 0 0
Bosher and Sons	998 15 0
J. Kirby,* Dorchester	898 0 0

*Accepted.

(Tenders continued on page vi ii.)

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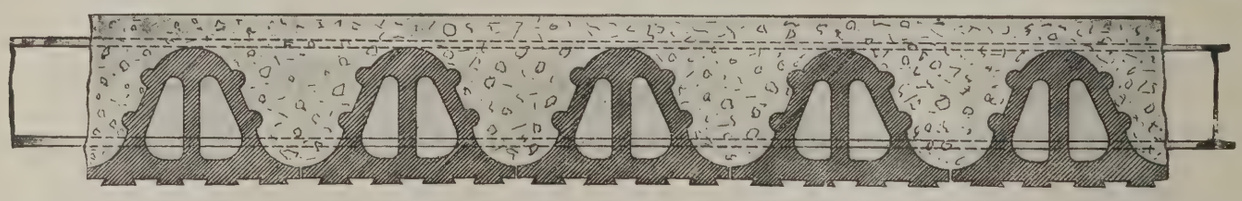
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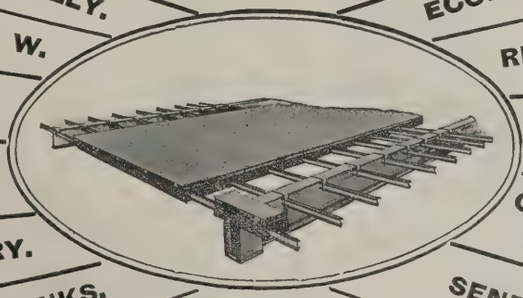
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(*Tenders continued from page vi.*)

London, S.E.—For erection of seven cottages on the site of Nos. 1 to 21, Pitman Street, for the Camberwell Borough Council:—

W. Reason, Rosebery Avenue...	£2,349 0 0
W. J. Coleman and Co., Brixton	2,293 19 0
Wood Bros., Forest Gate	2,208 10 0
G. Parker, Peckham	2,249 0 0
H. Bragg and Sons, Ltd., Brixton	2,179 0 0
F. and T. Thorne, Isle of Dogs	2,097 0 0
G. Skinner, Beckenham	2,062 0 0
F. Webster and Son, East Dulwich	2,046 0 0
H. King and Son, Peckham	2,022 0 0
R. and E. Evans, Peckham	1,998 0 0
H. J. Williams, Ltd., Bermondsey	1,989 0 0
Thompson Bros., Peckham	1,909 1 6
F. W. Jacobs, Anerley	1,883 0 0
T. Sobey, Lambs Conduit-st.	1,877 0 0
A. P. Maeers, Peckham Rye	1,800 0 0
Weibking and Co., Ltd., Hackney	1,777 0 0
E. Pryce and Son, Clapham	1,750 0 0
B. and A. Gale, Old Kent-rd.	1,659 0 0
S. A. Douglass, Woolwich	1,645 0 0
J. Fox and Son, Balham	1,639 10 0
E. Pavitt and Sons, Aveley and Purfleet, Essex	1,349 13 6

Borough engineer's estimate, £1,500.

Note.—It was recommended that the borough engineer's estimate be accepted.

Shotton (Flintshire).—For the erection of a new Council school to accommodate 500 scholars at Shotton, in the parish of Hawarden, for the Flintshire Education Committee. Mr. Samuel Evans, county surveyor:—

E. O. Probert, Hope Village	£6,672 4 8
Parker Bros., Chester	6,543 0 0
Wm. Hopkins, Birmingham	6,300 0 0
Richard Costain and Sons, Liverpool	6,239 0 0
Hughes and Stirling, Liverpool	5,991 0 0
John Mayers and Sons, Chester	5,956 16 0
C. Griffiths, Lye, Stourbridge	5,896 0 0
Horace Kelly and Brother, Liverpool	5,869 0 0
E. Blane and Sons, Connah's Quay	5,787 0 0
Thomas Spencer, Liverpool	5,770 0 0
Robert Williams, Brymbo	5,753 15 4
Robert Carlyle, Manchester	5,595 0 0
Thomas E. Russell, Manchester	5,518 0 0
J. M. Greenhalgh and Co., Warrington	5,473 0 0
Geo. Wright and Sons,* Hawarden, near Chester	5,395 0 0

*Accepted.

Tredegar (Mon).—For erection of 40 houses to be built on Mile Field, Tredegar, for the Tredegar Workmen's Building Society. Mr. A. F. Webb, architect, High Street, Blackwood.

J. Newcombe, Tredegar	£11,020
Vodden and Lee, Bargoed	10,640
J. Bell, Swindon	10,490
Passmore and Perkins,* Blackwood, Mon.	10,040

*Accepted.

Woodford Green (Essex).—For works of kerbing, channelling, and making-up in Empress Avenue, Grange Avenue, Glebe Avenue, Mayfield Avenue, and Fairlight Avenue, Woodford Green, for the Urban District Council. Mr. William Farrington, surveyor:—

J. Russell, Wanstead	£3,268 7 3
Griffiths, London	2,523 6 11
E. Bloomfield, S. Tottenham	2,480 18 6
Wilson, Border and Co., Romford	2,435 13 11
J. A. Ewart, London	2,297 17 4
Bower Bros., London	2,285 12 4
T. Adams, Wood Green	2,200 5 7
J. Jackson, Forest Gate	2,170 9 7
A. Champniss, Wealdstone	2,160 0 0
W. Manders, Leyton	2,150 4 1
O. T. Gibbons, Wanstead	2,149 9 4
W. Wilson, Ramsgate	2,138 0 11
T. C. Trueman, London	2,132 0 0
Parson and Parsons, Ilford	2,130 0 0
G. Brummell, Willesden	2,099 5 10
Free and Sons, Maidenhead	2,094 17 7
Seymour and Hanson, Wanstead	2,078 0 11
J. W. Jerram, East Ham	2,042 5 9
W. and C. French,* Buckhurst Hill	1,919 13 7
Parry and Co., Putney	1,898 10 10

Surveyor's estimate £2,191 2s. 11d.

*Recommended for acceptance.

Wembley (Middlesex).—For the making up under Section 150 P. H. Act, 1875, of Eagle Road (second portion), for the Urban District Council. Mr. Cecil R. W. Chapman, engineer and surveyor:—

C. W. Killingback and Co	£1,617 0 0
George Jaggard	1,556 0 0
Samuel Gibbons	1,535 17 9
W. H. Wheeler and Co., Ltd.	1,445 10 8
J. and W. Drake	1,414 0 0
Thomas Adams	1,320 6 8
O. T. Gibbons	1,249 0 0
W. and C. French	1,248 18 2
Parry (Victoria Stone)	1,243 0 0
Parry (Adamant Stone)	1,243 0 0
Parry (Atlas Stone)	1,228 0 0
Champniss and Co.	1,243 0 0
Thomas Free and Sons, Ltd.	1,222 16 0
George R. Mann	1,221 7 0
John Mowlem and Co., Ltd.	1,212 0 0
F. G. Brummel*	1,162 12 11

*Accepted.

York.—For erection of four pairs of semi-detached houses, Holgate Gardens estate. Mr. J. C. Proctor, A.R.I.B.A., architect, Cabinet Chambers, Basinghall Street, Leeds:—

J. Bryant and Sons	£3,219 2 0
G. Naylor	2,604 0 0
E. Relton	2,597 8 7
F. Shepherd and Co	2,590 0 0
H. H. Luke	2,578 1 9
Pottage Bros.	2,577 13 7
H. Smithers	2,517 4 3
W. Fairweather	2,492 6 4
Wray and Sons	2,429 17 8
W. Usher	2,410 9 0
W. Birch,* York	2,398 3 5
L. J. Rochester	2,320 1 1

*Accepted.

South Uist (Scotland).—For erection of school and houses, for the School Board. Mr. John Wedderspoon, C.E., architect, Inverness:—

D. and I. Macdougall, Oban	£2,790 8 4
W. Bain,* Lochmaddy	2,152 3 1

*Accepted.

North Owersby (Lincs.).—For new Wesleyan chapel and Sunday-school, stable and coach-house. Messrs. Hemsoll and Chapman, architects, Imperial Chambers, 18, Norfolk Row, Sheffield:—

Marshall and Topliss	959 15 6
J. Stamp	£922 0 0
Holmes and Richardson	898 10 0
P. McGinnis,* Market Rasen, Lincs.	650 0 0

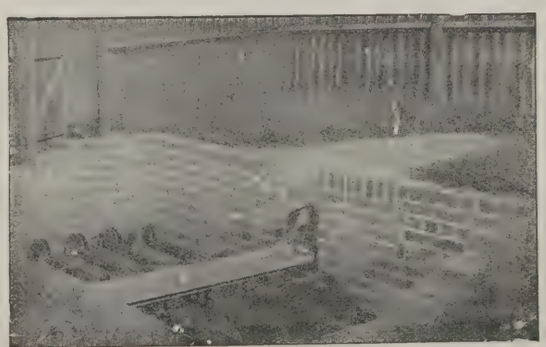
*Accepted.

South Shields.—Accepted for carrying out laundry extensions at the Workhouse, for the Guardians:—

W. Hall	£1,735 4 10

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Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Oct. 22. DARLINGTON.—Erection of a governor house and time office at the gasworks for the Corporation. Plans, etc., may be seen, and form of tender, etc., obtained on application at the offices of George Winter, borough surveyor, town hall.

Oct. 22. PRIDEAUX. — Alterations to Nanscawen Farm, Prideaux, for Sir Colman B. W. Rashleigh. Plans and specifications may be seen at the office of the architect. Sealed endorsed tenders will be received by noon on Oct. 22, by B. C. Andrew, M.S.A., architect, Biddick's Court, St. Austell.

Oct. 22. BEDLINOG.—Erection of 15 or more cottages at Bedlinog, for the South Wales Estates Company (Limited). Plans and specification may be seen and all particulars obtained at the office of William Dowdeswell, architect, Treharris. Tenders, endorsed "Cottages," to be sent to Edwards Bros., Cambria Chambers, Dowlais by Oct. 22.

Oct. 22. MORLEY. — Various works except mason's required, in addition and alteration to Glen Mills, Morley, for Albert Glover. Quantities to be obtained at the office of T. A. Buttery, Exchange Buildings, Queen Street, Morley, on Oct. 15. Tender to be sent to the proprietor, Glen Mills, Morley, on Oct. 22.

Oct. 23. SHREWSBURY.—Erection of elementary schools at Colcham, Shrewsbury, for the education committee of the corporation. Persons desirous of tendering are requested to send their names to the architects, A. B. and W. Scott Deakin, 12a, Pride Hill, Shrewsbury, by Oct. 23. Quantities will be supplied on deposit of one guinea.

Oct. 23. GLANTON, near Alnwick.—Demolishing existing offices, and erecting new latrines, etc., at Glanton schools for the managers. Plan, specifications, bills of quantities, and forms of tender are deposited with the schoolmaster at the school house, Glanton Tenders, endorsed, to be sent to H. W. Walton, clerk to the managers, Fenkle Street, Alnwick, by October 23rd.

Oct. 23. LONDON.—Extension of the Royal Courts of Justice (first contract), for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Sir Henry Tanner, I.S.O., F.R.I.B.A., at Storey's Gate. Bills of quantities and forms of tender may also be obtained there on payment of one guinea. Tenders must be delivered before noon on Oct. 23, addressed to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Royal Courts of Justice Extension, First Contract."

Oct. 23. CORK.—Erection of new additions, etc., to the resident engineer's house at the pumping station, Lee Road, Cork, for the Corporation, in strict accordance with the specification, drawings, and conditions of contract prepared by the city engineer. Drawings, general conditions, and specification may be seen and tender form and all information obtained at the city engineer's office, city hall, Cork, from 10 to 4 daily. Intending contractors must first lodge £1 with the city treasurer. Persons tendering must lodge with tender a sum of £10. All materials used to be as far as possible of Irish manufacture. Sealed tenders, endorsed "Tenders for New Additions and Improvements to R.E.'s House, Waterworks," must be deposited before noon on Oct. 23, with F. W. M'Carthy, town clerk, Cork. Fair wages clause.

Oct. 24. ABERYSTWYTH.—Alterations and additions to a house in High Street for Evan Davies. Plans and specifications may be seen at the office of the architect. Sealed tenders are to be delivered by Oct. 24, to J. Lewis Evans, architect and surveyor, 21, Great Darkgate Street, Aberystwyth.

Oct. 24. BRAUNTON (DEVON).—Erection of a pair of semi-detached villas at Vellator, Braunton, for E. J. Slee. Plans, specification and conditions can be seen at the office of H. W. Weir, M.S.A., 32, Greenclose Road, Ilfracombe, between 10 and 4, where sealed endorsed tenders are to be delivered by noon on Oct. 24.

Oct. 24. CAVERSHAM (Oxon).—Erection of a footbridge at Lower Caversham, for the Caversham U.D.C. Plans and specifications can be seen at the office of Alfred J. Smith, surveyor to the Council, Gosbrook Street, Caversham. Sealed tenders, endorsed "Footbridge," are to be delivered at the surveyor's office by mid-day on October 24.

Oct. 24—Nov. 18. ROWLEY REGIS.—Erection of public libraries, Nos. 2 and 3, being one at Ross Road, Black Heath and Rowley Regis, and the other at Dudley Road, Tividale, for the U.D.C. £1 for quantities in each case must be sent to the clerk before Oct. 24, with name, etc., of applicant. Plans, specifications, and conditions prepared by Wills and Anderson, the council's architects, may be seen at the council's offices, Old Hill, on and from Nov. 7, between 10 a.m. and 4 p.m. (Saturdays, 10 a.m. to 1 p.m.). Tenders, duly endorsed, must be delivered by 9 a.m. on Nov. 18, to Daniel Wright, clerk, council offices, Old Hill, Staffordshire.

Oct. 24. NORWICH.—Erection of a secondary school, with alterations to existing buildings, at Eaton Road. Personal application must be made at the offices of C. J. Brown, architect and surveyor, Cathedral offices, The Close, to inspect the drawings, specification, etc., after which form of tender, etc., can be obtained at the city accountant's office, Municipal Buildings, upon depositing Bank of England notes of the value of £25.

Oct. 26. WILMSLOW (Cheshire).—Erection of new council schools, to accommodate 700 scholars, at Wilmslow, Cheshire, for the Knutsford and Wilmslow administrative sub-district committee. Plans, specifications, etc., prepared by Herbert H. Brown, architect, may be inspected at his offices, 17, Dickinson Street, Manchester. Persons desirous of tendering must send their names to the architect, accompanied by a deposit of two guineas, before Oct. 9. Tenders, enclosed in sealed envelopes, endorsed "Tender for Council Schools at Wilmslow," must be delivered by 10 a.m. on Oct. 26, to George Leigh, clerk, union offices, Knutsford, Cheshire.

Oct. 26. DONAGHADEE (Ireland).—Alterations and additions to Methodist church and schools at Donaghadee, in accordance with plans and specifications, which may be inspected at the office of the architect, or on the school premises, Donaghadee. Quantities may be obtained from S. C. Hunter, on payment of two guineas. Sealed and endorsed tenders must be delivered by Oct. 26, to J. St. John Phillips, A.R.I.B.A., architect, 16, Donegall Square South, Belfast.

Oct. 27. MENSTON.—Erection of a villa residence at Menston, for Dr. W. J. Hyslop. Persons desirous of tendering must forward their names by Oct. 27, to Harold Chippendale, architect, Guiseley, when quantities will be forwarded in due course.

Oct. 27. PARK GATE, GUISELEY.—Erection of twelve houses at Park Gate, Guiseley, for Rev. Sir Peile Thompson, Bart. Persons desirous of tendering must send their names by Oct. 27, to Harold Chippindale, architect, Guiseley, when quantities will be forwarded in due course.

Oct. 27. NAIRN.—Mason, joiner, slater, plumber, and gasfitter, plaster and cement, glazier, smith, heating, and painter work of new free church to be built at Gordon Street, Nairn. Plans may be seen with John Buchan, Ashiestiel, Nairn, and schedules of quantities had on application to James Strang, architect, Falkirk, with whom sealed offers are to be lodged by Oct. 27, marked on outside of cover, "Tender for Church."

Oct. 28. LYMINGE.—Alterations to the vagrant wards at the workhouse, Lyminge, for the guardians of Elham Union. A specification of the work can be seen with R. Longergan, clerk, 11, Cheriton Place, Folkestone, where tenders are to be delivered before Oct. 28.

Oct. 28. TONREFAIL (Glam.).—Erection of a residence at Tonrefail, Glam., for Dr. D. Naunton Morgan. Plans and specifications can be seen at the Tonypandy and Pontypridd offices and bills of quantities obtained there, and also at the Cardiff office, 12, Edwards Terrace, on payment of £1 1s. deposit. Tenders to be delivered at Tonypandy office by noon on Oct. 28, endorsed "Tender for Tonyrefail House," addressed to W. Morgan Lewis and T. Naunton Morgan, Pontypridd and Tonypandy.

Oct. 29. DORCHESTER.—Alterations at the Holy Trinity infants' school, Grey's School Passage, Dorchester, for the managers. Plans, etc., may be seen at the office of the architect, J. Peacey, South Walks, Dorchester.

Oct. 29. SCUNTHORPE.—Erection of a fire station, highways depot, cart sheds, and public convenience at the corner of Mary Street, E., and Cole Street, for the U.D.C. Plans, sections, and details may be seen, and any further information given upon application to Walter F. Bickford, engineer and surveyor, Engineer's and Surveyor's Office, Home Street, Scunthorpe. Form of tender, general conditions, specifications, and bill of quantities may be obtained upon payment of two guineas. Tenders, sealed and endorsed "Tender for Fire Station, Buildings, etc.," to be addressed to F. C. Hett, clerk, 2, Trafford Street, Scunthorpe, and delivered by noon on Oct. 22.

Oct. 30. LONDON.—Erection of a shelter and store for model yachts, at Victoria Park for the L.C.C. Persons desiring to tender may obtain the drawing, specification (without bill of quantities), form of tender, and other particulars at the Architect's Department, 19, Charing Cross Road, W.C., upon payment of 10s. to the cashier of the council, at the County Hall, Spring Gardens, S.W. Full particulars of the work may be obtained on application at the County Hall, before the payment of the fee. Each tender is to be delivered in a sealed cover, marked "Tender for Shelter, etc.," Victoria Park," by 11 a.m. on Oct. 30, to G. L. Gomme, clerk to the London County Council, County Hall, Spring Gardens, S.W., Fair wages clause.

Oct. 31. LEEDS. — Erection of the firemen's dwellings and hose tower, in Park Street, for the Corporation. Contractors desirous of tendering must send their names, accompanied by a deposit of one guinea, to the architect, Percy Robinson, F.R.I.B.A., Yorkshire Post Chambers, 53, Albion Street, on Oct. 31, when bills of quantities will be forwarded. Tenders, endorsed "Firemen's Dwellings," must be delivered by Nov. 18, to Robert E. Fox, town clerk, town hall, Leeds.

Oct. 31. ABERDEEN.—Erection of a new booking office, etc., at the corner of Bridge Street and Guild Street, with steel footbridge and stairs to the west platforms, for the Aberdeen Joint Station Committee. The drawings may be seen at the office of James A. Parker, C.E., 80, Guild Street, Aberdeen, where copies of the specification and schedule may be obtained on payment of one guinea. Sealed tenders, endorsed "Tender for Booking Office," to be lodged by 10 a.m. on Oct. 31, with T. S. Mackintosh, secretary, Aberdeen Joint Station Committee, 80, Guild Street, Aberdeen.

Nov. 1. DRUMAGHLIS (Ireland).—Erection of a new National school. Plans and specifications may be inspected on application to John M'Robert, J.P., Rademon, Crossgar, or 13, Wellington Place, Belfast, by whom tenders will be received up to Nov. 1.

Nov. 2. DUBLIN.—Addition to and alteration in the General Post Office, Dublin, for the Board of Public Works. Plans and specification can be seen at the offices of the secretary. Forms of tender and bills of quantities will be supplied on deposit of £1. Separate envelopes containing the tender and the bill of quantities must be endorsed "Tender for Works at the General Post Office, Dublin," and delivered by 10 a.m. on Nov. 2, to H. Williams, secretary, office of public works, Dublin.

Nov. 2. LISBURN.—Construction of a masonry and brickwork arch bridge over the railway at Ballinderry Road level crossing, near Lisburn, for the directors of the Great Northern Railway Company (Ireland).—Parties wishing to tender may see the drawing and specification at the office of W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or copies at the district engineer's office, Belfast, and can obtain at the offices lithographed copies of drawing and specification, also form of tender, upon payment of 10s. per set (not returnable). Tenders, on the forms supplied, should be delivered, under sealed cover, endorsed "Tender for Bridge near Lisburn," by 10 a.m. on Nov. 2, to T. Morrison, secretary, secretary's office, Amiens Street terminus, Dublin.

Nov. 4. NORTH FARNBOROUGH.—Erection of a new council school at North Farnborough, for the Southampton County Council. Persons desirous of tendering may see plans, specification, and conditions of contract, and obtain bills of quantities, and other information, at the office of W. J. Taylor, county surveyor, The Castle, Winchester, on and after Oct. 21, between 9 a.m. and 5 p.m. (Saturdays, 9 a.m. and 1 p.m.). A deposit of two guineas is required for the bills of quantities and form of tender. Deposits must

be made by cheque, payable to the Hants county council, and crossed "Bank of England." Tenders, endorsed "North Farnborough Council School," to be delivered by Nov. 4, to H. Barber, clerk of the county council, The Castle, Winchester.

Nov. 4. NORTH DALTON (near Murton). — Erection and completion of an engine house, boiler house, coal store, chimney stack, etc., at the North Dalton pumping station, near Murton, for the directors of the Sunderland and South Shields Water Company. Plans and specifications may be seen, and quantities and further information obtained upon application to Alfred B. E. Blackburn, Assoc.M.Inst.C.E., the company's engineer, at 29, John Street, Sunderland. Quantities will be supplied only to contractors tendering for the whole of the works, on personal application. A deposit of three guineas must be made. Sealed tenders, marked "North Dalton Pumping Station," must be delivered to the secretary, 29, John Street, Sunderland, by noon on Nov. 4.

Nov. 5. ASTON-CUM-AUGHTON.—Whole or separate tenders in the erection of heating chamber at Aston-cum-Aughton; fence for provided school, near Rotherham, for the West Riding Education Committee. Plans may be seen and bills of quantities obtained on application to the architect. Sealed tenders, properly endorsed, to be forwarded by 10.30 a.m. on Nov. 5, to J. Vickers-Edwards, county architect, county hall, Wakefield.

Nov. 10. CHELMSFORD.—Erection of a covered cowshed and construction of a roof over an auction ring in the cattle market, for the Corporation. Specifications, bills of quantities, forms of tender and full particulars may be obtained on deposit of £2 2s. The plan may be inspected at the borough surveyor's office, 16, London Road, on and after Oct. 26. Tenders, on the form provided, enclosed in sealed envelopes and endorsed "Market," must be delivered by 4 p.m. on Nov. 10, to W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford.

Nov. 13. HULL.—Additions and alterations to cattle market under two contracts, for the corporation. No. 1, three reinforced concrete galleries of a total area of about 1,100 yds., together with alterations to existing concrete floors and other works; No. 2, new pens and hurdles and alterations to existing pens (weight of new iron and steel about 22 tons). Forms of tender and other particulars may be obtained of A. E. White, M.Inst.C.E., city engineer, town hall, Hull, on payment of £1 in respect of each contract. Blue prints of the plans for either contract will be supplied on payment of 5s. not returnable. Remittances must be made payable to T. G. Milner, city treasurer. Tenders, endorsed as directed on the forms of tender, to be addressed to the chairman of the markets committee and delivered at the town clerk's office, Hull, before noon on Nov. 13.

Dec. 1. RUAN, ENNIS, (Co. Clare).—Erection of a new church at Ruan, Ennis, Co. Clare. Tenders will be received by the Rev. J. Garry, P.P., up to Dec. 1. Drawings, specification, and bills of quantities may be seen at the Parochial House, near railway station, Ruan, or at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick.

No date. WEST LYNN.—Alterations to cottages at West Lynn, for Wm. Wing. For bill of quantities and all information apply to Walker and Walker, architects and surveyors, Wisbech and Terrington.

No date. BRADFORD.—Erection of new wheelwright's workshops, in Bowland Street, Bradford. Plans may be seen and quantities obtained upon application to H. Hardaker, architect, Ivegate Chambers, New Ivegate, Bradford.

No date. DEVIZES.—Erection of a stone wall in stream on Poulshot Road, also moving and repairing the post and rails, for the R.D.C. Specification and particulars to be had on applying to Jas. M. Butcher, Southbroom Terrace, Devizes.

No date. BAWTRY (near Doncaster).—Erection of a villa residence at Bawtry, near Doncaster. Persons desirous of tendering are requested to forward their names to Garside and Pennington, architects and surveyors, Pontefract and Castleford.

No date. TALYBOUT (Cardiganshire).—Erection of a new mission church at Talybont, Cardiganshire. Plans, specifications, and further particulars may be obtained on application to the architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. OLDHAM.—Erection of thirty-eight houses on the Hollin Hall Estate, Oldham, for the Oldham Equitable Co-operative Society, Ltd. Specifications, etc., may be obtained of the Society's architect, F. Thorpe, 7, Clegg Street, Oldham, on deposit of £2 2s.

No date. GLOSSOP.—Works in connection with new Conservative club and shops, Norfolk Street, Glossop. Contractors may see plans and obtain bills of quantities on application to John Eaton, Sons and Cantrell, architects and surveyors, Stamford Street, Ashton-under-Lyne.

No date. LLWYNYPIA.—Erection of a house at Llwynypia, for the Glamorgan Coal Company, Ltd. Plans may be seen at the offices of Edgar G. C. Down, A.R.I.B.A., architect and surveyor, 31, High Street, Cardiff, from whom bills of quantities may be obtained on deposit of two guineas.

No date. BRIXWORTH (Northants).—Erection of a bakery at Brixworth, for the Provident Co-operative Society, Ltd. Bills of quantities will be posted to contractors on application to A. H. Walsingham, architect, or C. E. Roberts and Co., bakery engineers, 62, Market Street, Manchester. Drawings may be seen at the Society's office.

ENGINEERING.

Oct. 22. GOOLE.—Constructing and sinking in the bed of the river Ouse a cast-iron casing cylinder (about 55 tons), for a new accumulator, and construction of an accumulator house, etc., at Goole swing bridge, for the North Eastern Railway. Plans may be seen, and specification, detailed quantities, and form of tender obtained on personal application at the office of W. J. Cudworth, the company's engineer at York. Sealed tenders, marked "Tender for Cast Iron Casing Cylinder, etc., at Goole Swing Bridge," to be addressed to R. F. Dunnell, secretary, and delivered at his office at York by Oct. 22.

Oct. 24. KIMPTON, WELWYN. — Heating Kimpton Church by the low-pressure hot-water system, including the construction of a new heating chamber for the vicar and churchwardens. Plans, etc., may be seen at the church upon application to the sexton.

Oct. 26. BAMBER BRIDGE (near Preston). — Sinking a pump head well and borehole, on the site of proposed pumping station, situated at Bamber Bridge, near Preston, for the U.D.C. of Walton-le-Dale. Persons desiring to tender must first submit their names to the clerk. Tenders, endorsed "Well Sinking," to be delivered by noon on Oct. 26, to W. S. Woodcock, clerk to the council, council offices, Bamber Bridge, near Preston.

Oct. 26. HAYFIELD.—Extension of the waterworks, for the R.D.C., as follows:—Part 1.—Providing and laying about half-a-mile of 3-in. cast-iron water main along the Glossop Road between Hayfield and Little Hayfield. Part 2.—Construction of a break-pressure tank on kinder bank, and providing and laying about three-quarters of a mile of 4 in. and 3 in. cast-iron mains in Hayfield, with all necessary connections and apparatus. Specification and drawings may be seen at the council offices, 16, High Street, New Mills, and schedule of quantities obtained from the engineers, George and F. W. Hodson, MM.Inst.C.E., Loughborough, on deposit of cheque for £2 2s. Tenders to be sent by Oct. 26 to J. R. Bowden, clerk to the council.

Oct 27. LONDON.—Supplying 12 water-tube boilers, with mechanical stokers and superheaters, etc., each boiler capable of evaporating 15,000lbs. of water an hour, for the L.C.C. Persons desiring to tender may obtain drawings, specification, bills of quantities, form of tender, and other particulars from the clerk of the council, upon payment to the cashier of £2. Tenders to be delivered in a sealed cover, to the clerk of the London County Council, Spring Gardens, S.W., marked "Tender for Water-tube Boilers," by 11 a.m. on Oct. 27. Fair wages clause.

Oct. 27. MIDDLESBROUGH.—Construction of a new bridge and approaches at South Bank, Middlesbrough, for the directors of the North Eastern Railway. The work comprises about 20,000 cubic yds. of earthwork, altering and erecting about 70 tons of existing steelwork to be provided by the company, and providing and fixing about 56 tons of new steelwork, and constructing the roadway over the bridge and the approaches. Plan and specification may be seen and detailed quantities and form of tender obtained on personal application at the office of W. J. Cudworth, the company's engineer at York, on and after Oct. 19. Sealed tenders, marked "Tender for Bridge and Approaches, at South Bank, Middlesbrough," must be sent by 9 a.m. on Oct. 27, to R. F. Dunnell, secretary, York.

Oct. 30. HALTON (Chester).—Construction of new Sewerage Works in the parish of Halton, Chester, for the Runcorn R.D.C. The works will comprise about 2¾ miles of 6in. to 12in. earthenware pipe sewers, together with all manholes, lampholes, and other appurtenances. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind-hill-street, Heywood, or at the office of the clerk, on payment of two pounds. Sealed tenders endorsed "Tender for Halton Sewerage Works" to be sent by October 30th, to Geo. F. Ashton, clerk to the council, 71, High Street, Runcorn.

Oct. 31. PENYGRAIG.—Sinking a shaft 20ft. in diameter and approximately 500 yards in depth for the Naval Colliery Company (1897), Limited. Plans and specifications may be seen at the Naval Colliery Offices, Penygraig, between nine a.m. and five p.m. Tenders to be sent in before Oct. 31.

No date. WOOTTON BASSETT.—Construction of a dam, with puddle wall and other works in connection therewith, at Marsh Farm, Wootton Bassett, for Howard Horsell. Plans and specification may be seen with F. Redman, engineer for the work, 34, Wood Street, Swindon. The site may be inspected by arrangement with Mr. Horsell, Dudley House, Wootton Bassett, where tenders are to be delivered.

IRON AND STEEL.

Oct. 22. DUNDEE.—Supplying 25 tons of steel rails, tramway section, about 127 lbs. per yard, with fish plates and bolts to suit, for the trustees of Harbour of Dundee. Sealed tenders, marked "Tender for Rails," must be lodged by 10 a.m. on Oct. 22, with J. Hannay Thompson, M.Inst.C.E., harbour engineer, harbour engineer's office, Dundee.

Oct. 22. LLANDUDNO.—Supply and delivery to Llandudno Junction station of 488 tons (more or less) in No. 662, 15 in. by 12 ft. long cast iron spigot and socket pipes, for the U.D.C. Also about 14 tons of special pipes. Full particulars, with form of tender, may be obtained from E. P. Stephenson, Assoc.M.Inst.C.E., town hall, Llandudno. Tenders must be sent by Oct. 22, endorsed "Tender for Pipes," to A. Conolly, clerk to the council, town hall, Llandudno.

Oct. 26. BRYNMENYN (Glam.).—Supply and delivery of cast iron manhole covers (light and heavy), also cast iron sheet gulley gratings, for the Ogmore and Garw U.D.C. All to be made in accordance with the council's pattern, which may be seen at Brynmenyn. Full particulars and form of tender may be obtained from the council office, Brynmenyn, Glam. Sealed tenders, endorsed "Manholes," to be sent to S. H. Stockwood, Bridgend, by Oct. 26.

Oct. 26. LONDON (for India). — Supplying about 4,700 tons of 80. lb. Bessemer acid steel rails and angle fishing plates, for the Crown Agents for the Colonies, acting on behalf of the Government of Ceylon. Forms of tender and all particulars may be obtained on application at the office of the Crown Agents for the Colonies, between 10 a.m. and 4 p.m. (Saturdays 10 a.m. to 1 p.m.), on deposit of £1. Tenders to be delivered in sealed envelopes, addressed to the Crown Agents for the Colonies, Whitehall Gardens, S.W., endorsed "Tender for Rails and Fishplates, Ceylon Government Railways," by noon on Oct. 26.

Oct. 27. ISLINGTON.—Supply and delivery of galvanised wrought-iron shingle bins and cast-iron orderly bins, for the corporation. A specification and drawing of the shingle and orderly bins may be seen, and form of tender obtained, upon application to the borough engineer, J. Patten Barber, at the town hall, and deposit of £2 2s. Sealed tenders, endorsed "Tenders for Bins," must be delivered by 4 p.m on Oct. 27, to Wm. F. Dewey, town clerk, town hall, Upper Street, N.

Oct. 27. LONDON (for India).—Supplying (1) Steel rails and fishplates, about 700 tons; (2) tie bars, gibs, and cotters, about 38 tons; (3) fish-bolts, and nuts, and spikes, about 48 tons; (4) switches and crossings, 102 sets switches, 82 sets crossings, for the South Indian Railway Company, Ltd. Specifications and forms of tender may be obtained at the company's offices. Tenders, addressed to the chairman and directors of the South Indian Railway Company, Ltd., marked "Tender for Rails," or as the case may be, must be left by noon on Oct. 27, with V. E. De Broe, secretary, company's offices, 91, York Street, Westminster, S.W. A charge, which will not be returned, will be made of 20s. for each copy of specification No. 1, and of 10s. for each copy of Nos. 2, 3, and 4. Copies of the drawings may be obtained at the office of Robert White, 3, Victoria Street, Westminster, S.W., on payment of 5s. per sheet.

PAINTING.

Oct. 22. ST. BEES.—Painting and decorating the United Methodist church and schoolroom, St. Bees. Particulars on application to the secretary, E. J. Ireland, Manor Cottage, St. Bees, to whom tenders, sealed and addressed, should be forwarded before Oct. 22.

Oct. 23. HULL.—Painting the exterior of artisans dwellings, Great Passage Street, and 77 houses in New Bridge Road, Rustenburg Street, and Steynburg Street, in four contracts, for the corporation. Forms of tender and other particulars may be obtained at the office of A. E. White, M.Inst.C.E., city engineer, town hall, Hull. Tenders, endorsed "Tender for Painting Properties," to be addressed to the chairman of the property committee, and delivered at the town clerk's office before 10 a.m. on Oct. 23.

Oct. 24. BARROW-IN-FURNESS. — Cleaning, painting, etc., at the stores and stables, Ramsden Street, for the corporation. Bills of quantities and further particulars may be obtained at the borough engineer's office, town hall. Tenders to be delivered by noon on Oct. 24.

Oct. 26. HERTFORD.—Painting iron fencing at the cemetery for the corporation. For particulars, etc., apply to the borough surveyor.

PLUMBING & SANITARY

Oct. 22—Nov. 4. EASINGTON (Durham). — Construction of main sewerage and sewage disposal works for Thornley and Wheatley Hill R.D.C. The proposed works comprise furnishing and laying about 1,000 yards of 12, 9, 7 inch fireclay sewers with gaskin and cement joints with manhole and lamphole shafts, storm overflow chambers, bacterial tanks and filters, fencing, etc. Contractors desirous of tendering are requested to send their names and addresses by Oct. 22, to the engineers, D. Balfour and Son, civil engineers, S. St. Nicholas Buildings, Newcastle-on-Tyne, accompanied by a cheque for £5, after which full particulars and quantities will be forwarded. Contractors must furnish good and approved security for the due fulfilment of the contract. Sealed tenders, endorsed "Tender for Thornley and Wheatley Hill Sewage," must be sent by 10 a.m. on Nov. 4, to J. Morley Longden, clerk to the council, union offices, Easington, Castle Eden, R.S.O.

Oct. 23. CHISLEHURST.—Laying out, constructing, sewering and surface water draining a new road in Perry Street, Chislehurst, for the U.D.C. Forms of tender, with a copy of the specifications, can be obtained of the council's surveyor, at Hampden House, Station Road, Sidcup, on payment of £2 2s., in respect of each matter. Plans, sections, and conditions of contract may also be seen at the surveyor's office. Tenders, sealed and endorsed "Tender for ———," as the case may be, must be delivered by 4 p.m. on Oct. 26, to H. E. Knight, clerk of the council, council offices, Chislehurst. (See also "Miscellaneous.")

Oct. 26—Nov. 5. CRANLEIGH (Surrey). — Materials and labour in laying in about 1,278 yds. of pipe sewer, with manholes and flushing arrangements, in Horsham Road, Cranleigh, Surrey, for the Hambledon R.D.C. Plans, sections, specification, and conditions of contract, can be inspected at the office of the council's surveyor, Edward I. Lunn, 36, High Street, Guildford. Contractors desiring to receive bills of quantities must send their names and addresses to the surveyor, by Oct. 26, enclosing a deposit of £3 3s. Sealed tenders on the form supplied, must be delivered by 10 a.m. on Nov. 5, to Ferdinand Smallpiece, clerk to the council, 138, High Street, Guildford. Security or a bond, in the sum of £200 for the due performance of contract, may be required.

Oct. 27. STECHFORD (near Birmingham).—Construction of twelve rectangular brick and concrete sewage filters, each about 162ft. by 35ft., for the Yardley R.D.C. Also supply and wash-out chambers, distributing and effluent channels, subways, cast-iron carriers, and other works incidental thereto, at the Cole Hall Sewage Disposal Works, Stechford, near Birmingham, in accordance with plans, drawings, specification, and conditions which may be seen on application to the engineer and surveyor, Arthur W. Smith, at the council house, Sparkhill, near Birmingham, between ten and one and three and five (Saturdays ten and one). Specification, bill of quantities, and form of tender can be obtained on payment of three guineas to the clerk. Sealed tenders, addressed "The Yardley Rural District Council," and endorsed "Rectangular Filters," to be delivered by noon on Oct. 27, to Francis Ladbury Thompson, clerk of the council, Council House, Sparkhill, near Birmingham. The contractor shall give preference to workmen resident in Yardley. Fair wages clause.

Oct. 27. YARDLEY.—Provision and construction of the following foulwater sewers for the R.D.C.:—89 yds. of 9in. sewer in Yardley Road; 220 yds. of 9in. sewer in Warwick Road; 291 yds. of 9in. sewer in Weston Lane, together with manholes, lampholes, flushing chambers, and other works appertaining thereto, in accordance with plans, drawings, specification, and conditions of contract, which may be seen on application to the engineer and surveyor, Arthur W. Smith, Council House, Sparkhill, near Birmingham, between ten and one and three and five (Saturdays ten and one). Specification, bill of quantities, and form of tender may be obtained on payment of three guineas to the clerk. Tenders, endorsed "Sewer Extensions," to be delivered by noon on Oct. 27 to Francis Ladbury Thompson, clerk to the council, the Council House, Sparkhill, near Birmingham. The contractor shall give preference to workmen resident in Yardley. Fair wages clause.

Oct. 27. WATFORD.—Execution of works of drainage of Theobald Street, Boreham Wood, comprising about 1,230 yds. lineal of 12 in. and 9 in. pipe sewers, together with manholes and other necessary work. Also a short extension of main sewer, Shenley Road, Radlett (about 170 yds. lineal of 9 in. pipe), with manholes, etc., for the R.D.C. Plans and specification may be seen and a copy of the quantities obtained at the offices of the engineer to the council, Ernest Lailey, 9, Market Street, Watford, between 9 and 1, on deposit of two guineas. Sealed tenders, endorsed "Tender for Theobald Street Drainage," or "Tender for Extension of Sewer Radlett," must be delivered by 4 p.m. on Oct. 27, to H. Morten Turner, clerk to the council, Watford Place, Watford.

Nov. 2. OMBERSLEY (Droitwich).—Construction of about 933 yards of stoneware pipe sewers, with manholes and other work incidental thereto, in the village of Ombersley, for the R.D.C. Drawings and specification may be seen, and quantities obtained, on application at the offices of H. W. Smith, surveyor, 12, The Foregate, Worcester. Tenders to be sent by Nov. 2 to Arthur J. Bearcroft, clerk to the council, Union Office, Droitwich.

Nov. 3. EGREMONT.—Cutting trenches and laying and jointing about 420 lineal yards of 7in. steel sewerage pipes at Egremont, for the U.D.C. Plan and specifications can be seen and any other information obtained on application to James Cowan, surveyor, town hall, Egremont. Sealed tenders, endorsed "Sewerage Pipe Track," must be delivered by noon on Nov. 3, to John Bowley, clerk to the council, town hall, Egremont.

ROADS AND CARTAGE.

Oct. 22. HARROGATE.—Private street works required in a portion of Prospect Place, for the Corporation. Specification may be seen, and quantities obtained of F. Bagshaw, borough engineer and surveyor. Tenders must be submitted by 9 a.m. on Oct. 22.

Oct. 23. BRIGHTON.—Supplying 4,500 cubic yards of land flints for highways required during the period to the 31st March, 1909, for the Corporation. Specification and form of tender may be obtained on application at the office of the borough surveyor, town hall, Brighton. Sealed tenders, endorsed "Tender for Flints," must be delivered before 10 a.m. on Oct. 23, to Hugo Talbot, town clerk, town hall, Brighton.

Oct. 23. RHONDDA.—Paving, kerbing, channelling, etc., the following streets under the Private Street Works Act, 1892, for the Rhondda urban district council. 1, Old Street, Blaenclydach; 2, Charles Street, Blaenclydach; 3, Fern Terrace, Blaenclydach; 4, Maddox Street, Blaenclydach; 5, Jones Street, Blaenclydach; 6, Railway Terrace, Blaenclydach; 7, North Terrace, Blaenclydach; 8, Cross Street, "A," Blaenclydach; 9, Cross Street "B," Blaenclydach; 10, Trealaw Road, Trealaw (ballasting and metalling of roadway, etc.). Plans may be seen and form of tender obtained at the office of W. J. Jones, engineer and surveyor, public offices, Pentre, Rhondda, on payment of one guinea. Tenders must be delivered under seal, endorsed with the name of the contract, and addressed to the chairman of the council, public offices, Pentre, Rhondda, and delivered by 10 a.m. on Oct. 23. Fair wages clause.

Oct. 24. DEVONPORT.—Levelling, paving and completing (under section 150 of the Public Health Act, 1875) the following lane, for the Corporation. Contract No. 136.—Lane at rear of Nos. 24 to 33, Avondale Terrace. Plans, specifications, and conditions may be seen and forms of tender and bills of quantities obtained at the surveyor's office, on payment of £1 1s. for each set of quantities. Separate sealed tenders must be delivered by Oct. 24, to John F. Burns, borough surveyor, Municipal offices, 29, Ker Street, Devonport.

Oct. 26. WESTON-ON-AVON. — Regravelling the playground at Weston-on-Avon council school, for the managers. Persons desirous of tendering may obtain further information upon application to Francis L. Thompson, 42, Greenhill Street, Stratford-on-Avon.

Oct. 26. WEDNESBURY.—Levelling, paving, metalling, flagging, channelling, and making good Longcroft Avenue, between Vicar Street and Clarkson Road, for the Corporation. Plans, sections, specification and conditions of contract may be seen, and bills of quantities and form of tender obtained, on application to the surveyor. Tenders, endorsed "Longcroft Avenue," must be delivered by Oct. 26, to E. Martin Scott, borough engineer and surveyor, town hall, Wednesbury. Fair wages clause.

Oct. 26. STONE, DARTFORD. — Making up Charles Street, in the parish of Stone, for the R.D.C., in accordance with plans and specifications which have been prepared under the direction of the council's surveyor, and may be seen and forms of tender obtained at the office of W. Harston, A.M.I.C.E., 8, Hythe Street, Dartford, between 11 and 4; Saturday, 11 and 1. Quantities may also be obtained from W. Harston, on deposit of £2 2s. Tenders, in envelopes, endorsed "Tender for Private Street Works," must be delivered by 10 a.m. on Oct. 26, to J. C. Hayward, clerk, Sessions House, Dartford. The person whose tender is accepted will be required to enter into contract for the due execution of the works, and a bond for ensuring the performance of the contract with two sureties.

Oct. 27. BROMLEY.—Sewering, levelling, paving, metalling, channelling, and making good Farnaby Road for the corporation, in accordance with the plan, sections, and specification, which may be seen, and bills of quantities, etc., obtained, at the office of the borough engineer, on deposit of 10s. at the town clerk's office. Tenders, endorsed "Farnaby Road," must be delivered by 3 p.m. on Oct. 27, to Fred H. Norman, town clerk, municipal offices, Bromley, Kent.

Oct. 27. WEALDSTONE.—Supply of 400 tons of granite, broken to 2 in. gauge, and 40 tons of granite chippings, the whole to be delivered in trucks as directed at Harrow and Wealdstone Station (L. and N.W. Railway), for the U.D.C. Samples of material to be supplied must be forwarded to Herbert Walker, C.E., council's surveyor, Wealdstone. The contractor will be required to enter into the usual contract for the due performance of the tender. Sealed tenders, endorsed "Granite," to be sent by 7 p.m. on Oct. 27, to R. J. Bryant, clerk, council offices, Wealdstone.

Oct. 27. YARDLEY.—Masons', paviors', surface water drainers' and road widening, kerbing, channelling, and paving works, for a period from 1st Nov., 1908, to 31st Mar., 1909, for the R.D.C. Specification, conditions of contract, schedules, and forms of tender may be obtained on application to Arthur W. Smith, engineer and surveyor to the council, Council House, Sparkhill, near Birmingham, between ten and one and three and five (Saturdays ten and one), on deposit of three guineas to the clerk. Sealed tenders, addressed "The Yardley Rural District Council," and endorsed "Pavior's and Drainers' Works," to be delivered by noon on Oct. 27, to Francis Ladbury Thompson, clerk to the council, Council House, Sparkill. The contractor shall give preference to workmen resident in Yardley. Fair wages clause.

Oct. 27. GREAT YARDLEY. — Making up Knowle Road, Greet, within the district, under the Private Street Works Act, 1892, for the R.D.C. Plans, sections, specification, and conditions of contract of the proposed works can be seen, and bill of quantities and form of tender obtained on application to Arthur W. Smith, engineer and surveyor to the council, council house, Sparkill, near Birmingham, between 10 and 1 and 3 and 5 (Saturdays, 10 and 1), on deposit of one guinea to the clerk. The contractor shall give preference to workmen resident in Yardley. Sealed tenders on the prescribed form, addressed "The Yardley Rural District Council," and endorsed "Private Street Works," to be delivered by noon on Oct. 27, to Francis Ladbury Thompson, clerk to the council, Council House, Sparkhill. Fair wages clause.

Nov. 3. BRENTFORD.—Supply and delivery of 1,500 tons of best hard Guernsey granite spalls for the union guardians. Forms of tender may be obtained upon application, and tenders must reach William Stephens, clerk to the guardians, union offices, Isleworth, W., before four p.m. Nov. 3.

Nov. 9. STEYNING (Sussex).—Supplying 250 tons of broken granite or basalt, and 50 tons of chippings, to be delivered at the Aldrington Basin, near Brighton, or to Hove railway station, before February 1, 1909, for the East R.D.C. Forms of tender, giving full particulars of the materials required, can be obtained on application to the surveyor of the council, G. W. Warr, town hall, Southwick. Tenders must be delivered by Nov. 9, to Arthur Flowers, solicitor and clerk to the council, council offices, New Shoreham, Sussex.

No date. MAINDEE (Newport).—Formation of new roads, sewers, etc., on the Maindee Estate, Newport, for the directors of the Maindee Estate Company, Limited. Contractors desirous of tendering are requestetd to send their names to Henry Budgen, F.R.I.B.A., 95, St. Mary Street, Cardiff, with deposit cheque for £2 2s.

MISCELLANEOUS.

Oct. 23. BATLEY.—Making, painting, and fixing twelve "honours' boards," in the various schools in the borough for the education committee. Persons desirous of tendering may obtain further information from G. R. H. Danby, secretary and director, Education offices, Batley.

Oct. 24. HUDDERSFIELD.—Cleaning, papering, and painting at thirteen dwelling-houses, situate in East Parade and Alfred Street for the watch committee of the Corporation. Specifications, etc., may be obtained on application to the chief constable, at the Central Police Station.

Oct. 26. CHISLEHURST. — Erection of a fence along a new road. Erection of an iron fence to enclose the cemetery and depot land. Erection of an oak park fence, all for the U.D.C. Forms of tender, with a copy of the specification, can be obtained of the council's surveyor, at Hampden House, Station Road, Sidcup, on deposit of £2 2s., in respect of each contract. Plans, sections, and conditions of contract may also be seen at the surveyor's office. Tenders, sealed and endorsed "Tender for———," as the case may be, must be delivered by 4 p.m. on Oct. 26, to H. E. Knight, clerk to the council, council offices, Chislehurst. (See also "Plumbing and Sanitary.")

Oct. 27. POOLE.—Alterations to the larder at the workhouse, for the union guardians. Particulars to be obtained on application to the master at the workhouse, Longfleet, Poole. Tenders to be delivered by Oct. 27, to P. E. L. Budge, clerk.

No date. ABERLOUR.—Erection of 2,000 yds., or thereby, of fencing in parish of Aberlour. Persons desirous of tendering, should apply to J. S. Thomson, Factor, Keith.

Appointments Wanted.

The charge for Advertisements under this heading 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 10 o'clock on Tuesday morning.

Advertisements received on Tuesday morning will be found on page xxviii.

ARCHITECTS.—GOOD CLASSIC DETAILS. Architect's Assistant with 10 years' thorough experience in good offices on important classic and renaissance work, disengaged. Give part evenings to competition work; age 28; salary £2 15s.—Apply to W. H. Garwood, 32, Marine Parade, South Lowestoft. 4638

ADVERTISER, disengaged, holds Royal Sanitary Institute diploma, London and Provincial experience; six months as Clerk of Works, expert surveyor and leveller; plans, specifications; superintendence; quantities, etc.—Box 4649, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant seeks engagement; has had nine years' experience in good offices (London and the provinces); just completing engagement with City firm; excellent testimonials; moderate salary.—Box 4636, BUILDERS' JOURNAL Office.

ARCHITECT'S junior assistant (21), 5 years' church and domestic experience in busy provincial office; surveying and levelling; excellent references; moderate salary.— Box 4645, BUILDERS' JOURNAL Office.

ASSISTANT (20), builder's or surveyor's, 4 years with quantity surveyor, office routine, abstracting, billing, construction, land surveying, levelling, plans, tracings.—Henry Priddle, 4, Sumatra Road, West Hampstead. 4653

ARCHITECT and surveyor's assistant desires engagement, 15 years' experience; good draughtsman, colourist, etc., working drawings, details, specifications, surveying, levelling, and general routine; moderate salary; excellent references.—A. R., 1, Ivy Villas, Cheam, Surrey. 4557

ARCHITECT's Assistant (21) sees re-engagement (abroad if required); 5 years' all-round experience, ecclesiastical, domestic and public buildings; prepare working and detail drawings from rough sketches, surveying, levelling, etc.; P.R.I.B.A., honours in construction, etc.—Box 4647, BUILDERS' JOURNAL Office.

ARCHITECT'S junior assistant, ten years' varied London experience, references, 35s., or by arrangement; churches, domestic alterations, measuring; London, Provinces.—Dicken, 8, Westbury Road, Ealing. 4650

ARCHITECTURAL Improver, or junior assistant (21), excellent knowledge in good design, very neat and clever draughtsman; assist quantities, surveying, perspectives; moderate salary; specimens.—Box 4635, BUILDERS' JOURNAL Office.

ASSISTANT, A.R.I.B.A. (29), thirteen years' London experience, working drawings, perspectives, specifications, supervision; office work; well up in management; salary 2 guineas; London preferred.—Apply Box 4622, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's managing assistant, A.R.I.B.A., desires engagement at home or abroad. Twenty years' experience. Good testimonials and references.—C. A. C. Springfield, 31a, Leyland Road, Lee, S.E. 4542

ARCHITECT'S Assistant, well recommended, 14 years' good all-round experience; practical, working and detail drawings, quantities, specifications, supervision; salary 2½ guineas. — Box 4536, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's junior assistant desires engagement; probationer R.I.B.A.; good draughtsman; 4½ yrs.' general exp; moderate salary.—F. G. C., 46, Franklin Road, Gillingham, Kent. 4641

ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant (23), over 7 years' London and Provincial experience; excellent references. Inter.R.I.B.A. Exam.—H. J. Wilson, 17, Clifton Road, Crouch End, N. 4612

ARCHITECT'S and Surveyor's Assistant desires change; 6 years' varied general experience; assist quantities, good refs.—Box 4617, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, 7 years' experience, desires engagement in London or provinces; designs, working drawings, details, etc.; excellent references; moderate salary. — Apply Box 4548, BUILDERS' JOURNAL Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade. —Apply Box 4585, BUILDERS' JOURNAL Office.

BUILDER'S clerk, used to double entry, dissecting time sheets, etc.; good general experience; draughtsman; within 60 miles radius.—Henry, 4, Plimsoll Road, Finsbury Park, N. 4493

BUILDER'S or Architect's Assistant (24), seeks re-engagement; drawing, typewriting, shorthand, correspondence, accounts, and general office routine; also assist in quantities; 9 years' references; moderate salary.—Apply Box 4626, BUILDERS' JOURNAL Office.

BUILDER'S Clerk and assistant (20), seeks engagement, general experience, book-keeping, time sheets, plans, etc.; good references, and moderate wages.—Apply Box 4555, BUILDERS' JOURNAL Office.

BUILDER'S Assistant desires situation. Sixteen years' experience in office routine, estimating, measuring, accounts, etc. Also experienced in outdoor management. Moderate salary.—W. P., 65, Leicester Road, East Finchley. 4569

BUILDER'S and decorator's clerk seeks situation, well up in all trades; ten years' experience; age 26; Midlands preferred; wages moderate.—Apply Box 4599, BUILDERS' JOURNAL Office.

BUILDER'S (25) confidential assistant desires engagement; 5 yrs.' training, workshop and building works; 8 yrs.' office management; shorthand-typist, correspondence, book-keeping, estimating, supervision; highest refs.—Box 4639, BUILDERS' JOURNAL Office.

BUILDER'S Clerk (24), seeks situation; 7½ years' London experience. P.C. jobbing, wages; schedule work and assist estimates; good refs.—B., 11, Belitha Villas, Barnsbury, N. 4608

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, BUILDERS' JOURNAL Office.

CARPENTER and joiner, work wanted, piecework; any quantity; labour only; good references.—W., 14, Gorrings Park Avenue, Mitcham, Surrey. 4526

CARPENTER and joiner wants work; bench fixing, alteration, or jobbing. Could take charge of general work. Life abstainer. Good references. Age 32. Very energetic.—Pearson, 53, Hartham Road, Isleworth, W. 4471

CARPENTER and joiner wants job; all-round hand, used to jobbing shop. Eight years' references last job. Wages moderate.—Cooke, 10, Cumberland Road, Walthamstow. 4652

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER wants post, London or Provinces; 12 years' experience, calculations, quantities, designs, detail drawings, bridges, structural steel-work, prepared, reinforced concrete.—Box 4579, BUILDERS' JOURNAL Office.

FOREMAN Painter (working); life experience; good colourman; do any class of work; manage any number of men; life abstainer; non-smoker; good references.—T., 39, Northbrook Road, Croydon, Surrey. 4625

GENERAL Foreman, just completed West-end job; experienced and capable.—Reply J. L., 20, Wellington Avenue, Lower Edmonton. 4618

GENERAL Foreman shortly disengaged, just finishing large job; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable; first-class testimonials.—W. R., New Council Schools, Biddulph Moor, Congleton. 4621

IMPROVER, surveyor's or builder's office (21), technical student, four years' practical knowledge, supervise, neat draughtsman; abstainer; good references.—Marfleet, Totland Bay, I.W. 4581

IMPROVER, brass-finisher, requires situation; 3 years' previous experience with well-known London firm; excellent references. Apply Box 4550 BUILDERS' JOURNAL Office.

IMPROVER desires situation as junior assistant; 4 years' experience; good draughtsman; certificates building construction, plot from sketches, etc.; shorthand (100), and typewriting; good testimonials; energetic, disengaged Oct. 26th. — D. Z., 153, High Street, Shoreditch, London, E.C. 4642

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

LATE Pupil (22), four years' experience, requires berth as surveyor's or architect's assistant, drawing, surveying, levelling, qualified Stage III., Building Construction and Architecture.—J. W. D., Laurelwood, Hare Lane, Godalming. 4582

MANAGER of masonry works or general foreman, well up in management of men and machinery, London and country experience; practical in all trades. — Thomas, 38, Napier Road, Tottenham. 4602

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER, experienced (registered), gas and hot water fitter, new jobbing, sanitary work, good lead layer, desires permanency; excellent references; town or country. — Box 4556, BUILDERS' JOURNAL Office.

QUANTITY Surveyor, Member Q.S.A., 32, eight years' practical building experience, eight years' office practice, desires post as senior or managing assistant.—Box 4610, BUILDERS' JOURNAL Office.

SLATE MERCHANTS AND BUILDERS' MERchants.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STUDENT R.I.B.A., 23, well trained man, desires situation as assistant; 1½ guineas. — Box 4607, BUILDERS' JOURNAL Office.

TRAVELLER.—Architect desires post as representative to good firm. — Address Box 4497, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

Appointments Vacant.

APPLICATIONS for architectural situations written promptly in striking form, that will exhibit applicants' capabilities and experience to best advantage, by technical man. — Box 4616, BUILDERS' JOURNAL Office.

FOREMAN Painter.—Wanted by London contractor a thoroughly competent and energetic man, to take entire charge of painters; must be accustomed to dealing with a large number of men on scattered jobs.—Apply, giving at least two references, and full particulars to A. Z., Box 4629, BUILDERS' JOURNAL Office.

NORTHAMPTONSHIRE COUNTY COUNCIL

EDUCATION COMMITTEE.

A Draughtsman Clerk will shortly be appointed. Salary £60 rising by £5 annual increments to £80 per annum; experience in a similar capacity in an architect's or surveyor's office is an essential qualification. Applications must be received not later than Saturday, 24th October, 1908. Statement of duties and form of application may be obtained from the Secretary, County Education Offices, Northampton. 4628

Offices to Let.

LONDON Architect, with large suite of fine offices, will let portion, including attendance, lighting warming, etc., rent from 25 to 50 guineas; occasional services sometimes required.—Box 4637, BUILDERS' JOURNAL Office.

EXCEPTIONAL opportunity occurs for first-class Provincial firm connected with the building trade to establish London branch in very fine building in unsurpassed central position; could arrange valuable introductions.—Address in confidence, Architect, Box 4646, BUILDERS' JOURNAL Office.

October 28, 1908 Volume 28, No. 716.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The Conscientiousness of Councils.

Everybody has admired the superb conscientiousness of the village constable who arrested himself in the act of obstructing himself in the execution of his duty; and it is understood to be a comparatively common occurrence for a coroner to fine himself smartly, or at least to let himself off with a severe reprimand, when he arrives unduly late at an inquest. Equally familiar is the dilemma of a still rather famous Lord Chancellor who (in comic opera) contemplates the possibility of being compelled to commit himself for contempt of his own court. Hardly less farcical is the psychical problem suggested by a case that came before the magistrate at the South-Western police-court the other day, when, in effect, the London County Council summoned itself for not giving itself notice of its own intention to build. A matter of such gravity and complexity was not to be settled offhand. The magistrate went home to think over it. Less bewildering, but hardly less entertaining, is the reported discussion of by-laws at a recent meeting of the Thames Ditton District Council. The chairman moved that certain of the Council's stables should be made to conform to the Council's by-laws. He was supported by a member, who pointed out, with as much magnanimity as acumen, that "it was inconsistent to compel other people to comply with the by-laws when the Council itself failed to do so.' Then uprose a councillor who "thought the chairman was putting the cart before the horse, inasmuch as it had been proposed to alter the by-laws so that such buildings as those under discussion would conform to them." This equine argument, being as forcible as original, so strongly impressed the chairman, that he at once withdrew his motion, contenting himself with the mild protest that "they were not necessarily going to amend the by-laws so that their buildings would conform to them." Not necessarily!—but what a contrast in tone and attitude between the two councils!—the one practising the most rigorous austerities, the other disposed to be very kind and tender to itself. The really rational course seems to lie somewhere near the midway of these two extremes of severity and lenity; but how many builders (of sorts) will sigh regretfully at the manifest impossibility of establishing, in these iron times, and outside the confines of urbane Thames Ditton, the comfortable—and not essentially heterodox—doctrine, that when the building and the by-law are in conflict, it is the by-law that should be altered.

Against Works Departments.

Simultaneously with futile attempts at recent meetings of the London County Council to fan into flame the embers of the virtually extinct works department, Mr. J. Davidson, secretary of the Yorkshire Centre of the Federation of Building Trades Employers, delivered a smashing blow at the general system and practice of municipal trading. His paper, read before a meeting of the organisation with which he is connected, contains, however, neither rhetoric nor invective; its crushing weight is made up of solid facts and sound deductions, which are all the more impressive from the temperate and courteous manner in which they are presented. He shows, by a formidable array of convincing examples, that municipal trading, however specious in theory, constantly breaks down hopelessly in practice, and that the municipal works department is essentially uneconomical to the ratepayer, unfair to the contractor, and demoralising to the workman. The paper is, in our estimation, of considerable value and importance as a clear, concise, and cogent statement of the case against municipal works departments. We have therefore much pleasure in reproducing it in another part of the present issue.

"Beyond the Dreams of Avarice."

The Llandyssul Rural District Council has, so we learn from the "Welsh Gazette," been having trouble with its building surveyor. Llandyssul, we gather, is a peaceful agricultural district in Carmarthenshire, and we are glad to have the information. We plead guilty to previous ignorance of this interesting place, and its still more interesting Council. But now that we can claim cognisance of Llandyssul, through the medium of our excellent contemporary, we hasten to condole with the local legislators in their unmerited difficulties. For the peaceful vale of Llandyssul—our information does not mention a vale, but it sounds poetic—is rent in twain. The placid course of local government has been disturbed; the dignity of elected rulers has received a shock. The surveyor resigned! The reason for this unprecedented step is not vouchsafed to us. Perhaps he was bored by the Council; perhaps their relations had become strained and blasé. There are times when even the best of friends must part. Never would we venture to suggest that he could become dissatisfied with a post that carried with it the munificent salary of £5 a year. And yet there is a hint that such might be, nay! really was, the case. Fearful that the breaking of the old ties might "cause unpleasantness between him and the Council," the late surveyor made a still later repentance. "As several members had promised to support his application for an increase of salary at the end of the (three years') term," he decided to apply for reappointment. But the wounded feelings of the Llandyssul Rural Council were not to be thus appeased. They had three other candidates in the running; and had, moreover, to procure them, incurred the expense of an advertisement in our contemporary. As one of the councillors aptly remarked: "They had been put to all this bother of appointing by Mr. Bowen." So they elected one of the other candidates by six votes to four. "The manner in which Mr. Bowen had sent in his resignation," as another councillor stated, "was enough for him to vote against him." Poor Mr. Bowen! By one small act of temerity to have forfeited the affection of the Llandyssul Rural Council—and a salary of £5 a year. Truly, if we could foresee the results of our actions, how slow should we be, sometimes, to act. Meanwhile his successor reigns in his stead. And deep peace broods once more over the vale—there must be a vale—of Llandyssul.

Sheffield's Impossible By-laws.

It has been stated, perhaps rhetorically both as to the time and the judgment, that a committee of Sheffield Corporation have spent seven years in producing a code of by-laws of which several are "impracticable and impossible." It would seem as if too protracted a brooding had addled the eggs. The general opinion of them is, according to "a Sheffield architect of the highest standing," "that these by-laws have been made as stringent as it was possible to make them. It almost looks as if someone had collected copies of the by-laws from all over the kingdom and culled from them the most drastic regulations they could discover." With this opinion the associated master builders of the city are apparently in substantial agreement, for they have lodged a strong protest to the effect that the proposed new by-laws would, without conducing in any way to public health or public benefit, greatly increase the cost

of building, and thus "most unnecessarily cripple an industry which has suffered, and is still suffering, from severe depression." The proposed by-laws, it is asserted, would render impossible the erection of very cheap dwellings, and would strongly tend to discourage the alteration or rebuilding of business premises. Some of the points to which objection has been raised are (1) unnecessary thickness of walls both in commercial and domestic buildings; (2) unnecessary strength of timbers; (3) inadequate provision for temporary buildings—in many cases temporary buildings would not be allowed at all; (4) insufficient distinction between roads intended for main thoroughfares and those for back streets; (5) impracticable regulations as to street line for new buildings; (6) no provision for compensation where properties are set back; (7) rule as to area at back of buildings for the ventilation of water-closets so stringent that it will seriously affect town buildings. The owner of a large block of buildings in a narrow street has declared that insistence on the proposed new building line would rob him of 15ft. of depth, and he adds that it would not greatly astonish him to find that in some instances the building would be entirely eliminated. This opinion is hardly more grotesque than the by-laws that have provoked it. The committee have no doubt acted in good faith, and with the best intentions. But while it is impossible to withhold sympathy from their aspirations for the soundness and salubrity of their city, it is nevertheless a duty to protest against the employment of means towards that end that have been shown to be harsh, arbitrary, and unnecessary. The new by-laws have been referred back, in spite of the illogical contention that, having been seven years in incubation, they should now be rushed through without further consideration. Why this belated haste? That the (so far) most effectual protest has been made by the associated master builders of the city is one more striking proof of the benefits of organisation. But why were not these by-laws submitted to them in draft? Clearly the expert advice of such a body is well worth having; and it is surely better to have it in advance of the scandal.

THE HOLBORN NEW TOWN HALL.

This building has been erected at the junction of High Holborn and Broad Street, adjoining the Holborn Public Library, with which it forms one building when seen from the street. Although the library heights are followed in the elevations, the old offices of the Borough Council are retained intact in the new plan, and have been used by them throughout the execution of the work, without the necessity of their finding temporary office premises. Internally each floor has a large circular hall adjoining the main staircase, and in which a passenger lift is provided to all floors. The Council Chamber (see page 331) on the second floor, is in a quiet position, free from the noise of all traffic. A gallery for the public is provided, entered by a separate staircase from the street. On the same level as the council chamber are the committee rooms, mayor's parlour, and ante-room. Immediately under the council chamber is the court room, in which the magistrates will

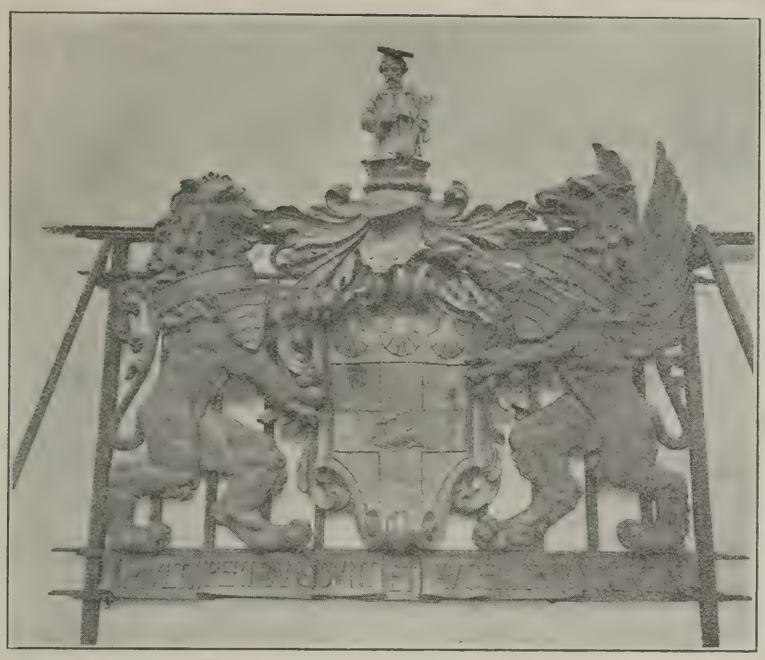


Photol *W. Ellis*

THE HOLBORN NEW TOWN HALL: GENERAL VIEW OF THE ELEVATION TO HOLBORN.

(Note.—The bay on the left is old.

WARWICK AND HALL, ARCHITECTS.



THE HOLBORN BOROUGH COAT OF ARMS, EXECUTED IN CAST-IRON BY THE BROMSGROVE GUILD.

hear licensing and other business, and where rating assessment will be conducted. Enquiry and waiting rooms are planned close to the court.

The remainder of the building is occupied by the borough officials, whose departments are in each case self-contained. Service lifts for food and books are provided from the housekeeper's rooms on the fourth floor to the strong rooms in the basement, with a servery on each intermediate floor.

The floors of the entrance and other halls are laid by Diespeker, Ltd., in their patent veined marbles and marble granite, and the staircase has been constructed in the same material, the dado being carried out in the firm's veined marble, verd antico, and Arnialto panels. The service stairs and landings of artificial stone, the main staircase structure of ferro-concrete, and the whole of the granolithic paving, have been executed by F. Bradford and Co. Bratt, Colbran and Co. supplied their heaped fire grates; R. E. Pearse and Co., Ltd., the metal casements; and J. W. Singer and Sons, Ltd., of Frome, the whole of the electric light fittings. The lift was made by Messrs. R. Waygood and Co., Ltd., the lift enclosure being the work of The Bromsgrove Guild, who are also responsible for the entrance gates and the wrought-iron balcony on the front, the centrepiece being the borough coat of arms, which we illustrate, executed in cast-iron, and a rather remarkable piece of work. Shanks and Co. supplied the sanitary fittings, and Charles Smith, Sons and Co., Ltd., the door locks and furniture. The stone carving and the panelling and seating in the council chamber are the work of H. H. Martyn and Co., Ltd., of Cheltenham. The building contract was entrusted to John Greenwood, Ltd., the architects being Warwick and Hall, of South Square, Grays Inn.

It will be noted that, in the design of the front elevation, the architects have endeavoured to preserve the general massing of the older library building, to which the new structure is in the nature of an addition. The detail, however, differs considerably in character from that on the library building.

The building was formally opened on October 13th, 1908, by the Lord Mayor of London, Sir John Bell. The Bishop of London took a prominent part in the ceremony, and the Mayor, Lieut.-Col. Lacy W. Ridge, entertained the guests.

ARCHITECTURAL SOCIETIES.

R.I.B.A.

The first ordinary general meeting of the session 1908-09 will be held at 9, Conduit Street, on Monday, November 2nd, at 8 p.m. Mr. T. E. Collcutt, past presi- subscribers, formally present to the Institute the portrait of Mr. John Belcher, A.R.A., president 1904-06, painted by Frank Dicksee, R.A., hon. Associate R.I.B.A. Mr. Ernest George will deliver his presidential address. The following gentlemen are nominated for election at this meeting:—

AS FELLOWS.

Allen, G. P., London; Barnard, L. W., Cheltenham; Bidwell, R. A. J., Singapore; Cotman, G., Norwich; Heathcote, C. H., Manchester and London; Heathcote, E. G., Manchester and London; Martin, F. W., Birmingham.

AS ASSOCIATES.

Baird, W., London; Bromhead, F. H., Letchworth, Burgoine, S., London; Burlingham, A. C., Evesham; Cable, J. S., London; Clark, C. W., London; Colthuret, W. B., Taunton; Crampton, A., Southport; Ditchburn, D. W., Leytonstone, Essex; Dixon, R., Birmingham; Dyke, D. N., London; Edwards, A. C. M., Byfleet, Surrey; Emerson, H. V. M., London; Epps, W. M., London; Farrow, G. R., London; Forsyth, C., Glasgow; Gravenor, H. J., Montreal, Canada; Green, E. R., Sydney, N.S.W.; Holt, H. G., London; Jefferies, H. G., London; Jeffrey, J. McNee, London; Langman, F. W., London; Loveluck, E., Bridgend; Meakin, F., Chellaston, near Derby; Milne, D., London; Mitchell, W. H., Sale; Osborne, F. J., Birmingham; Phipp, R. A. H., Manchester; Sayner, J. H., London; Scott, J. M., London; Smithers, A., London; Stelfox, A. W., Belfast; Taylor, S. P., Harrow; Truelove, J. R., London.

The Society of Architects.

At the annual general meeting, on Thursday, October 15th, 1908, the follow-



Photo: [C. Ellis.

THE HOLBORN NEW TOWN HALL: PRINCIPAL CORRIDOR.
WARWICK & HALL, ARCHITECTS.

ing officers and members of the Council were elected for the year 1908-9:—

PRESIDENT.

Bond, Geo. E., J.P., Rochester.

VICE-PRESIDENTS.

James, Cholton, F.R.I.B.A., Cardiff; Tubbs, Percy B., F.R.I.B.A., London.

HONORARY SECRETARY.

Marsland, Ellis, London.

HONORARY TREASURER.

Tucker, B. R., London.

HONORARY LIBRARIAN.

Mead, C. H., M.R.San.Inst., London.

COUNCIL.

Adams, Henry, M.Inst.C.E., London; Bare, R. Geo., London; Bartlett, James, London; Butler, R. M., F.R.I.B.A., Dublin; Corby, J. B., F.S.I., Stamford; Davies, R. Cecil, Chester; Emerson, H. V. Milnes, A.R.I.B.A., London; Hawker, H. E., F.S.I., Bournemouth; Jack, R. A., London; Leest, E. M., J.P., Devonport; Leslie, Col. F. S., R.E., Woolwich; Matthews, H. W., Bath; Middleton, G. A. T., A.R.I.B.A., London; Monson, E. C. P., F.R.I.B.A., London; Murgatroyd, A. J., Manchester; Partridge, E. J., F.S.I., Richmond; Sadgrove, E. J., F.R.I.B.A., London; Trew, J. Fletcher, Gloucester.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION
Oct. 31	BURY. NEW SECONDARY SCHOOL for the Education Committee. Premiums of £50, £25, and £10. Particulars and site plan from Robert Wilkinson, Director of Education, 8, Bank Street, Bury. Deposit £1 1s.
Oct. 31	*ROMFORD. COUNTY HIGH SCHOOL FOR GIRLS. Applications for Conditions to D. T. Williams, 71, South Street, Romford, Essex, to be made by or before August 24th, accompanied by deposit of five guineas, of which sum five pounds will be returned on receipt of bona fide design.
Nov. 1	CARDIFF. COUNTY HALL AND OFFICES. Particulars and site plan from T. Mansel Franklen, Clerk, Glamorgan County Council Offices, Cardiff.
Nov. 9	*WHITLEY AND MONKSEATON URBAN DISTRICT COUNCIL.—Public Shelter to seat 1,000, and provide promenade accommodation for another 400, at a cost of £1,200. Premium of £20 to merge if successful design is carried out. The Council (with such advice as they may decide to obtain) will be sole arbiters. Particulars from J. P. Telford, Acting Surveyor to Council, may be obtained at his Office, Council Buildings, Whitley Bay, any week-day (except Saturday) between the hours of 10 and 11 a.m., and 4 and 5 p.m. Design, plan and estimate, in sealed covers, to be sent to the Clerk to the Council, Council Buildings, Whitley Bay.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL. Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall. Whitehaven. No statement as to premiums or deposit.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street, Strand, London.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50 £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.

** These competitions have been unfavourably reported upon by Correspondents.*

The Reformation Memorial at Geneva.

The result of the international competition for the above has now been announced. The jury consisted of Professor Gull, of Zurich, who presided; MM. A. Bartholomé, sculptor; Ch. Girault, Membre de l'Institut de France; Professor Bruno Schmitz, George J. Frampton, R.A. (appointed by the President R.I.B.A.), Alfred Cartier, Horace de Saussure, and Lucien Gautier. MM. Charles Borgeaud and Victor van Berchem were delegated by the promoters to assist in a consultative capacity. Seventy-one designs had been sent in. Five of these were received after the time fixed by the conditions, but the jury decided to admit them, reserving to themselves the right to consider more fully the question of their admission should any of them find place among the designs set aside for final selection. The first prize (10,000 francs) was awarded to No. 52, under the motto "Le Mur." The jury were unanimous that this design offers the best solution architecturally, possessing as it does that character of dignity and severity which the memorial should present, and by reason also of its adaptability to the site given and the distribution of the sculpture. The models of the figures, however, lacked the fine sculptural qualities present in some of the other designs, notably Nos. 41, 26, and 18, and the jury advise arrangements being made with the authors of these designs in order that the best sculpture the competition has called forth may be available for the monument.

The authors of No. 52, the selected design, are MM. Monod and Laverrière, architects (Lausanne); Taillens and Dubois, architects (Lausanne); Reymond, sculptor (Paris).

The second prize (6,000 francs) went to design No. 41, whose architectural, and especially sculptural, qualities were commended; the authors are MM. H. P. Nénot, architect; Paul Landowski, sculptor; and Henri Bouchard, sculptor, all of Paris.

Prizes of 2,000 francs were awarded to design No. 1, Guido Bianconi, sculptor (Turin); No. 2, Paul Becher, sculptor (Berlin); No. 3, Edmond Fatio, architect (Geneva), aided by Adolphe Thurs, architect (Paris), and A. Seysses, sculptor (Paris); No. 18, H. Janos, sculptor (Budapest); No. 26, Charles Plumet, architect (Cirey, France), and De Niederhausen Rodo, sculptor (Berne); No. 27, P. Heurtier, architect (Paris), collaborator G. Thorimbert, and F. Sicard, sculptor (Paris), collaborator L. Baralis; No. 32, Jean Fiault, architect, and André Vermare, sculptor, both of Paris.

New Parish Council Chambers, Bellshill.—At a meeting of the committee of Bothwell Parish Council, Mr. John G. Morton, 121, St. Vincent Street, Glasgow, was appointed architect for the work, his design having been placed first by the assessor, Mr. Ninian MacWhannell, architect, Glasgow. There were 29 designs submitted, and the following is the list of the other commended designs placed in order of merit by the assessor:—Crawford and Sutherland, Uddingston; W. Baird, Bellshill; R. Ewan, Glasgow; A. Mitchell, Coatbridge; J. Boyd, Glasgow. The buildings are estimated to cost about £2,000.

The Cornwall County Hall Competition we refer to in "Architects and Public Bodies."

Views and Reviews.

"The Decorator."

The sixth yearly volume of the "Decorator" deals authoritatively and luminously with every phase of modern practical decoration. The most casual glance through its pages reveals the value and importance, technically, artistically, commercially, and, it may be added, socially—for decorators are here revealed as a very clubbable fraternity, with an amiable weakness for flocking to conventions and getting themselves photographed in groups—of this excellent periodical to the art-craftsman to whose service it is dedicated. It is no doubt highly educative, and, from cover to cover, it is decidedly interesting from many points of view.

"The Decorator": An Illustrated Monthly Magazine for the House Painting, Decorating, and Kindred Trades. Edited by Arthur Seymour Jennings. Volume VI., July, 1907, to June, 1908. London: The Trade Papers Publishing Co., Ltd., 36, Birkbeck Bank Chambers, High Holborn, London, W.C. Price 7s. 6d.

THE GOLDEN AGE OF HELLENIC ART.

In art, as in other intellectual pursuits, the Greeks had the wisdom to learn from nations whose civilisation was older and more developed than their own. The first Greek artists thus borrowed largely from the well-defined traditional styles exemplified in the sculpture and architecture of the Egyptians, and also, although to a far less extent, from the rich decorative art of the Babylonians and Assyrians. Mere slavish imitation, however, was foreign to Greek nature, and the architectural models bequeathed to them by the founders of these earlier civilisations were by no means adopted in their entirety. Each ornament, each separate part of a structure, became in the hands of the Hellenic artist the centre of a fresh conception which was embodied in a type of design that was purely *Greek*. In like manner sculptors and painters dealt with the hitherto universally accepted conventional rendering of the human form, and in this they received considerable assistance from the customs of their country. The gymnasium itself was a school of art. Here the nude form was visible at all times in marvellous perfection and in every pose, and thus, ever present to the eye, it was studied and understood as perhaps it has never been since either studied or understood to quite the same extent. The Greek sculptor was thus able to obtain that deep and comprehensive grasp of nature which enabled him to mould many of his presentments of humanity in that living form which has caused his work to remain for countless ages a perennial subject of wonder and delight.

As art was thus fostered by nature, so nature, in turn, was sustained by art. But it was not until after the conclusion of the Persian wars that the development of Greek art received its mightiest impulse. Before that time it had been somewhat uncouth, more or less traditional in treatment, and its period of perfection did not really set in until the Athenians obtained supremacy among the states, and their city thus became the centre of the intellectual activity of the nation.

Then indeed Greek sculptors met and overcame the difficulties of representing human attitudes, costumes, and features in a natural and realistic manner, and

their masterly groupings of men and horses, either in processions or contests, created a subtle illusion of life and movement hitherto almost unknown in any epoch of art.

Pericles and Phidias.

The best period of Greek art commences with the advent to supreme influence of Pericles (B.C. 461), whose policy was based upon an endeavour to realise two great objects, namely, the formation of a continental empire under the supremacy of Athens, and the improvement of the city itself, which he destined to become the chief home of Hellenic literature and art. Although Pericles failed to achieve his former object, the latter succeeded beyond his most sanguine expectations, and under his auspices Athens became the centre to which artists and men of learning instinctively turned. All that money could command, and genius and learning could bestow, was lavished upon Athens. A splendid harbour was constructed, and many magnificent buildings were erected in the city, and the names of Phidias, Myron, Polycletus, Ictinus, Mnesicles, and other artists who laboured to adorn their city will ever be associated with this golden age of Greek art.

It is understood that Phidias had control of the works suggested by Pericles and his advisers for the adornment of the city, and although various architects were engaged, yet it was he who added the crowning glory of the buildings, represented by the beautiful statuary and carvings with which they were enriched. The much-admired figures in the friezes, pediments and metopes of the Parthenon were executed by Phidias, or by those of his school who were working under him, and the colossal figure of Athena Promachos—the bronze statue which towered above the Parthenon—was also due to his prolific genius.

Of other well-known buildings at Athens the Propylæa, at the entrance of the Acropolis, was not commenced until towards the end of the period with which we are dealing, but the Erechtheium, the splendid double temple which took its name from the mythical King Erechtheus, dates from the time of Pericles, and to the same age belong the Odeum, the temple of Athena Nike, and the Theseum.

The streets and colonnades of Athens were adorned with Hermae, and with monuments of every conceivable kind and form. A whole street, that leading from the Dionysian theatre, hollowed out of the southern rock of the Acropolis, was filled with memorials erected to the men who had produced (or stage-managed) the plays which year by year were adjudged the best. One such memorial is still extant in the circular domed structure of Pentelic marble adorned with columns of the Corinthian order known as the Choragic Monument of Lysicrates.

Greek Painting.

The sister art of painting also contributed to the embellishment of the city, and although there are no means of comparing the art of the contemporary painter with that of the architect and sculptor of the time of Pericles, we know that the Theseum, the Propylæa, and the Temple of the Dioscuri were all adorned with paintings by Polygnotus and other artists, representative of episodes in Athenian history.

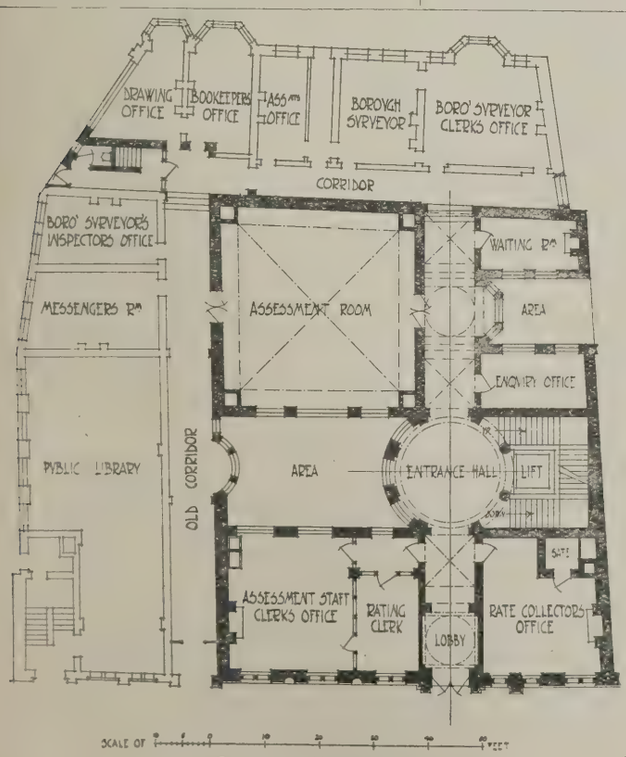
The Great Sculptors.

Of the sculptors of the epoch, the merit of having first presented the human form complete to its minutest detail, and absolutely correctly fashioned and proportioned, is said to belong to Polycletus, whose Doryphorus, long upheld as a brilliant example of the master's genius, was hence surnamed the *Canon*. The works of Myron are especially noted for their excellent representations of the human form in action, the well-known Discobolus being a typical example.

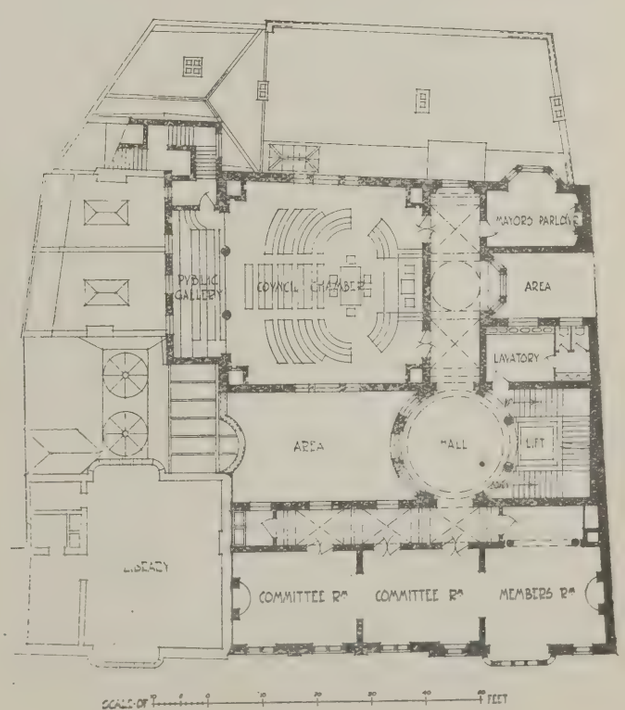
Owing chiefly to the universality of his genius, Phidias was deemed the mightiest of the many great sculptors of his time; and although his greatest triumph, the colossal statue of Zeus, wrought in ivory and gold, and placed in the Temple of Olympia in Elis, did not adorn the Acropolis at Athens, yet he was there represented by a large number of beautiful works. In fact, in most of the undertakings entered upon by Pericles with the view of enhancing the beauty and glory of his native city, the creative genius, if not the actual hand of Phidias, was ever active.

Although Athens excelled the other Greek states in the number and splendour of her artistic treasures, the progress and development of Hellenic art was not confined within the limits of the city. On the contrary, many of the states of Greece possessed examples of architecture and sculpture of very great excellence, such as, to give a single example, the celebrated Venus of the Louvre, which came from Melos. As a matter of fact, Greek artists were accustomed to work for any state that would employ them, and thus the Greek temples, more especially those that were the seats of Oracles, were often filled with the works of the greatest artists of the time, which were presented by devout worshippers.

It has been well said that constant association with noble thoughts and beautiful sights has the same effect upon the mind as residence in a healthy place and daily athletic exercises have upon the body, and there can be little doubt that great artistic and literary triumphs of the Greeks brought an intellectual distinction that was almost unique to the supremacy of Athens, although the pre-eminence of that city had originally been secured almost entirely by the strength of her naval power and the martial activity and patriotism of her citizens.



GROUND FLOOR PLAN



SECOND FLOOR PLAN

THE HOLBORN NEW TOWN HALL: PLANS. WARWICK & HALL, ARCHITECTS.

LATER LESSONS FROM VIENNA.

"A Splendidly Planned City."

At the opening of the sixty-first session of the Liverpool Architectural Society, recently, the newly elected president, Mr. T. E. Eccles, F.R.I.B.A., said that in considering the subject of his address, he thought he could not do better than give his impressions of the Congress at Vienna, which was held last spring, and at which he was present. The Congress was attended by leading men from the different nationalities to the number of 1,400, and the opening ceremony was held in the Chamber of Deputies in the Houses of Parliament. By some misunderstanding, England, Mr. Eccles regretted to say, was not represented among the principal delegates on the platform. M. Harmand drew attention to an important point of which he was astonished to find Englishmen—diplomatists as well as architects—were unaware, namely, "That the English laws of 1766 and 1862 conferred complete protection on the architect's work."

International Competitions.

The much-vexed question of International competitions was discussed, as well as such subjects as architectural copyright and the ownership of drawings, legal qualification and Government certification of architects, the protection of ancient monuments, and what steps can be taken to secure a greater regard for æsthetic construction in engineering works.

A "Baroque" Boom?

Of course the visitors' time was principally taken up with viewing the buildings and the city. One naturally is struck by the symmetrical lay-out of the city, and the means of access to the different parts from the principal thoroughfare, the Ringstrasse. Mr. Eccles was sure that he was not the only one who was immensely impressed by the beauty of the buildings in Vienna erected in the early part of the eighteenth century in the style known as Baroque, and he felt perfectly confident that after this visit of architects of the various nationalities, this style will have a very strong influence on future design. He referred especially to the Rathaus and the Palais Kinsky. Of characteristic buildings, Mr. Eccles said, his hearers had doubtless seen illustrations by Mr. Rickards in THE BUILDERS' JOURNAL. Also of this date are fine examples in the Singerstrasse. The gates leading to the Belvidere Palace, 1715-1725, were illustrated in THE BUILDERS' JOURNAL of June 24th. Of the Gothic period of the fourteenth and fifteenth centuries, the finest examples, Mr. Eccles thought, were the Cathedral Church of St. Stephen and the smaller one of our Lady on the Shore. The latter to him appeared a perfect gem, and full of good things.

Liverpool to Vie with Vienna.

Vienna is a splendidly planned city, and the municipality has under consideration further improvements in the laying-out of the streets and suburbs. This naturally leads one to hope for great things in the future development of our own cities from that admirable Bill which he hoped would become law next session, the "Town Planning Bill." Referring to the Liverpool Town Planning Bill, Mr. Eccles suggested that the idea of the Ringstrasse is being adapted to the requirements of Liverpool under very difficult circumstances. He thought it was hardly sufficiently recognised that Liverpool Corporation intend to make Liverpool a city second to none in this country, under this new Act which he hoped would soon become law. Of course the development of the old part of Liverpool is a matter of time and circumstance, but the Corporation are dealing with the New Liverpool outside this with no uncertain hand.

Rise of the "Ring" System.

One is bound to recognise, Mr. Eccles declared, the superior laying-out of cities like Vienna, Munich, Cologne, Frankfort, etc. How are they able in these foreign cities to deal with existing poor conditions and improve them? The following description will explain the method:—The earliest of the important European cities to adopt the "Ring" as a means of connecting the radial thoroughfares was Vienna; and in 1857, as a result of considerable popular agitation, the Emperor Francis Joseph issued a decree addressed to the Minister of the Interior requiring that "the enlargement of the Inner City of Vienna for the purpose of its suitable connection with the suburbs should be undertaken as speedily as possible."

The improvements dealt rather with the enlargement of the inner city, and with its connection with the suburbs, than with a remodelling of the district itself, which was then mainly occupied with the fortification and ditch and a wide space beyond. The fortification and ditch still surrounded the heart of the city, though the buildings had long grown beyond, and it was suggested that these should be removed, and at the same time adequate provision be made for a new opera-house, museums and galleries, and other of the more important public buildings. It was decided to open a competition of plans for the improvement, the jury to consist of a commission of officials who represented various interests. Before the final award was made, the plans had to be further submitted to a committee of specialists. Three prizes, of 2,000, 1,000, and 500 gold ducats, were to be awarded to the successful competitors. Eighty-five designs were submitted, and, though none of the premiated plans was literally carried out, many valuable suggestions were adopted, and set the standard for the final scheme. Encouraged by the success of the competition, the Municipality again inaugurated, in 1892, a competition for the remodelling of old Central Vienna, and invited architects and engineers from all parts of the world to submit plans. Profiting by their former experience, they did not hope to find amongst the competitors any one suitable complete design, and they therefore divided their prizes, giving two of 10,000 florins, three of 5,000 florins, and three of 3,000 florins. For "part designs which do not comprise the whole city, but consider only a few questions of the improvement, or means of communication," there were prizes of 3,000 florins and under; and, finally, prizes were awarded for plans that were good in parts, though not satisfactory as a whole. The jury was composed mainly of professors, and leading architects and engineers.

Architectural Advisors on Town Planning.

It appeared to the author that, broadly speaking, it would be of great value to our various large cities if the architectural advisors of the councils were permitted to see on the spot what was already done or was in contemplation in such cities as Vienna, and to enquire into the methods adopted by means of architectural competition to obtain the best schemes, even though these schemes took years to develop.

THE ARCHITECT AND THE STRUCTURAL ENGINEER.

(Contributed.)

Some remarks by Mr. W. Noble Twelvetrees, contained in his recent presidential address to the Civil and Mechanical Engineers' Society, suggest the danger, to architecture no less than to the architectural practitioner, which appears to be contingent on the steady growth of structural engineering. The society in question has long offered the privilege of membership to architects, because it has been recognised that they are often deeply interested in the solution of engineering problems, and that in their work there occasionally arise problems that demand a certain amount of engineering knowledge. Dealing appreciatively with the policy pursued in this direction by the Society, Mr. Twevetrees nevertheless stated it to be his opinion that, despite the encouragement given to the investigation of constructional science by the Royal Institute of British Architects, it would be found that in the erection of modern buildings the knowledge of architects would not carry them far enough, and they would have to invoke the aid of the engineer. There are doubtless instances, particularly in the erection of very large buildings in which the lighting, heating, or ventilation is a science in itself, where the assistance of the engineer is welcomed. But when we come to the question of the main construction of buildings, it cannot be too forcibly contended that this is as much the architect's work as is the actual designing of the plans or elevations. It must unfortunately be admitted that there are architects who, as regards their steelwork, put their trust in the small army of specialist draughtsmen and designers employed by each of the big steel manufacturing firms. But those architects who do not place too much reliance on extraneous aids of this description, who not only perforce accept, but also actually by their knowledge and experience are competent to undertake full responsibility for all constructional work, perform better service both to architecture and to their own profession. The fast increasing use of steel as the constructional skeleton in most commercial buildings, the rapid growth of the use of reinforced concrete, together with the strong probability that construction in steel and reinforced concrete will be by law allowed in the case of at least all London buildings before the expiration of twelve months—all such signs of the times render the determination of the architect's position with regard to what is usually termed structural engineering to be a matter of vital importance.

The derogation by architects of any responsibility for structural design might conceivably have a seriously adverse effect on the vital strength and vigour of modern architecture. An analysis of an architectural design may be concentrated on three points—first the plan, then the



Photo: *C. Ellis.*

THE HOLBORN NEW TOWN HALL: THE COUNCIL CHAMBER. WARWICK & HALL, ARCHITECTS.

construction, and thirdly the æsthetic element which has effect in influencing, colouring, and transfiguring the two former. An architect in preparing a design has these three factors ever in his mind, no single one can usually be thought of except in conjunction with one or other of the remaining two. Everyone knows, for instance, how in the great historic styles of architecture the construction has formed the solid basis of design. Therefore, if by any unfortunate combination of circumstances responsibility for construction, and with it the possibilities of structural design in the highest sense of the word, becomes even temporarily to be lost to architects, the result can be nothing less than a calamity. Bereft of one of his three incentives and aids to high achievement, the architect would be prone to produce but a feeble and halting architecture.

It may, however, be suggested that an architect and an engineer can be so closely in touch with one another as to work together towards a satisfactory constructional and artistic result. This presupposes the existence of singleness of aim rarely met with in men of entirely different training and ideals. In fact, if an engineer becomes so attuned to the influence of the vital forces which go to make architecture, he will *a fortiori* be reasonably entitled to be considered an architect. There is, however, nothing in the theories and practice of structural design which is beyond the attainment of an architectural student, and it is for the younger members of the profession to awake to a realisation of this fact. The prospects of the profession are not likely to improve materially if any self-complacent inertia in the rising generation of architects tends to admit of serious inroads in the rightful province of architecture being effected by the structural engineer.

Proposed Extension of the District Railway.—The rural district between Wimbledon and Sutton at present suffers from the want of travelling facilities to Waterloo, the Thames Valley, and the Metropolitan District Railway system via Putney and Earl's Court, and a number of land and property owners have framed a scheme for the extension of the Wimbledon and Putney line of the Metropolitan District Railway from the former place to Sutton. In order to further the project, a meeting has been held to discuss the *pros* and *cons* of the proposal. The scheme, as at present outlined, is to extend the line from the Wimbledon terminus through South Wimbledon, to a point about midway between the Wimbledon and Raynes Park Stations, and to carry it to Merton Park (a rapidly growing district to the south-west), thence to Morden and Sutton. The Wimbledon and Putney line has succeeded remarkably in developing the land through which it passes, and there is now a service of something like 100 trains each way per day. It is thought that a like success would follow the construction of an extension to Sutton, and the fact that the Wimbledon and Putney line was promoted and the Act obtained by the landowners is an encouragement to the present promoters.

* * *

Bury.—Lord Shuttleworth has opened a new operating theatre and other extensions to the infirmary, which have cost about £4,500.

THE ARCHITECTURAL PROFESSION OF TO-DAY.—VII.

Having met, and successfully overcome, the difficulties presented by the preliminary examination, the Probationer's admission to the second, or Intermediate, examination (presuming he has attained the age of 19 years) will depend upon his satisfactory execution of various Testimonials of Study, consisting of illustrations of old examples measured, if possible, from actual buildings. We think the recommendation of the Board of Examiners to the effect that the orders should be thus measured and delineated ought to be so worded as to leave no shadow of doubt in the mind of the probationer that these splendid legacies of the art of bygone ages must be studied *exclusively* from correct examples; because even as ungrammatical writings are, or should be, withheld from the student of literature, so the unscholarly equivalents in brick or stone, which are, alas! beloved by so many modern architects, ought not to be allowed to exercise their baneful influence upon the embryonic practitioner. The examination itself embraces the following subjects, viz., (1) Classic Ornament; (2) the Characteristic Mouldings and Ornaments of each Period of English Architecture, from A.D. 1000 to 1550, with their Application; (3) the Orders of Greek and Roman Architecture, their Origin, Development, and Application; (4) Outlines of the History of Mediæval and Renaissance Architecture in Europe; (5) Theoretical Construction; (6) Descriptive Geometry; and (7) Elementary Applied Construction. Students who have attended the two years' course at King's College, London, or other similar courses at University College, Liverpool, and elsewhere, may be exempted, under certain specified conditions, from sitting for the Intermediate Examination, provided the work done by them during the session is submitted to and approved by the Board of Examiners as suitable Testimonials of Study.

Stress is also rightly laid upon a recommendation of the Board of Architectural Education that students, within reach of certain universities and schools at which the study of architecture may be pursued, should "avail themselves of the opportunities these institutions afford, and take up the architectural courses provided rather than submit themselves for the examination without such recognised training." Whilst the details of this examination are, generally, well thought out, yet surely something of a more up-to-date nature and useful character could be substituted for the drawings of the "framed timber floors," set as the subject of Sheet 8 in the Testimonies of Study? Our main objection to this scheme of examination arises from the fact that, having regard to the limited period of preparation allotted to the student, *it attempts far too much*. We do not doubt that many students can and do emerge with success from their encounter with this examination after only two years of preparatory study. But we are certain that, within this limited period of time, no student can hope to obtain a *thoroughly sound and reliable knowledge of the whole of the seven subjects of which the examination consists*. A re-arrangement of the scheme of study is, therefore, absolutely necessary to ensure the success of any effort that may be made to enable the student of architecture to become thoroughly conversant with the technical essentials of his profession, which are, in a large measure, embodied in this examination. In our judgment, the Intermediate Examination should be divided into four parts, the subject matter of each part being of such a far-reaching and comprehensive character as to necessitate a year's preparation, involving sessional work at an architectural school, in addition to the pupil's attendance at the office of his principal.

During his four years of preparatory study, the work executed by the probationer at the studio of the architectural school, under the supervision of a practical and experienced architect, should be regarded as being of far greater value, as evidence of his efficiency, than any work of a like nature produced under the stress of written examinations. As to the Final Examination—which at present enables a student of 21 years of age to qualify for candidature as an associate member of the Royal Institute of British Architects—we would not allow any young architect to present himself for it who had not attained the age of at least 25 years. The Testimonies of Study required for this examination comprise the following drawings, viz.:—(1) A study of Ornament from the round; (2) A design for a Building of moderate size; (3) Measured drawings of some Historical Building, or part of a Building; (4) One sheet of diagrams of constructive Masonry or Brickwork; (5) One sheet of diagrams of a Roof Truss of iron or steel of not less than 40ft. span.

Now, to enable them to carry irrefutable proof that the whole of the above drawings are "Testimonies of Study" within the *real* meaning of the term, it is absolutely necessary that each of the above scheduled drawings should be prepared, from start to finish, in the studio of an architectural school. A certificate "signed by a member of the R.I.B.A. or other person of recognised position," to the effect that the student is a proper person to be admitted to this examination, and that the Testimonies of Study he submits are his own work—which is all that is now required—is certainly *not* sufficiently conclusive evidence that the student has intelligently analysed and studied the subjects he has delineated.

The Final Examination itself—to qualify for candidature as Associate of the Royal Institute of British Architects, and to be passed by students whose Testimonies of Study have been approved—is arranged in two parts. In Division I., the candidate is examined in design, and, in Division II., in the following subjects, viz.:—

(a) The Principal Styles of Architecture—their Features, Mouldings, and Ornament.

(b) The Nature and Properties of Building Materials.

(c) The Arrangement and Construction of Buildings in relation to Health.

(d) Specifications and Estimating, and Construction.

Apart from the architectural schools, proper instruction of a more or less elementary kind can be obtained by the student at many of the now numerous Polytechnics, Schools of Arts and Crafts and Technical Institutes, but we doubt whether the educational methods

employed at these establishments are of the best possible kind. Indeed, to us, the curricula of study appear, too often, to be framed with the object of affording the student facilities whereby he may be enabled to pass the statutory examinations of the Royal Institute of British Architects, rather than with any idea of instructing him in the art of architecture.

The system of pupilage, in alliance with the system of communal study, is, theoretically, a perfectly sound one, provided the practical experience only to be acquired in an architect's office is *properly* supplemented by a course of sound and efficient training in the studio of the school. Yet, although training of the requisite kind is only to be obtained through the medium of men who are essentially scholarly architects, nevertheless it is indisputable that the general tendency of the day is to relegate architectural education to imperfectly trained teachers, "cranks," or professional "crammers."

The difficult problem of the education of the architect is as yet unsolved, and it may be confidently expected to remain so until the unity of the profession is an accomplished fact. Meantime, architectural students, who are capable of qualifying as practising architects under the present defective system of education, and through the fallacious tests so long imposed by the R.I.B.A. under its scheme of examinations, will continue to flock into the profession. Architects who complain of the shortage of work, of the admission to the profession of undesirable men, and of the unfair competition which is thus brought about, must remember that the remedy, to a large extent, lies in their own hands. In brief, they must cease to make the pathway to the profession *too* smooth for the undesirable and imperfectly educated man. To satisfactorily effect this object the united efforts of the whole profession will be required. We have already alluded to the vital necessity of placing the education of the young architect in the hands of those properly qualified to lead him to realise the full significance of his art—to teach him to sift the architectural wheat from its chaff—to enable him to realise that the possession of genius without scholarship is useless, and thus early lead him to discriminate between what is good and what is bad in modern work. We now suggest that any reorganisation of the teaching element should be accompanied by drastic reforms in the *personnel* of the administrative boards which have been instituted for the conduct of architectural education and architectural examinations. In our opinion, sufficient care has not, hitherto, been exercised to prevent the unpractical "faddist," the surveyor, and the unscholarly architect, from being far too much *in evidence* on those Boards or committees which have been formed for the purpose of initiating and administering schemes framed to solve perhaps the most difficult of the many problems now awaiting solution by the architectural profession. A central controlling authority—truly representative of the views of the entire profession—might be expected to deal satisfactorily with this burning question of education and examinations; but its *personnel* would have to be selected with the greatest care and judgment.

ARCHITECTS AND PUBLIC BODIES.

The Week's Complaints.

The latest competition which has been unfavourably reported to us is that for the Cornwall County Offices. In our issue of September 30th, we reproduced some comments of a Cornish architect, which had been sent to our contemporary the "Western Morning News"; but these, while unfavourable, took the form of generalities on the subject of competitions rather than specific complaints concerning this particular competition. We have since, however, received a letter from a well-known London architect, in which he states:—"I have written asking if, on return of conditions herein—supposing I find them unsatisfactory—my £1 1s. will be refunded. The reply of the Clerk is in the negative. . . . From the correspondence I have had with these authorities, I gather the contemplated assessor has not been asked to prepare or advise on the conditions." Now, these are serious points, and those who contemplate entering for this competition, or who have already entered for it, may well be urged to stay their course. The Ilford Hospital Competition, upon which we commented last week, is an instance of the unsatisfactory results that are almost bound to eventuate when the conditions have not been drawn up by a proper assessor. The temper which characterises the Cornwall County Council in its dealings with architects may well be gauged by its procedure in the matter of deposits, mentioned above. In the light of the experiences given, we have starred the competition, and if architects choose still to participate, they have only themselves to blame if the result is disappointing, and their labours are wasted. While on the subject of competitions, we may draw attention to that promoted by the Whitley and Monkseaton Urban District Council, which appears in our list this week for the first time, and is already starred. The Council want designs for a public shelter to provide seating accommodation for 1,000 people and promenade space for another 400; and they offer a premium of £20 to any architect who will show them how to get it for £1,200, or less. We do not think that that £20 will be money thrown away. The successful architect—if such can be found—can figure out how much marble, mosaic, statuary, and bronze can be thrown in to bring up the cost to the stupendous sum allowed. The Council, however, does not bind itself to erect the shelter; but if the work is proceeded with, the successful designer will get the "usual architect's remuneration"—not the architect's usual remuneration, mark you!—less, of course, the £20 already paid as a premium. The merging of the premium is now so usual that most architects regard it without any misgiving. We do not; and we take leave to point how it operates in an instance like the present. This beneficent body asks architects to get to work and supply them with designs for a shelter. They offer one premium of £20—which merges. So that no one gets anything for his trouble, except the successful designer, and he gets just the ordinary fees—if the design is carried out. So now let the designs roll in to this Council, who, "*with such advice as they may decide to obtain*," will be the sole arbiters in the matter. Think, gentlemen, on what a high plane your dignified and honourable profession rests in the eyes of the worthy Councillors of the Whitley and Monkseaton Urban District. Prostrate yourselves, and with deep obeisance, offer them grateful thanks that they do not demand £5 5s. deposit for the conditions and particulars.

The promotion of competitions is not, however, the only work at which our public bodies shine. There is the case of Mr. Charles Cole, an Exeter architect, who has, at considerable cost to himself, revealed the happy legal position of public bodies in regard to payment of their debts. Mr. Cole did a lot of work for the Topsham Parish Council; he charged them a very low fee, amounting to £16 7s. 1d. Then the Council discovered that they had not sealed his instructions, and so they need not pay his bill. And they did not pay it. It, moreover, turned out that they had no right to give him instructions to design roads for them at all, the construction of roads being beyond their powers. The County Court judge could only regret his inability to give judgment against the Council, and Mr. Cole has everyone's sympathy—but no fees.

The architects of Harrogate are aggrieved with their Town Council. The latter has two big works on hand, the extension of the baths, and the building of a new infants' school at Bilton. The first-named, costing £14,000, is being carried out by the Borough Surveyor; the Education Committee recommended a like procedure in the case of the second. Then the Harrogate Architectural Society protested strongly, and pointed out that all previous school work had been done by architects. Alderman Houfe stood out as a worthy supporter of an oppressed profession; but the interests of the ratepayers was strongly urged, and, on the casting vote of the Mayor, it was decided that the school should be designed by the Surveyor. So Messieurs the Architects of Harrogate will not have an opportunity of increasing the general district rate. But they may have their revenge. They can retire to the workhouse, and send the poor-rate up with a run.

We shall return to this subject from time to time, as occasion demands.

We are asked to state that Messrs. H. Johnson and Sons, plasterers, of Liverpool, have a London office and studio at 1-5, Little Denmark Street, Charing Cross Road, with centrally situated workshops in New Compton Street. They have also secured fine showrooms in the west central district, which will shortly be opened. The London works are under the actual personal supervision of one of the principals of the firm.

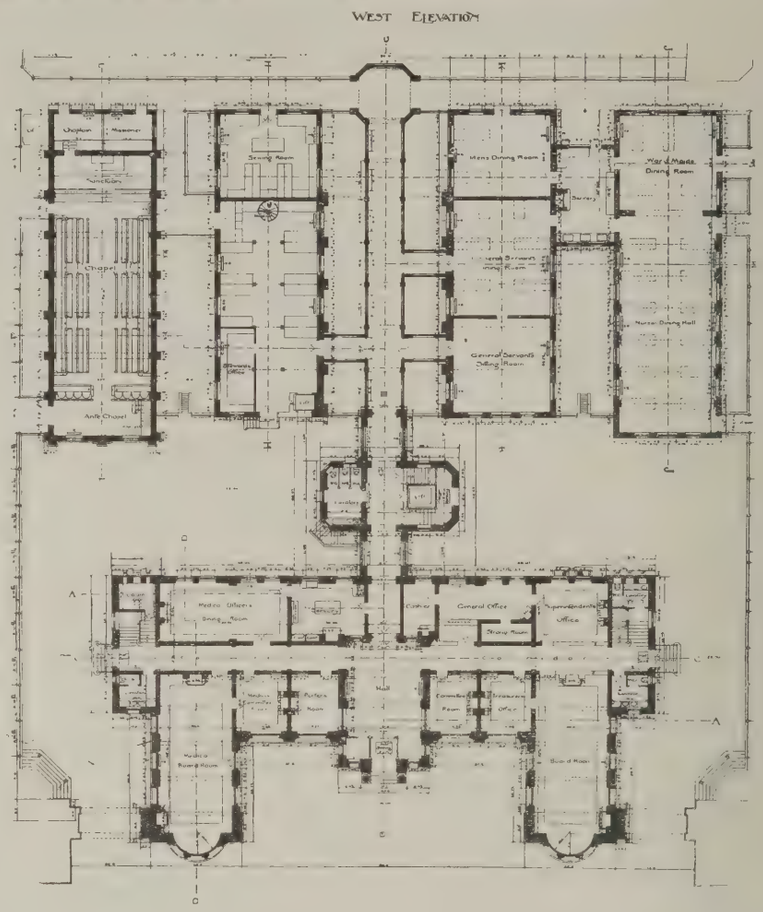
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Cheltenham.—Salterley Grange Sanatorium, which has been erected for the Corporation of Birmingham on the Cotswold Hills, near Cheltenham, and was formally opened on October 15th, provides accommodation for forty patients in four blocks of châlets, which have been built in local brick, faced with rough-cast stucco. The work has been designed and carried out under the superintendence of Messrs. W. H. Ward, of Birmingham.

THE MANCHESTER NEW ROYAL INFIRMARY.

During the past week the new home of the Manchester Royal Infirmary has been open for inspection by the public. Full advantage has been taken of this privilege by many architects in Lancashire, who have thus undoubtedly gathered valuable professional information, as this important building embodies all that scientific knowledge and medical skill can suggest for the proper treatment of the injured and diseased. Within the last quarter of a century, the pressure upon the infirmary has enormously increased, and has been due partly to the growth of population and partly to the remarkable development of modern methods in medicine and surgery. No progress was made towards the erection of the new hospital till 1902, owing to an acute controversy as to whether the demand for extra accommodation could be more efficiently met by rebuilding on the old site, or by a new building on a new site. Finally, after the election of a new board of management, the presentation of a suitable site was made by the Trustees of the late Sir Joseph Whitworth to the University of Manchester for hospital purposes, to which additions were made by purchase, increasing the site to nearly 13 acres in area.

A limited competition was held, and confined to certain architects conversant with this class of work, Mr. J. J. Burnet, A.R.S.A., F.R.I.B.A., acting as architectural assessor. He recommended for acceptance the plans submitted by Mr. Edwin T. Hall, Vice-President, R.I.B.A., and Mr. John Brooke, F.R.I.B.A. With some modification of detail, the new infirmary is the realisation of these plans. Provision has been made for 592 patients and 339 resident



MANCHESTER NEW ROYAL INFIRMARY.
GROUND PLAN OF THE ADMINISTRATION BLOCK.



BLOCK PLAN

MANCHESTER NEW ROYAL INFIRMARY.

officers, nurses, and servants, occupying 48 separate blocks, at a cost of about half a million pounds. The major portion of this sum has been paid by the Manchester Corporation for the old site in Piccadilly; public and private benevolence have also assisted the board of management to almost raise the desired amount. In addition to the cost of the infirmary itself, there will be later an expenditure, estimated at £25,000, for the erection of a branch in the centre of the city for the treatment of slight accident cases and other ailments of a minor character.

The general disposition of the buildings will be readily understood with the assistance of the published plans. The main frontage to Oxford Road shows an imposing building, irregular in outline, with busy features, and a straining after a broken skyline which does not help the architecture, though partly due to the planning of the hospital. Owing to the position allotted to the west entrance lodge, no one is able to see the main approach properly. All the blocks are connected by covered ways, and they are so arranged that, whilst the distances separating them are comparatively small, plenty of fresh air is provided. All the internal traffic of the hospital is under cover. The sides are enclosed only to a height of four feet, so that whilst the ways are fully protected by the sides and overhanging glass roofs from the inclemencies of the weather, the air has free access, and satisfies the stringent requirements of modern practice as to free air space throughout each



General view of the principal front.



The out-patients' department.

Photos: Entwistle, Thorp & Co.

THE MANCHESTER NEW ROYAL INFIRMARY. EDWIN T. HALL, VICE-PRESIDENT R.I.B.A., AND JOHN BROOKE, F.R.I.B.A., ARCHITECTS.

part of the hospital. Under the covered ways are subways in which all the principal heating, hot water, steam, gas, and cold water pipes are laid, as well as electric mains and telephone wires, enabling the mechanical staff to attend to them without interfering with the regular traffic of the institution.

The wards are built on the pavilion system, with spaces of 60ft. between. Of the ten pavilions, six are allocated to surgical cases and four to medical cases; five pavilions have three storeys, and the other five two storeys, thus providing in all 25 large wards. They all lie at right angles to and are entered from the covered ways already referred to. This arrangement, dictated by the shape of the land, has many important advantages. It enables every pavilion to have its axis north and south, so that every large ward with windows on three sides receives direct sunlight, and the distance from the administrative centres of distribution is reduced to a minimum, effecting a great saving in time and labour. Also, the subdivision of internal traffic for goods and staff reduces noise and confusion. The distance from the main thoroughfares and the intervening buildings minimises external noise.

Each pavilion has an open paved basement by which aerial separation from the ground is secured. In the basement are the branch mains for hot and cold water, gas, etc., taken from the main subway, vertical pipes ascend, and all horizontal pipes which collect dirt are avoided in the wards.

In the administration block, particularly, and throughout this institution the position allotted to the staircases has been carefully considered, so as to secure suitable division and safety in case of fire. All the staircases extend to the flat roofs, which are available for promenade purposes. Each bedroom in the Nurses' Home has an inlet ventilator and an outlet ventilating shaft connecting directly with a main airway in the roof, from which an electric fan draws the air, creating a ventilating current out of each room. The windows of the upper storeys are all arranged so that the glass can be cleaned on the outside from the inside of the rooms.

The sanitary conveniences in the detached towers have various novelties in the details worth examination. The bath and the twin-filter in the ward kitchen received medals at the Cardiff Sanitary Exhibition before being in actual use. The wards are heated by hot-water radiators, arranged in cast-iron casings; a supply of fresh air, regulated by a valve, enters at the back, is warmed on the hot surface of the radiator, and passes into the room through hit-and miss plate valves. To facilitate cleaning, the front of the radiator casing is hinged, and the radiator itself hung on pivots, so that access is obtained to every part of the radiator and air passages. The originality of the swinging hot-water radiator and the question of the constant wear and tear on the bearings, owing to the weight of metal and water, are matters that are being watched with great interest by heating firms and architects. All the windows have fanlights at the top, with side draught protectors. The glass in some of the lower windows is of a new kind designed and made specially; it is obscured without detriment to its transparency or the smoothness of either surface, and is used on the sides where the male and female wards face each other. Liberal cubic space is allowed to each bed. The floors are covered with linoleum laid on the smooth concrete; and the low skirtings of teak hollowed out to an easy curve. The walls and ceilings are painted and varnished, and join a curve; there is not a single square corner in the ward where dirt can be harboured. The "Gilmour" doors, except those with glass panels, are absolutely flat and smooth on both sides; made of polished wainscot oak, they are handsome in appearance and perfect hygienically. In short, no pains or expense have been spared to give the patients that absolute cleanliness of environment which is the prime demand of modern hospital practice.

In the operating theatre the most noticeable feature is a small gallery to accommodate some 24 students, which is shut off from the operating part of the theatre by a plate glass screen 7ft. high, designed to intercept dust, but not to cut off a clear view or the sound of the surgeon's voice; a separate door connects this gallery directly with the lobby. The theatre walls are lined with Sicilian marble to a height of 7ft., and above, with "re-constructed marble," whilst the ceilings are glazed with opalite. The floor is of terrazzo. The surgical and sterilising appliances are kept in an annexe communicating with the theatre through an open archway.

The grounds surrounding the wards have been made as green as possible with grass, and many of the trees which had grown in the gardens occupying the site have been retained. Iron staircases between each pair of pavilions give access to the grounds.

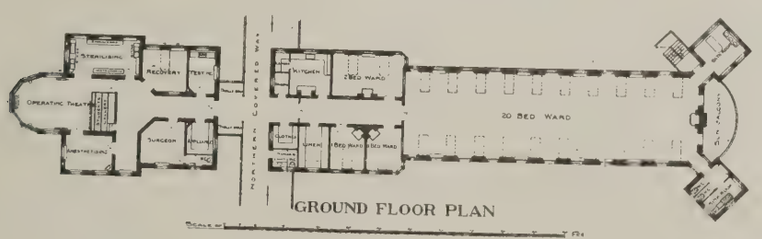
The drainage scheme is divided into many sections, each one thoroughly ventilated, so that there are no pipes in which sewer gas can accumulate. Every group of rainwater drains is carried to a flushing tank placed near a manhole, so that the soil drains are kept constantly flushed without the cost of using town water. Every manhole was specially designed, and is of glazed ware, the bottom is in one solid piece, with all branch inlets at the required angles. Every drain can be swept throughout its length. All rain manholes are covered with open gratings.

The cold water service throughout is direct from the mains to baths, sinks, and closets, but as a breakdown in the supply would be a very serious thing, the service is taken from three separate Corporation mains, any one of which can serve any part of the hospital.

The electric supply is, for the same reason, taken from separate Corporation generating stations to the main switchboards. In each pavilion the light is divided between the two separate sources of supply, so guarding against total failure. In the operating theatre there is also a low tension supply from a storage battery, and in other important spots pilot gas light.

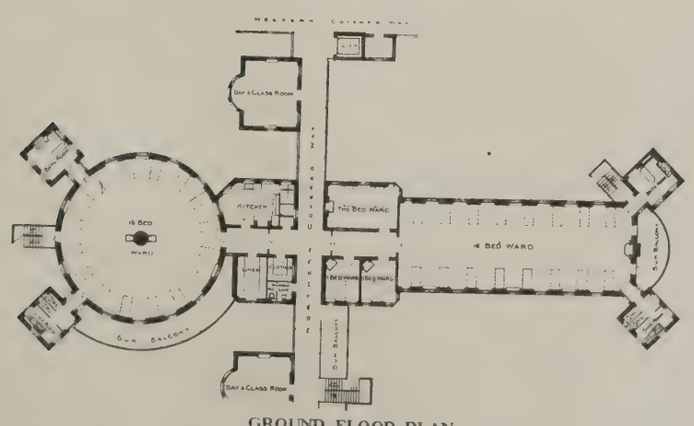
In the W.C.'s the closets throughout, supplied by Doulton and Co., Ltd., have the flushing tank, of white glazed stoneware, like the basin, fixed immediately above the basin. The flush is automatic, actuated by the door without rod gear, and so worked that no flush occurs on entering the water-closet and shutting the door, but only on leaving, thus effecting a saving of 50 per cent. of water, as compared with the usual door flushes. All closets are supported directly from the walls, leaving the floor

PAVILION P⁴ & THEATRE R²



GROUND FLOOR PLAN

PAVILIONS P⁵·⁶



GROUND FLOOR PLAN

MANCHESTER NEW ROYAL INFIRMARY. PLANS OF NEW SURGICAL WARDS.



Photo by] [Entwistle & Thorpe.

MANCHESTER NEW ROYAL INFIRMARY: THE WEST ENTRANCE LODGE AND ADMINISTRATION BLOCK BEYOND.

free from obstruction to thorough cleaning.

The baths, also by Doulton's, are of white glazed ware, have parallel sides, with ante-splash rim made flat, and Doulton's patent mixing valves. They are so wide that a bather can sit in them with comfort.

The filters, which are fitted over the sinks, are "twins" joined together by an arch and bib-valve, on which a thermometer is fixed. Hot and cold water are laid on, and thus filtered water at any temperature may be obtained. The filtering china "candle" is also protected by a stocking which collects all dirt, and is readily removable for cleansing.

A destructor furnace and steam disinfector are located near the boilers. All the clocks are electrically controlled from a high-class master clock. The locks, door and window furniture, floor springs, and fanlight gearing have been supplied by Messrs. Colledge and Bridgen, Wolverhampton.

The foregoing description of the modern arrangements and details throughout the building will be of practical service to those interested in infirmary building for future reference.

Among the other sub-contractors who may be mentioned, are the Farnley Iron Co., and Burmantofts, who supplied the glazed bricks; the British Doloment Co., Ltd., who supplied the flooring of the small wards; the St. Pancras Iron Works Co., London, who furnished the pavement lights; Dargue, Griffiths and Co., who carried out the heating and hot water plants, piping, steam mains, etc.; James Slater and Co., Ltd., who executed the kitchen plant; the Palatine Engineering Co., who supplied the Kelvin taps; and George Wragge, Ltd., who made the iron casements; Davidson and Co., Ltd., supplied the electric fans; Veritys, Ltd., electric light fittings; other electric light fittings coming from the General Electric Co., Ltd.; and the oak doors were made by the Gilmour Door Co., Ltd.; Peace and Norquoy made the folding partitions; J. W. Singer and Sons, Ltd., the bronze panels; and Richard Crittall and Co. supplied the gas, hot closets. Furniture and furnishings were supplied by Goodalls, Lamb, and Heighway, Ltd.; steam and electric sterilizers by James Slater and Co., Ltd.; and special fire appliances by Minimax, Ltd. Harold Arnold and Son, of Doncaster, were the general contractors, and Alfred Turner the chief clerk of the works.

London, E.C.—The memorial stone for the new rating office for the City of London was laid on the site of the old Council Chamber of the Guildhall. The old building, which was erected about 1777, consisted merely of the chamber and a vault below, while the building now in course of construction will have a basement and four storeys. On the first floor is to be erected a court to be used by the licensing justices and the Recorder. The cost is estimated at £12,865.

* * *

Messrs. H. C. Cleaver, Ltd., 35, Berners Street, W., and Tudor Works, Park Royal, N.W., whose exhibits at the Franco-British Exhibition have attracted much attention, have been awarded the silver medal for furniture shown in class 69, and a diploma of honour for their "Tudoresk" wall panelling and fitments, shown in class 66.

The proposal to build a huge casino along the foreshore at Brighton was strongly opposed at an influential public meeting that was held at the Bedford Hotel, Brighton, with Sir Henry Kimber, M.P., in the chair. Persons representing various interests protested against the scheme, and a resolution was passed condemning it. It is now a question whether, in face of such opposition, this ambitious scheme will ever materialise.

* * *

The firm of Wailes, Dove, and Co., Ltd., who exhibit at the Franco-British Exhibition in the Palace of Machinery, Stand No. 337, their patent "Bitumastic" enamels as applied to the ships of the British and foreign Admiralties, the mercantile marine throughout the world, and to the plant of the chief industrial concerns, railways, and municipal corporations in the United Kingdom, have been awarded two diplomas of the highest merit, with gold medals in classes referring to the mercantile marine and civil engineering respectively. This firm also received gold medals at Genoa, 1905, Milan, 1906, Savona, 1906, and Bordeaux, 1907, for superiority of the anti-corrosive qualities of their patent "Bitumastic" enamels, etc.

* * *

Mr. Arthur Race has been appointed to the position of borough engineer and surveyor of the county borough of Barrow-in-Furness in succession to Mr. W. Smith, who has gone to Edinburgh. Mr. Race has been the assistant engineer and surveyor at Barrow since 1901, when he was selected for the post out of 120 applicants, so that the present appointment is a preferment in the same office.

Correspondence.

Ideal Homes.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I, and I am sure others of our weird profession, look forward to your criticisms upon the three successful designs for cottages costing £1,000, £750, and £500 each. I hope you will not miss this opportunity of judging for yourself what is the "Art of Architecture." I am concerned as to what the public must think of us as a profession. We cannot expect the public to think much of us as artists, or even as common-sense business men. Imagine any member of the public (or even an architect) approaching the £1,000 house and calling it a cottage home. The £750 cottage is even more ludicrous than the former cottage. It is a crofter's cottage, such as you see in Wales, and the design, as delineated, appears "done for fun"; such draughtsman's work would certainly incite students to slovenly work. The £500 cottage seems better all-round. The competition, I understand, was to give the public an idea of what a cottage home should be; it was to illustrate "the ideal home," and the chief merit in the designs was to be "art of architecture" consistent with good planning, comfort, and, I suppose, commonsense. I hope I have been deceived as to what an "ideal home" is, or should be, and I further hope, Mr. Editor, you will give us in your next issue of THE BUILDERS' JOURNAL your candid opinion of the subject matter and the three designs placed first by the assessor, who, by the way, I think most architects consider the first in the land to tackle domestic architecture in the "art of architecture" manner, and from a common-sense point. Being a competitor in the above, and not one of the successful ones, it is natural that I should complain.

"A COMPETITOR."

[Our correspondent will have seen our notice of these. The assessor selected the three designs no doubt as the best of a very poor lot. When our correspondent praises the £500 cottage, has he studied the sections? The slope of the roof-wall begins about 20in. above the floor line, so that the habitable area of the bedrooms is far less than the figured floor area. It might be an ideal recreation for people to crawl about the floors of their bedrooms; but personally we prefer to be able to stand upright.—ED. "B.J."]

The Architectural Profession To-day.

To the Editor of THE BUILDERS' JOURNAL

SIR,—Unemployment at the present time amongst architects, surveyors, and their assistants has been attributed by your correspondents to various causes. There are also other reasons why the profession is not prospering at the present time—for instance, the employment of city and urban surveyors to design and superintend the erection of public buildings, for whose salaries local architects contribute to the rates.

In the district in which I practice, the surveyor's assistant (who is also paid a good salary out of the rates) undertakes the preparing of plans for speculative builders and the general public. Are not public officials employed on the undertaking that they give their whole time to their duties?

I also find that when architects are employed to prepare their plans, their clients have an idea that as the Council's surveyor will inspect the work they can therefore dispense with the architect. The Council's surveyor inspects the work about three times.

How can a surveyor, or surveyor's assistant, conscientiously inspect the work of his client for his Council without very often upsetting his client? Should he report the work as not in accordance with the by-laws, his client would naturally turn upon him, and perhaps not pay him his fees for preparing the plans.

The above, I think, are some very good reasons for the present unemployment, which I think the Registration Bill would remedy.

ONE OF THOSE AFFECTED.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—May I be permitted to mention one or two matters of general interest upon which I (and I am sure many others) would be glad of some advice? In sending plans away in answer to advertisements or in competitions, etc., there is little doubt that the plans are in some cases made use of. The long time they are kept and the condition in which they are returned go to prove it. An unscrupulous person might make a very good thing out of it. Some sort of protection seems to be necessary here. Again, with regard to the custom (as it appears to be) of making out-of-work assistants pay the expenses of interviews with a possible employer, when they have been requested by the employer to take the journey, which as often as not is a long one, is distinctly hard on the assistants. Once more, sometimes an assistant gets an offer of work in an office which has just opened. He does not know anything about his prospective principals or even what the work is. How can he engage rooms at his own risk, if he happens, as is probable, not to be living near? How can the assistant be sure of receiving his salary? What is the best way to deal with these difficulties? Perhaps some of your readers will tell us what they have done to provide against being thus plundered.—Yours faithfully,

A REGULAR READER.

Biggleswade.

Cleaning Old Stone Buildings: Is It Harmful?

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I have been asked to advise on the best means of cleaning down an exceedingly grimy stone-faced building, situate in a busy London thoroughfare. I should be grateful if any reader could give me his experience as to the danger of the life of the stone being shortened by any of the processes now in use, and also if any of the so-called preservatives are effective. I remember some years ago seeing samples of old stone treated with a solution to harden and preserve the face, and giving the appearance of new stone. Unfortunately, any literature I had has been mislaid, but my impression is that the manuacturer or inventor was a Frenchman.—Yours truly,

R. BISHOP.

Bermondsey.

Swadlincote.—On a site, given by Mr. John Hall, J.P., a public library has been built at a cost of £5,000, which has been defrayed by Mr. Andrew Carnegie. Mr. MacPherson was the architect.

Proposed New Works.

Aberdeen.—The Town Council propose to erect a new footbridge, in lieu of the existing Windmill Brae footbridge, on the Green.

Atherstone.—The District Council have applied to the L.G. Board for a loan of £1,300 to build offices and stores in Long Street. An inquiry was held on the 16th inst.

Bedford.—The Guardians have decided to enlarge the workhouse buildings, and an application to the L.G. Board for a loan is to be made.

Derby.—An extension of the buildings of the Royal Institution for the Deaf and Dumb is in contemplation. A design of a new block has been prepared by Mr. Arthur Eaton and approved by the Board of Education, which provides for twenty separate class-rooms, a room for instruction in cookery, and more dormitories and offices. The estimated cost of this, including furnishing, is £5,250, and the enlargement will provide accommodation for an additional fifty children, thus enabling the institution to take 200 instead of 150, as hitherto. In the new block a separate room will be provided for the instruction of each class. The funds are being raised by public subscription.

Derry.—The Irish Society in London has voted £5,000 towards the rebuilding of Derry Guildhall, which was destroyed by fire in April last. The condition attached to the grant is that the Council will clear the square in the centre of the city known as the Diamond, upon which the old School of Art now stands, and make it an ornamental open space. The offer of the Irish Society has been accepted by the Corporation, and a vote of thanks to that body unanimously passed.

Gloucester.—The Shire Hall is to be extended, and the properties adjoining have been acquired for the purpose.

Hawick.—An amended design for new public baths has been prepared by the Burgh surveyor, £4,000 being the estimated cost. It was originally proposed to acquire the Exchange Halls and fit them up at a total cost of £7,800.

Llandudno.—The Carnarvonshire Joint Police Committee are considering the question of a site for new County Police Buildings. The purchase of 1,680 sq. yards of land in Oxford Road for £882 has been referred back for further negotiations.

Nantwich.—The design of Mr. H. H. Brown, architect, of 17, Dickinson Street, Manchester, has been accepted for proposed new Council school in Beam Street, to cost £10,000.

Pulborough, Sussex.—A public meeting of the inhabitants has decided to erect a public hall here, and subscriptions are being collected for the purpose.

Rotherham.—By a majority of one vote the Guardians have decided to consider the erection of a union infirmary in one of the country districts around Rotherham. The treatment of phthisical cases is the purpose in view.

St. Anne's-on-the-Sea.—A fund has been started for building a new Baptist Church.

Seaton Burn.—A Presbyterian Hall is to be erected here, at a cost, including site, of £668.

Scorton, Yorks.—The Home for Incurables, administered by the English branch of the Brotherhood of the Order

of St. John of God, is to be rebuilt. A public appeal is being made for £16,000 for the purpose.

Stirling.—It is proposed to build a church, to be called "The Bruce Memorial" Church, for the United Free Congregation of Cambusbarron. The cost is estimated at £1,000.

Swanage.—The Urban Council have passed plans for the following:— Mr. L. P. D. Way, a villa in Durlston Road; Mr. F. W. Pond, a house in Priest's Way; Messrs. Parsons and Hayter, a bathing house on the beach, and four shops in High Street.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

Slabbing Glazed Tiles.

BIRMINGHAM.—E. L. T. writes: "I wish to know the correct method of 'backing' glazed tiles to form slabs and interior grate surrounds. Would either of the following be suitable: 1. Portland cement and sand—reinforced with metal lathing 1in. mesh, to finish 1½in. thick. 2. Keene's cement and sand and ditto, but with ¼in. mesh iron wire. 3. Equal proportions of hair, mortar, sand, and plaster wetted up with glue, the tiles being soaked in *warm* water—no reinforcement; eyelets being arranged in each case to receive cramp for fixing."

Either of the three methods named might be adopted with success; No. 2 is probably to be preferred, though No. 1 is almost equally good if the slabs are not expected to stand high temperatures after fixing. G.

Lining Storage Tank.

LONDON, E.C.—"SUMP" enquires: "Whether the asphalt lining of the storage tank shown (sketch not reproduced) is likely to bulge from face of brickwork if the ground outside should become waterlogged; or whether any pressure so caused would be resisted by the pressure due to head of water in the tank, which is constant. For the purposes of the case the brickwork is assumed to be porous."

It would be better to use one of the building compositions, which, as you probably know, are used to form a thick impermeable joint in the centre of the wall. The pressure of the water in the tank might not be constant, and if the asphalt became detached from the wall it would sink or fall over.

Architectural Posts Abroad.

LEICESTER.—C. writes: "Could you give me any information as to the best way of advertising for an architectural post in the Colonies or the United States?"

Your best plan would be to advertise in either the United States or the Colonial technical newspapers. At the same time we do not think there are any openings abroad except in the South American States, and perhaps European countries. You can refer to a letter from a Canadian correspondent in our last issue. South Africa, we have been told by one or two architects who have returned, "is dead," so far as architecture is concerned. There are possibilities in Egypt, India, Burmah, or the Straits Settlements; but these possibilities are only open to the man on the spot. A good firm of advertisement agents would furnish you with all particulars.

The Number of Practising Architects.

PLYMOUTH.—SCRAMBLE writes: "Can you inform me about how many architects are at present practising (a) in London, (b) in England?"

The London Directory for this year gives the names of about 1,200 firms practising in the City and suburbs of London, or roughly just over 2,000 if partners are counted separately. The Building Trades Directory gives the number of provincial practising architects at about 3,900, so that the total number in England is probably between 6,000 and 7,000.

Federation News.

CONFERENCE OF SECRETARIES.

The annual Conference of Secretaries of the National Federation took place at the offices, 31 and 32, Bedford Street, Strand, London, on Tuesday, October 20th, Mr. E. J. Brown, senior vice-president of the Federation, in the chair. Several matters were discussed, and a number of papers read which will appear in our columns. The first, on "Federation Benefits," by Mr. A. G. White, the National Federation Secretary, will appear next week.

YORKSHIRE BUILDERS AND MUNICIPAL WORKS DEPARTMENTS.

Nearly fifty representatives of the building trades Associations in Yorkshire attended on October 22nd the monthly meeting of the Yorkshire Federation of Building Trades Employers, which was held at the Grand Central Hotel, Leeds, Mr. J. Biggin, Sheffield, the president, in the chair. The principal item on the agenda was a paper by the secretary (Mr. J. Davidson) on "Municipal Works departments." Mr. Davidson dealt with the subject under three aspects:—(1) The quality and expedition of the work; (2) Comparison of cost; (3) General labour position. With respect to quality of work, he said, it is not seriously contended that the works carried out by employees of a corporation are better than works carried out by private contractors. Under both methods works have been executed that are structurally sound and substantially well built. The Manchester Corporation decided that they would have nothing to do with the establishment of a works department, and were of opinion, by 69 votes to 10, that their work could be better carried out by contractors. As an instance of the slow progress made in work carried out by corporation employees, and the consequent increased expense, he mentioned the case of the Huddersfield reservoir, which was estimated to cost £150,000, but after works had been carried out for several years by direct labour at a cost of nearly £300,000, they were found to be unsatisfactory. The completion of the works was let to a contractor for £78,000, and these were executed to the full satisfaction of the corporation within a period of two years. Again, in London, works took four years to execute which the engineer reported should have been completed in eighteen months. Sir Alexander Binnie, though he had been a supporter of the works department, admitted, in reporting upon drainage works at Woolwich, that the actual cost exceeded the estimate by £16,000, and that the work had "taken four years to execute, whereas it should have been completed in eighteen months."

Another fallacious argument used for the establishment of works departments, said Mr. Davidson, is that they save the contractor's profit. That this is a complete travesty of the actual facts is abundantly testified by the experience of such departments in all parts of the country. At Huddersfield, Sheffield, West Ham, etc., these departments had been abandoned. In Manchester the official report admitted that the cost of excavating work carried out by the regular staff averaged 156.83 per cent. more than contract work. Labour leaders in Manchester, he added, were bound to admit that public work done by the corporation workmen cost, in some cases, three times as much as similar work done by private contractors. Work carried out by a Salford firm for 1s. 6d. per cubic ft. cost the ratepayers no less than 4s. 9d. when done by corporation men. Work executed by the regular staff was often not measured, nor the time so kept that accounts could be accurately made up and the actual cost definitely ascertained. For many years the engineer and architect of the London County Council had prepared estimates of the costs of the works planned by them, and a further estimate had also been prepared by the works manager. There was authority for the remarkable statement that there had been a difference of 50 per cent. between the two official estimates, and, as the highest price was taken as the approved estimate, the works department thus had a handsome margin of 50 per cent. before work was commenced.

In illustrating this point, Mr. Davidson mentioned the following cases:—In 1904 the London County Council had five large main drainage works in hand. The engineer's estimates were £770,747; the accepted tenders amounted to £584,903, or £185,844 below the engineer's estimate, a saving of nearly 25 per cent. For Section 3 of the new northern low level sewer, between Stepney and Trafalgar Square, the estimate of the works department was £299,800, while the accepted tender, that of one of the most respectable firms of contractors in London, amounted to £261,599, a direct saving of £38,201. A very noteworthy instance was that of two blocks of buildings erected under the Houses of the Working Classes Scheme, absolutely identical in size, design, and material used, and built at the same time and under the same conditions as to cost of labour and material. The Cookham buildings (erected by a contractor) cost £14,059, while the Hogarth Buildings (erected by the works department) cost £15,030, or nearly £1,000 more, an excess of 6½ per cent. over the exactly similar work done by the contractor.

In Leeds, a committee brought forward a recommendation to accept the estimate of the works department amounting to £22,000 for works of street improvement. The matter was referred back in order that estimates might be obtained, and ultimately a recommendation of the committee to accept a tender amounting to £17,130 was adopted, and a saving of £4,870 effected.

The report of the works committee of the London County Council with regard to the Horton Asylum work carried out by the works department showed the large excess of cost over estimate of £37,878, or 13 per cent. A works department for special repair work was absolutely untenable and financially unsound. The provision of an alcove at the Girlington recreation ground for the Bradford Corporation cost £227, against an estimate of £163, an excess of £64, or 38 per cent. above the estimate. The Leeds Corporation carried out works of street construction in the Gledhow district at 34s. 4d. per lineal yard, whereas similar work in the same district was carried out about the same time by contractors for 25s. 6d. The owners appealed to the Local Government Board against the excessive charge, and after a local inquiry had been held, and evidence had been given by both parties, the Local Government Board reduced the claim of the Corporation from £541 2s. to £416 10s. 10d., and a direct loss of £124 11s. 2d. thereby fell upon the ratepayers as the result of the mischievous experiment of carrying out works on behalf of private owners by direct labour instead of contract.

In their excess of zeal for municipal work, the Bradford Corporation formed a team labour department, and, notwithstanding the fact that it had been bolstered up by charging the other departments at a rate per day in excess of that previously paid to contractors, the department had for some years been worked at a considerable loss, involving a serious charge upon the rates. A most unsatisfactory feature in connection with the structural and jobbing work carried out by local authorities was the incomplete and imperfect manner in which the accounts of such works were kept.

An argument, said Mr. Davidson, which is often advanced in favour of works departments was that they afforded higher pay and shorter hours of labour for workmen. This statement, he remarked, was founded on gross ignorance or wilful misrepresentation, for it was apparent that they could not create more work or find greater employment. Works departments, he maintained, were not only against public policy, but were calculated to reduce the supply and efficiency of skilled labour. Local authorities did not accept apprentices; they drew absolutely for skilled labour upon those who had gained their experience and training under private contractors. The present unemployed were largely recruited from the ranks of unskilled labourers, and the growth of works departments and the corresponding reduction in work caried out by contractors was calculated in a few years to reduce most seriously the number of skilled workmen and to increase still further the number of unskilled labourers, with all the economic disadvantages accruing therefrom.

Building trade employers had also the advantage in their relations with workmen by the establishment of conciliation boards. Strikes or lock-outs could not be resorted to until disputes had been heard by three boards. The amicable relationship which exists between building trade employers and employees in Yorkshire was strongly emphasised by the fact that only one or two disputes had been heard by the conciliation boards since their formation three years ago. On the other hand, corporation employees often resorted to strikes; there were instances of violence accompanying these strikes, notably the recent tramways strike at Halifax, and the gas strike in Leeds some years ago.

Labour members often argued that the advantage of a contractor in the despatch of work was obtained by the sweating of the men. This was a complete fallacy. It was freely admitted in Manchester that the principal reason for the increased cost of municipal work as against private contracts was that the corporation workmen had not done their simple duty, and that the work had been shirked. In London the advocates of municipal trading had had to make frequent appeals to the workmen to do an honest day's work for an honest day's pay. In this connection, the statement of a member of a deputation from the Labour party complaining before the General Purposes Committee of the London County Council of the method adopted by the works department towards the men in their employment was interesting and important. He said he would prefer that the work should be done by a contractor rather than the works department, because the contractors treated their men better than the works department. This Labour testimony, remarked Mr. Davidson, should effectively dispose of the outrageous sweating allegation. But this experience was by no means exceptional.

As to the comparison of cost of labour under labour administration, he stated that it was not possible in England to obtain definite information on the subject. Australia, however, afforded some reliable comparison of the disastrous effects of putting into practical use some of the unsound economic theories advanced by the Labour party. At a place in New South Wales the cutting of drains for water supply was let by contract at £16 per mile. The Government, however, interfered, and caused the drains to be cut by day labour under the direction of officials of the public works department. The cost of cutting a mile of drains on this system came to £96, though the wages of the day labourers were no higher than the earnings of the contractor's men who worked at piecework rates. The stimulus of proportionate reward being absent, and the supervising officials having no direct interest in making the supervision efficient, the productive capacity of the labour employed fell off to just one-sixth of what it was before. A further example from Western Australia of a water scheme carried out by day labour under official direction was also given, the ultimate cost of pipe laying and jointing work being about £100,000 more than the estimate.

Mr. Davidson concluded by stating that the irrefutable facts he had set forth should appeal to the judgment of members of local authorities and to the public generally. Consideration of them would lead to the firm conviction that the truest interests of the workmen were not advanced by municipal trading, that it was most unfair to private traders, that its continuance was against public policy, and that it was indefensible on financial grounds.

On the motion of Mr. Mansfield, York, seconded by Mr. Sinclair, Scarborough, the paper, after being slightly amended, was approved. Several delegates spoke in commendation of it, and strongly advocated its wide circulation. It was finally resolved, on the proposition of Mr. W. R. Thompson, Dewsbury, seconded by Mr. Mansfield, that five thousand (or more if necessary) copies of it should be printed for circulation among the federated associations and county federations in the kingdom.

Bath Builders and Unemployment.

On Monday, October 12th, seven members (comprising the committee) of the Bath Master Builders' Association met, by invitation, the seven secretaries of the various local branches of the building trades unions of the district, to consider the present question of unemployment in the building trade in the City of Bath, and, if possible, to suggest means of alleviating it.

Mr. J. W. Knight, J.P., president of the Bath Master Builders' Association, and Mayor-elect, was in the chair, and opened the proceedings by giving the reasons for calling a conference of employers and employees. After much discussion, all present agreed to a resolution the effect of which will be to shorten for at least the next three months the working hours of all trades. This revision of the working rules would, it was hoped, afford some degree of relief, as it would have the effect of giving employment to ten men instead of nine. It is understood that the majority of the local firms will agree to this proposal, and that probably all will fall into line as soon as the necessary arrangements can be made. Mr. F. J. Blackmore, who is engaged in building the new nurses' homes for the Royal United Hospital, hopes to have the sanction of the committee of that institution to extend the time for the completion of his contract, in order that he also may be able to fulfil the terms of the resolution, which are as follows: "That, with a view to meeting the present lack of employment, this conference of master builders and local secretaries of trades unions in the building trades agree to a reduction of working hours from Saturday, October 17th, until January 24th, 1909, viz., work to commence at 8.0 a.m. until 12.0 noon, and from 1.0 p.m. until 4.30 p.m. To cease work on Saturdays at 12.30 p.m., being 42 hours instead of 56. These rules to apply to all, working in and out of doors." A copy of this resolution has been forwarded to the town clerk, asking him to endeavour to get the various corporation committees to agree to the above hours for all their employees.

Northampton Association Annual Dinner.

The thirty-second annual dinner of the Northampton Builders' Association was held at the Angel Hotel, Northampton, on Thursday evening, October 15th, the president, Mr. Edwin Archer, in the chair. He was supported by the Mayor (Mr. T. L. Wright), Councillor Henry Martin, J.P., Mr. W. Hull, Mr. A. Fidler (Borough Engineer), Mr. R. W. Harris (vice-president), Mr. F. Tomlinson (Water Engineer), Mr. Arthur Airs (secretary), etc., etc. Following the loyal toast, Mr. H. W. Hanwell proposed the toast of "The Mayor, Magistrates and Members of the Corporation." The Mayor and Mr. Henry Martin, J.P., replied. Mr. J. J. Martin proposed "The Architects," coupling with the toast the name of Mr. W. Hull, and remarking upon that architect's homely way of impressing upon builders that even moles and worms were more systematic in their earthwork than some so-called builders. In reply, Mr. Hull complimented the builders of Northampton on the excellence of their work. Mr. Shaw, who also replied, said that he was old enough to re-

collect when there were only three architects in the town—now there were seven times that number. Mr. John Brown, jun., commented upon the competition of the builder-architect, which he was afraid would grow and crush many a smaller man. Mr. Redwood proposed "Success to the Northampton Builders' Association." He thought that a spirit of loyalty was to be found in the Association. They tried to do away with unfair dealing, and exercised a good influence in any dispute that might threaten. Despite complaints of bad trade, the builders had managed to get a living. What they wanted was not a lot more work, but work of a more remunerative kind, and of a character to do credit to those who were so well able to carry it out. The president then made a suitable acknowledgment. He was afraid that the trade was going through seven lean years, and he trusted that ere long matters would improve. Mr. G. J. Fisher toasted "The Visitors," and Mr. J. F. Stops, replying, mentioned how sorry he was not to see Mr. F. J. Airs present, he having been the devoted secretary for more than 31 years. Mr. John Bird proposed "The President," and eulogised his sound business abilities and his continued loyalty to the Association. Mr. Henry Green, in proposing the toast of "The Vice-President" (Mr. R. W. Harris), commended the excellent rule the Association has of electing a different president each year, and thereby creating a wider interest amongst the members. Referring to some of the grievances of the trade, he thought the architects could not altogether be blamed for employing specialists to fix what they make; but such sub-contractors should be bound by the same conditions as the builder, and not be paid earlier; they should in some way indemnify the builder in the matter of workmen's compensation insurance. Mr. R. W. Harris suitably replied. Mr. A. P. Hawtin, in proposing "The Secretary," spoke sympathetically of the failing eyesight which prevented the former secretary (Mr. Airs, sen.) from being amongst them. The secretary, in reply, assured them of his appreciation of their kind sentiments.

The large business premises which are just rising above the ground in the Market Place, Burton-on-Trent, from the design of Mr. Forshaw, are to be fireproofed on the "Fawcett" system. The steelwork throughout the buildings is being supplied and fixed by Messrs. Mark Fawcett and Co., of Westminster and Greenwich.

Trade and Craft.

"Fibro-cement" Compressed Roofing Slates and Non-compressed Sheets.

The fibro-cement compressed roofing slates were introduced by C. Zerenner and Co., Norfolk House, Laurence Pountney Hill, E.C., five years ago. They are non-absorbent and practically indestructible, even in atmospheres charged with sulphurous fumes. They also possess very considerable mechanical strength, which is a most important characteristic for a roofing material. The material, being a mineral product, is impervious to vermin, is not liable to rot, and its insulating properties render it not only suitable for buildings in which a regular temperature is required, but also very suitable for switchboard work. At the port of Havre, where the violence of the storms puts roofing material to the severest test, Messrs. C. Zerenner and Co. delivered about 350,000 of their asbestos slates. The custom house and the railway station at Boulogne, as well as Bennett's shipping offices, have also been roofed with these slates. Further, the cavalry barracks at Aldershot, the gun factory at Woolwich Arsenal, etc., etc., and barracks at H.M. dockyards at home and abroad, have been roofed with "Fibro-Cement."

The "Fibro-Cement" non-compressed sheets made by the same firm constitute, we are informed, an excellent fire-proof lining for walls, ceilings, partitions, doors, ventilating shafts, etc. They measure about 8ft. by 4ft., and 4ft. by 4ft. by 3-16th in. thick, and can easily be cut to any size by a saw, and render partitions sound-proof and damp-proof, as well as fireproof. It is claimed that the sheets are of such a rigid nature that, when nailed to standards or studded, they actually increase the strength of the structure. "Fibro-Cement" sheets can be joined, fitted, etc., by anyone, no unusual or special knowledge being required in handling them.

For door panels, "Fibro-Cement" sheets are not in the least degree subject to the usual expansion and contraction due to the damp atmosphere of winter or to the furnace heat of summer. Panels made of this material can be painted or veneered to suit individual tastes. An additional advantage of having doors and walls constructed of this material is that it makes practically a fire-proof partition between the rooms of a building, be it a private residence or a factory. Where it is desired to cut down insurance rates and to ensure personal safety from fire by confining it to the floor in which it originates, "Fibro-Cement" sheets may be used upon the rough floor. The finished floor may then be laid immediately upon these sheets, the whole being securely nailed in the usual manner. These sheets, it is claimed, are not only fireproof, but at the same time form an indestructible barrier against the gnawing of mice, rats, and other vermin, which are often the cause of making apertures sufficiently large to allow the passage of flame. "Fibro-Cement" has been approved by underwriters.

Prominent at the Electrical Exhibition in Manchester is a house erected, furnished, and decorated by "Goodalls," of King Street, Manchester, as a means of demonstrating the value of electricity in the house. The house is about 120ft. long, and one storey high, built with rough-cast trellised walls, and roofed with warm-coloured tiles, having its projected windows filled with painted glass, while the canopied carved doorway is surmounted by a stone panel bearing the arms of the Moseleys, who were lords of the manor of Manchester. The interior decoration and fittings maintain the firm's reputation for taste and resource.

Bankruptcies.

CUMMING, E. H. S., builder, 19, Merivale Road, Harrow. P.E., C.C., St. Albans, Nov. 17, at 10.30. (Amended notice.)

EARLAND, WM. HY., builder, 10, Heath Road, Harrow. R.O., Oct. 13.

KENWORTHY, CHAS. HY. HAROLD, and Claude Robt. Kenworthy, builders (trading as Kenworthy Bros.), Croydon Road, Caterham Valley. Adj. Oct. 12.

KIRK, GEO., 364, New Wellington Street, Great Grimsby, and Geo. Shaw, 57, St. Helier's Road, Cleethorpes, slaters (trading as Kirk, Shaw and Co., Grimsby and Cleethorpes). R.O., Oct. 13. Adj., same day.

MARSH, A., builder, Portsdown Avenue, Golders Green, late 162, Dalston Lane. R.O., Oct. 14. First meeting, Bankruptcy Court, Oct. 28, at 1. P.E., same place, Nov. 2, at 12.

NEEDLER, ARTHUR, late builder, Sutton Ings, Holderness Road, Sutton, late Middleburg Street, Hull. R.O., Oct. 13. Adj., same day.

SANDERSON, HY. WILLIS, victualler and builder, the Nelson's Arms, Towcester, late the Butchers' Arms, Greens Norton. R.O., Oct. 15. First meeting, O.R.'s, Northampton, Oct. 28, at 11. P.E., County Hall, same day, at 12. Adj., Oct. 15.

SMITH, CHAS., 109, Walmer Road, Fratton, and Geo. Morey, Silon, Powerscourt Road, Portsmouth, builders, Adj., Oct. 15.

TAYLOR, JOSEPH, builder and contractor, 69, Woodside View, Halifax. R.O., Oct. 12. First meeting, C.C., Halifax, Oct. 27. P.E., same place, Oct. 30, at 2.

THOMS, JAS., builder and contractor (trading as J. Thoms and Son), Brunton Road, Lancaster. R.O., Oct. 16.

WHITEHEAD, WM. HY., joiner, builder, and contractor (trading as J. R. Whitehead and Son), 67, Park Lane, Bradford. R.O., Oct. 17. First meeting, O.R.'s, Bradford, Oct. 29, at 11.30. P.E., C.C., same, Nov. 18, at 10. Adj., Oct. 17.

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IMPORTANT TO ARCHITECTS & BUILDERS.

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A New and Wonderful Floor Spring for Double and Single Action Doors.
Absolutely the Shallowest, Most Perfect, Powerful and Efficient Spring ever invented.
Half the size, Thrice the Value and Durability of others.
Its unique Sealed Check Chamber is Impervious to Water, and an immunity against oil-stained floors.
It is calculated to increase the demand for double and single action Door Springs, even more than my original celebrated and now Universally used 1870 patent Spring and Adjustable Shoe.
Such a Shallow Box as referred to above has never before been known to be practicable. It has been specially designed for the shallowest floors, to suit the exigencies of modern construction.
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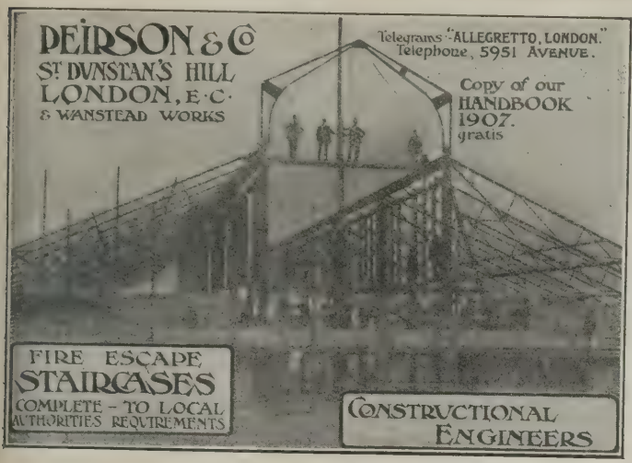
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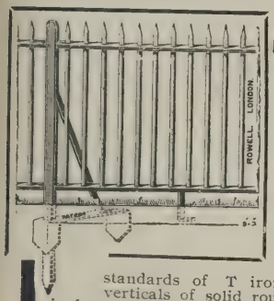
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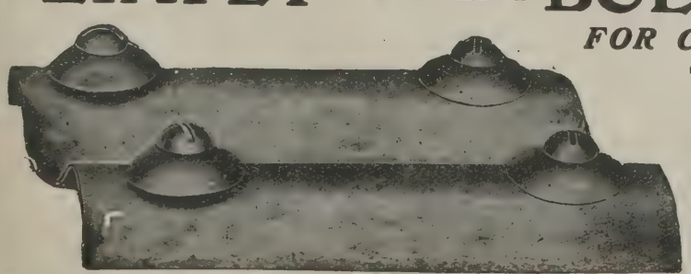
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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bromley (Kent).—For erection of secondary school for girls, for the Kent Education Committee. Mr. W. H. Robinson, architect. Thirty-nine tenders received.

Chadwell Heath Joinery Co.	£10,550 10 0
A. S. Ingleton,* Herne Bay ...	8,327 0 0

*Accepted.

Chelmsford.—For erection of new offices in Duke Street, Chelmsford, for the Essex Education Committee. Mr. F. Whitmore, architect. Twenty-seven tenders received.

Kirk and Randall	£4,988 0 0
Parkington anll Son,* Ipswich	3,900 0 0

Architect's estimate, £4,000.

*Accepted.

Croydon.—For erection of a secondary school for girls to accommodate some 380 pupils, proposed to be built in the Crescent, Croydon, for the Education Committee. Mr. H. Carter Pegg, F.R.I.B.A., architect, Thornton Heath. Twenty-eight tenders received.

F. T. Brunton and Son, Bayswater, W.	£17,099
B. E. Nightingale,* Albert Embankment	13,405
W. Wallis, Balham, S.W.	13,338

*Accepted.

London, N.W.—Accepted for erection of factory, Collingdale Avenue, Hendon, for Messrs. Dickinson. Messrs. Meaken, Archer, and Stoneham, surveyors:—A. J. Staines and Co., 154, Great Titchfield Street, Oxford Street, £1,300.

London, S.E.—For warehouse, 47, Queen Elizabeth Street, Tower Bridge, S.E. Mr. Arthur W. Osborn, architect, 90 and 91, Queen Street, Cheapside, E.C. Quantities by Mr. W. James Pamphilon, surveyor, 21, Finsbury Pavement, E.C.:—

Potton and Sons	£2,990 0 0
Hawtrey and Son	2,913 10 0
Renwick	2,912 0 0
Symes	2,910 0 0
Hoare and Son	2,839 0 0
Sheffield Bros.*	2,760 0 0
Watt	2,670 0 0
Parsons	2,654 0 0

*Accepted after modification.

London, S.E.—For new fire station in substitution for the Waterloo Road Station, for the London County Council:—

Charles Wall, Ltd., Lloyd's Avenue, E.C.	£12,127 0 0
Holloway Brothers (London), Ltd., Belvedere Road, S.E.	11,900 0 0
Higgs and Hill, Ltd., South Lambeth Road, S.W.	11,830 0 0
E. Lawrance and Sons, City Road, N.	11,716 0 0
Spencer, Santo and Co., Westminster, S.W.	11,659 0 0
Kirk and Randall, Woolwich, S.E. ...	11,674 0 0
W. Smith and Sons, Harleyford Road, S.E.	11,580 0 0
Patman and Fotheringham, Ltd., Islington, N.	11,538 0 0
F. and H. F. Higgs, Herne Hill, S.E.	11,462 0 0
G. Munday and Sons, Trinity Square, E.C.	11,457 0 0
J. Carmichael, Wandsworth, S.W. ...	11,187 0 0
H. L. Holloway,* Union Works, Church Street, Deptford, S.E. ...	10,949 0 0
Works Committee's estimate ...	10,674 0 0

Architect's revised estimate, £11,400.

*Recommended for acceptance.

Milton Regis (Kent).—For enlargement of Upton Lane Council School, for the Kent Education Committee. Mr. W. H. Robinson, architect:—

Treasure Bros.	£3,179 0 0
Johnson and Co.	2,915 0 0
Jones and Andrews	2,893 0 0
Spencer, Santo and Co., Ltd. ...	2,886 10 0
Abbot and Charlton	2,867 5 0
J. Wilford	2,780 0 0
C. E. Skinner	2,743 0 0
West Bros.	2,712 0 0
C. B. Benfield	2,690 0 0
Pavey and Sons	2,655 0 0
Amos and Ford	2,580 0 0
L. Seager	2,563 0 0
Bowes Bros.	2,545 10 0
Sturry Building Co.	2,539 10 0
H. J. Tidy	2,539 0 0
T. Monk	2,487 0 0
E. Bishop and Sons,* Albany Road, Sittingbourne	2,463 0 0

*Accepted.

(Tenders continued on page viii.)

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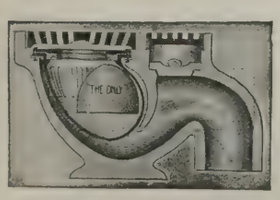
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W. Robinson, (Nottingham) Ltd., 7 & 9, Victoria Street, NOTTINGHAM.
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W. Robinson, (Nottingham) Ltd, Churchgate, LEICESTER.

(Tenders continued from page vi.)

Nottingham.—Accepted for erection of a pair of semi-detached villas, Warwick Road, Nottingham, Messrs. A. R. Calvert and William R. Cleave, A.R.I.B.A., architects:—W. Maule and Co., £1,483.

Sidmouth (Devon).—For new mixed Council school for 260 children at Woolbrook, including boundary walls, tar-paving offices, and covered sheds for Devonshire County Education Committee. Mr. Percy Morris, county architect (Education), 1, Richmond Road, Exeter. Quantities by Mr. S. W. Houghton, 22, Courtenay Street, Plymouth:

R. G. Spiller	£3,368 0 0
R. W. and J. Skinner	3,345 5 3
Bird and Pippard	3,294 13 0
C. Turner	3,222 7 5
W. E. Bennet	3,219 7 6
G. P. Turpin	3,174 0 0
F. J. Badcock	3,156 15 2
J. J. Lacey and Co.	3,133 5 8
Johnson and Co.	3,105 3 3
W. G. Coles	2,989 10 7
N. Pratt	2,986 14 8
F. J. Stanbury	2,984 16 8
Wilkins and Son	2,889 0 0
Westcott, Austin and White	2,856 0 0
Wakeham Bros.,* Plymouth	2,824 0 0

Architect's estimate, £2,928 7s.
*Accepted.

Teignmouth.—For sea defence works for the Teignmouth Urban District Council:—

F. Bevis, Portsmouth	£16,279
D. G. Somerville and Co., London	15,900
S. Wood, Bristol	15,672
W. Hill and Co., London	15,457
Whyte and Co., Ltd., Penarth	14,276
Playfair and Toole, Southampton	13,933
F. Mitchell and Son, Manchester	13,860
A. Facey and Son, London	13,601
R. T. Relf and Son, Plymouth	13,344
J. Moffat, Manchester	12,499
J. Dickson, St. Albans	12,434
G. Shellabear and Son, Plymouth	12,205
Hobrough and Co., Gloucester	11,798
Pethick Bros., Plymouth	11,383
R. C. Brebner and Co., Edinburgh	11,381
T. B. Cooper and Co., Bristol	11,200
E. R. Lester, Plymouth	10,937
A. N. Coles, Plymouth	10,637
R. W. Hunter and Co., Cardiff	10,462
W. Cowlin and Sons, Bristol	10,437
R. H. B. Neal and Co., Ltd., Plymouth	10,033
G. Pollard and Co., Ltd., Taunton	9,588
C. Hayes and Son, Bristol	9,233
W. E. Blake,* Plymouth	8,795

*Accepted

Llandovery (Carmarthenshire).—For the erection of a proposed new school. Mr. W. Vincent Morgan, A.R.I.B.A., county education architect, County Offices, Carmarthen:—

W. D. Morgan, Glanaman	£5,460 0 0
Brown, Thomas and John, Llanelly	5,436 0 0
David B. John, Tirydail, Ammanford	5,428 10 0
Benj. Howel and Son, Ltd., Llanelly	5,300 0 0
Evan Evans, Llanybyther	5,185 0 0
Morgan Morgan and Sons, Gwynfe, Llangadock	5,150 0 0
W. J. and S. L. Michael, Llandebie	4,850 0 0
Geo. Mercer, Llanelly	4,750 0 0
Jones Bros., Tirydail, Ammanford	4,717 0 0
Edgar G. Groom, Port Talbot	4,654 0 0
Daniel Davies, Ffairfach, Llandilo	4,600 0 0
Rees Davies, Carmarthen	4,519 0 0
Thomas Brothers,* Llandilo	4,450 0 0

*Accepted.

Southend-on-Sea.—For the erection of two houses at Southchurch Beach Road, for Mrs. A. Garrard, Mr. Charles Cooke, architect and surveyor, Tower Buildings, High Street, Southend-on-Sea:—

W. Dale	£1,350
G. J. Dinn	1,186
G. Bedwell	1,054
H. R. Wilkinson*	1,037
A. J. Arnold	1,020
E. Campkin	955

*Provisionally accepted.

Isleworth (Middlesex).—For extensions to the nurses' home at the workhouse infirmary, for the guardians of Brentford Union. Messrs. W. H. Ward, 30, Paradise Street, Birmingham, architects:—

W. Lacey, Hounslow	3,395 0 0
J. Dorey and Co., Brentford	3,450 0 0
W. H. Hyde and Co., Norwood, S.E.	3,455 0 0
W. Pattinson and Sons, Ltd., London, S.W.	3,551 0 0
W. J. Dickens, Ealing, W.	3,558 0 0
C. Wall, Ltd., London, E.C.	3,597 0 0
F. D. Hidden, Brentford	3,650 0 0
Abbot and Charlton, Acton, W.	3,718 0 0
H. C. Clifton, Bayswater, W.	3,745 0 0
T. J. Messom, Twickenham	3,755 0 0
Spencer, Santo and Co., Ltd., London, W.	3,787 0 0
Drowley and Co., Woking	3,800 0 0
Jarman and Co., Richmond, Surrey	3,895 0 0
Bird and Frost, Ealing, W.	4,344 13 2
Roberts and Co., Ltd., London W.	£4,450 0 0

Treharris (Wales).—Accepted for erecting a free library at Perrott Street, for Merthyr Tydfil Borough Council. Mr. W. Dowdeswell, architect, Treharris. Quantities by architect:—Jones Bros., Quaker's Yard, £2,340.

Newport (Mon.).—For the erection of a Technical Institute. Mr. Charles F. Ward, A.R.I.B.A., borough architect:—

C. H. Reed, Newport	£44,101
R. W. Moon, Newport	42,797
Wakeham Bros., Plymouth	42,498
Stephens, Bastow, and Co., Bristol	41,899
Watkin Williams, Cardiff	40,900
Poulton and Whiting, Pontnewydd	40,768
J. Jenkins, Ltd., Newport	40,298
John Charles, Newport	39,968
Jacob Long and Sons, Bath	39,893
D. W. Davies, Cardiff	39,254
Collins and Godfrey, Tewkesbury	39,180
E. F. King and Co., Newport	38,532
E. C. Jordan and Sons, Newport	38,320
E. Turner and Sons, Cardiff	37,938
A. S. Morgan and Co., Newport	37,900
Dd. Davies and Sons, Cardiff	37,780
W. E. Blake,* Plymouth	36,130

*Accepted.

Rothesay (Scotland).—For Contract No. 1. Work A.—The widening and extension of Albert Pier in Greenheart timber construction, or, as an alternative, in reinforced concrete construction, for the Harbour Trustees. Mr. J. B. Brodie, engineer, 141, West George Street, Glasgow:—

Timber Construction.

A. Stark and Sons	£5,068 16 1
E. R. Lester	4,850 1 8
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Kinnear, Moodie and Co.	4,570 19 6
G. Lawson	4,480 0 0
J. and W. Stuart	4,175 19 3
G. Halliday, Ltd.,* Rothesay	3,741 15 4

Alternative in reinforced concrete construction.

A. Stark and Sons	£6,217 19 4
G. Lawson	6,175 0 0
Kinnear, Moodie and Co.	5,454 2 0
W. Kennedy, Ltd.	4,732 11 0
J. and W. Stuart	4,604 2 7
G. Halliday, Ltd.,* Rothesay	4,336 5 9
D. S. Somervile and Co.	4,125 0 0
E. R. Lester	3,386 16 2
R. C. Brebner and Co	3,467 14 7

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Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the ontract, which requires them to pay the rates of wages current in the district.

BUILDING.

ct. 29. DEWSBURY.—Erection of a nurses' extension of the operating room at the and District General Infirmary. Draw- may be seen, and bills of quantities ob- offices of Kirk and Sons, architects,

ct. 29. DORCHESTER.—Alterations at the y Trinity infants' school, Grey's School Pas- hester, for the managers. Plans, etc., seen at the office of the architect, J. uth Walks, Dorchester.

ct. 29. SCUNTHORPE.—Erection of a fire sta- ways depot, cart sheds, and public conveni- e at the corner of Mary Street, E., and Cole the U.D.C. Plans, sections, and de- s may be seen, and any further information en upon application to Walter F. Bickford, en- eer and surveyor, Engineer's and Surveyor's me Street, Scunthorpe. Form of ten- eral conditions, specifications, and bill tities may be obtained upon payment of eas. Tenders, sealed and endorsed "Ten- Fire Station, Buildings, etc.," to be d to F. C. Hett, clerk, 2, Trafford Street, nthorpe, and delivered by noon on Oct. 22.

ct. 30. LONDON.—Erection of a shelter and re for model yachts, at Victoria Park for the Persons desiring to tender may obtain the specification (without bill of quantities), tender, and other particulars at the 's Department, 19, Charing Cross Road, a payment of 10s. to the cashier of the at the County Hall, Spring Gardens, S.W. rticulars of the work may be obtained on n at the County Hall, before the payment ee. Each tender is to be delivered in over, marked "Tender for Shelter, etc.," Park," by 11 a.m. on Oct. 30, to G. L. clerk to the London County Council, Hall, Spring Gardens, S.W. Fair wages

ct. 31. LEEDS. — Erection of the firemen's ings and hose tower, in Park Street, for the ration. Contractors desirous of tendering send their names, accompanied by a deposit ne guinea, to the architect, Percy Robinson, .I.B.A., Yorkshire Post Chambers, 53, Albion et, on Oct. 31, when bills of quantities will be warded. Tenders, endorsed "Firemen's Dwell- s," must be delivered by Nov. 18, to Robert E. , town clerk, town hall, Leeds.

ct. 31. ABERDEEN.—Erection of a new book- office, etc., at the corner of Bridge Street and ld Street, with steel footbridge and stairs to west platforms, for the Aberdeen Joint Station mmittee. The drawings may be seen at the ce of James A. Parker, C.E., 80, Guild Street, erdeen, where copies of the specification and edule may be obtained on payment of one nea. Sealed tenders, endorsed "Tender for king Office," to be lodged by 10 a.m. on Oct. with T. S. Mackintosh, secretary, Aberdeen nt Station Committee, 80, Guild Street, Aber- n.

ct. 31-Nov. 30. DUNHAM MASSEY.—Erection proposed isolation hospital, in Sinderland Road, nham Massey, for the Altrincham U.D.C. Per- s desirous of tendering should send their names the clerk by Oct. 31, accompanied by a deposit two guineas. Plans, specifications, etc., prepared the architect, Wm. Owen, A.R.I.B.A., Duchy ers, Clarence Street, Manchester, will be for inspection at his offices on and after Nov. which date copies of bills of quantities will warded to those who have applied for same. enclosed in sealed envelopes, endorsed for Isolation Hospital," must be deli- by Nov. 30, to W. S. Stokoe, clerk to the , town hall, Altrincham.

Nov. 1. DRUMAGHLIS (Ireland).—Erection of new National school. Plans and specifications ay be inspected on application to John M'Robert, P., Rademon, Crossgar, or 13, Wellington Place, elfast, by whom tenders will be received up to ov. 1.

Nov. 2. TIDESWELL, near Buxton.—Taking 3ft. f retort-house chimney, and building cks, to remove old mortar and point mortar and cement from top to floor Tideswell Gas Company. The con- scaffolding and all labour and lers should be addressed to nd endorsed "Tender for Chimney," Any further particulars from S. J. ager.

Nov. 2. DUBLIN.—Addition to and alteration in the General Post Office, Dublin, for the Board of Public Works. Plans and specification can be seen at the offices of the secretary. Forms of tender and bills of quantities will be supplied on deposit of £1. Separate envelopes containing the tender and the bill of quantities must be endorsed "Tender for Works at the General Post Office, Dublin," and delivered by 10 a.m. on Nov. 2, to H. Williams, secretary, office of public works, Dublin.

Nov. 2. LISBURN.—Construction of a masonry and brickwork arch bridge over the railway at Ballinderry Road level crossing, near Lisburn, for the directors of the Great Northern Railway Company (Ireland).—Parties wishing to tender may see the drawing and specification at the office of W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or copies at the district engineer's office, Belfast, and can obtain at the offices lithographed copies of drawing and specification, also form of tender, upon payment of 10s. per set (not returnable). Tenders, on the forms supplied, should be delivered, under sealed cover, endorsed "Tender for Bridge near Lisburn," by 10 a.m. on Nov. 2, to T. Morrison, secretary, secretary's office, Amiens Street terminus, Dublin.

Nov. 3. CASTLEFORD.—Erection of public baths for the U.D.C. Persons desirous of tendering are requested to forward their names and addresses to H. H. Broadbent, clerk to the council, by Nov. 3, when a copy of the quantities, etc., will be forwarded on receipt of one guinea.

Nov. 3. MARKET DRAYTON.—Erection of a new secondary school at Market Drayton, for the Salop C.C. Applications may be made for bills of quantities to the architect, Joseph Holt, A.R.I.B.A., 9, Albert Square, Manchester, on or before Nov. 3, after which date bills of quantities will be issued, and drawings, specifications, and conditions of contract may be inspected. Applications must be accompanied by a deposit of £2.

Nov. 3. BRIDGWATER.—Repairs and renovation of the buildings, gates, fences, and engines at the Ashford pumping station, Cannington, for the town council. Specification may be seen and forms of tender obtained at the offices of the borough surveyor, Municipal Buildings, High Street. Tenders must be submitted on the form supplied, and in sealed and endorsed envelopes, provided for the purpose. Tenders to be delivered at the offices of the town clerk by Nov. 3.

Nov. 4. HULL.—Erection and completion of art gallery to the public hall, for the property committee of the Corporation. Drawings and specifications may be seen with Joseph H. Hirst, city architect, town hall, Hull, and quantities obtained, upon deposit of two guineas. Remittances to be made payable to the city treasurer. Tenders, sealed and endorsed "Tender for Art Gallery," are to be addressed to the chairman of the property committee, and delivered at the town clerk's office, Hull, before 10 a.m. on Nov. 4.

Nov. 4. WESTWOOD.—Erection of station buildings at Westwood Station, situate between Ebchester and Lintz Green, on the Consett branch, for the directors of the North-Eastern Railway. Plans and specification may be seen, and quantities and further information obtained upon application to William Bell, the company's architect, Central Station, Newcastle-on-Tyne. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Westwood Station," to be sent by 9 a.m. on Nov. 4, to R. F. Dunnell, secretary, York.

Nov. 4. NORTH FARNBOROUGH.—Erection of a new council school at North Farnborough, for the Southampton County Council. Persons desirous of tendering may see plans, specification, and conditions of contract, and obtain bills of quantities, and other information, at the office of W. J. Taylor, county surveyor, The Castle, Winchester, on and after Oct. 21, between 9 a.m. and 5 p.m. (Saturdays, 9 a.m. and 1 p.m.). A deposit of two guineas is required for the bills of quantities and form of tender. Deposits must be made by cheque, payable to the Hants county council, and crossed "Bank of England." Tenders, endorsed "North Farnborough Council School," to be delivered by Nov. 4, to H. Barber, clerk of the county council, The Castle, Winchester.

Nov. 4. NORTH DALTON (near Murton). — Erection and completion of an engine house, boiler house, coal store, chimney stack, etc., at the North Dalton pumping station, near Murton, for the directors of the Sunderland and South Shields Water Company. Plans and specifications may be seen, and quantities and further information obtained upon application to Alfred B. E. Blackburn, Assoc.M.Inst.C.E., the company's engineer, at 29, John Street, Sunderland. Quantities will be supplied only to contractors tendering for the whole of the works, on personal application. A deposit of three guineas must be made. Sealed tenders, marked "North Dalton Pumping Station," must be delivered to the secretary, 29, John Street, Sunderland, by noon on Nov. 4.

Nov. 5. ASTON-CUM-AUGHTON.—Whole or separate tenders in the erection of heating chamber at Aston-cum-Aughton; fence for provided school, near Rotherham, for the West Riding Education Committee. Plans may be seen and bills of quantities obtained on application to the architect. Sealed tenders, properly endorsed, to be forwarded by 10.30 a.m. on Nov. 5, to J. Vickers-Edwards, county architect, county hall, Wakefield.

Nov. 7. KEA (Cornwall).—Erection of a pair of cottages at Trevean, in the parish of Kea, for the Right Honourable Viscount Falmouth. Persons desirous of tendering can inspect plans, conditions and specifications, at the Farm House at Old Churchtown, Kea, in the occupation of W. L. and J. P. Hearle. Tenders should be sent by Nov. 7 to George Gow, Tregothnan office, Truro.

Nov. 7. GLASGOW.—Removal and renewal of parapet walls, pavement and railings surrounding St. George's Church, 163½, Buchanan Street, for the Corporation. Drawings may be seen and forms of tender obtained on application to the city engineer at his office, 64, Cochrane Street. Sealed offers marked outside "Offer for Parapet Walls, etc., St. George's Church," must be lodged by Nov. 7, with A. W. Myles, town clerk, City Chambers, Glasgow.

Nov. 7. SOWERBY BRIDGE (Yorks.).—Extensive alterations of shops at West Vale for the Sowerby Bridge Industrial Society, Ltd. Plans and specifications may be seen, and bills of quantities obtained at the offices of Medley, Hall, and Son, architects and surveyors, 1, Harrison Road, Halifax, from Oct. 31 to Nov. 7, on which last-named day sealed tenders, endorsed "Tender for Alterations to Shops," to be delivered at the offices of the Society or to the architects Fair wages clause.

Nov. 7. NEWTON HEATH (Manchester).—Strengthening, etc., Church Street Bridge, over the Rochdale Canal, Newton Heath, for the Corporation. Drawing may be seen, and specification, bill of quantities and form of tender obtained, on application at the city surveyor's office, town hall, Manchester, on payment to the city treasurer of two guineas. All cheques or postal orders to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in official envelope, addressed to the chairman of the Improvement, etc., committee, must be delivered at the city surveyor's office by 10 a.m. on Nov. 7.

Nov. 9. DURHAM.—Erection of new science and art block and terraces in connection with the Johnston technical school, for the C.C., in accordance with plans and specification prepared by Oliver, Leeson, and Wood, architects, Newcastle-on-Tyne. Plans and specification may be seen and bills of quantities obtained on application to J. A. L. Robson, secretary for higher education, Shire Hall, Durham, to whom sealed and endorsed tenders should be sent by Nov. 9.

Nov. 10. NORWICH.—Erection of a pavilion of isolated cubicles at the isolation hospital, Bowthorpe Road, for the health committee of the Corporation. Plans may be seen at the office of Arthur E. Collins, M.Inst.C.E., city engineer, etc., Guildhall, Norwich.

Nov. 10. CHELMSFORD.—Erection of a covered cowshed and construction of a roof over an auction ring in the cattle market, for the Corporation. Specifications, bills of quantities, forms of tender and full particulars may be obtained on deposit of £2 2s. The plan may be inspected at the borough surveyor's office, 16, London Road, on and after Oct. 26. Tenders, on the form provided, enclosed in sealed envelopes and endorsed "Market," must be delivered by 4 p.m. on Nov. 10, to W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford.

Nov. 10. CHELMSFORD.—Erection of a covered cowshed, and construction of a roof over an auction ring, in the cattle market, for the Corporation. Specifications, bills of quantities, forms of tender, and full particulars may be obtained (on deposit of £2 2s.), and the plan may be inspected, at the borough surveyor's office, 16, London Road. Tenders, on the form provided, enclosed in sealed envelopes, and endorsed "Market," must be delivered by 4 p.m. on Nov. 10, to W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford.

Nov. 11. PADDINGTON.—Alterations and the provision of padded rooms at the workhouse in Woodfield Road, W., for the guardians of the poor, pursuant to plans and specification to be seen at the offices of the architect, F. J. Smith, F.R.I.B.A., Parliament Mansions, Victoria Street, S.W., between 10 and 5, where all information can be obtained, as also form of tender. Bills of quantities may also be obtained at the offices of the architect on deposit of five guineas. Sealed tenders must be delivered by 10 a.m. on Nov. 11, to Henry F. Aveling, clerk to the guardians, 313-319, Harrow Road, W. Fair wages clause.

Nov. 13. HULL.—Additions and alterations to cattle market under two contracts, for the corporation. No. 1, three reinforced concrete galleries of a total area of about 1,100 yds., together with alterations to existing concrete floors and other works; No. 2, new pens and hurdles and alterations to existing pens (weight of new iron and steel about 22 tons). Forms of tender and other particulars may be obtained of A. E. White, M.Inst.C.E., city engineer, town hall, Hull, on payment of £1 in respect of each contract. Blue prints of the plans for either contract will be supplied on payment of 5s. not returnable. Remittances must be made payable to T. G. Milner, city treasurer. Tenders, endorsed as directed on the forms of tender, to be addressed to the chairman of the markets committee and delivered at the town clerk's office, Hull, before noon on Nov. 13.

Nov. 14. BRIGHOUSE.—Construction of a hollow engine-room floor, 54 ft. by 30 ft., in ferro-concrete, for the Corporation. Plans may be seen, and particulars and tender forms obtained, from S. S. Haywood, borough engineer, municipal offices, Brighouse. Sealed tenders, with particulars of proposed construction, endorsed "Tender for Ferro-Concrete Work at Transforming Station," to be sent by Nov. 14, to James Parkinson, town clerk, town clerk's office, Municipal offices, Brighouse.

Nov. 14. BRIGHOUSE.—Erection of an electric transforming station on the Sand Wharf, Huddersfield Road, Brighouse, for the Corporation. Plans may be seen and speifications, bills of quantities and form of tender obtained, on application to S. S. Haywood, borough engineer, municipal offices, Brighouse. Sealed tenders, accompanied by priced quantities, endorsed "Tender for Electric Transforming Station," to be sent by Nov. 14, to James Parkinson, town clerk, town clerk's office, municipal offices, Brighouse.

Nov. 17. BARNET (Herts.).—Erection of extensions to the girls' grammar school, Barnet, Herts., for the governors of Queen Elizabeth's grammar school, in accordance with plans and specification prepared by the architect, John Ladds, of 93, Pemberton Road, Harringay, N., where plans and specification may be seen between 10 and 4 p.m. after Nov. 4. Builders wishing to tender must apply by letter to the architect on or before Nov. 4, for a copy of the quantities, enclosing a £5 Bank of England note. Tenders must be delivered at the office of the architect by 4 p.m. on Nov. 17. The builder accepted must be prepared to enter into a contract and bond with two sufficient approved sureties in the sum of one thousand pounds for the due completion of the works.

Nov. 27. TRAWDEN, near Colne.—Erection of an elementary school for 710 children at Trawden, near Colne, for the Lancashire education committee. Plans may be seen and bills of quantities obtained at the office of the county architect, Henry Littler, 16, Ribblesdale Place, Preston, by deposit of £2. Tenders must be delivered before noon on Nov. 27, sealed and endorsed, to H. W. Haworth, education office, Barrowford, near Nelson.

Dec. 1. RUAN, ENNIS (Co. Clare).—Erection of a new church at Ruan, Ennis, Co. Clare. Tenders will be received by the Rev. J. Garry, P.P., up to Dec. 1. Drawings, specification, and bills of quantities may be seen at the Parochial House, near railway station, Ruan, or at the office of O'Malley and O'Rourke, architects, 10, Glentworth Street, Limerick.

No date. CROSS KEYS.—Erection of six houses at Cross Keys, Mon. Persons desirous of tendering may obtain plans and specifications upon application to Moore, Cross Keys, Mon.

No date. WEST LYNN.—Alterations to cottages at West Lynn, for Wm. Wing. For bill of quantities and all information apply to Walker and Walker, architects and surveyors, Wisbech and Terrington.

No date. WINCHCOMB.—Erection of a Residence and stables at Winchcomb. Plans and specifications can be seen at the office of Thomas Malvern, architect, 21, Winchcomb Street, Cheltenham.

No date. KINGSWOOD.—Erection of a house at Kingswood. Persons desirous of tendering may obtain quantities, etc., upon application to La Trobe and Weston, F.R.I.B.A., architects, 44, Corn Street.

No date. WREXHAM.—Erection of a church house in Regent Street, Wrexham. Quantities, etc., may be obtained from Prothero, Phillot, and Barnard, architects, 13, Promenade, Cheltenham, on deposit of 10s.

No date. BRADFORD.—Erection of new wheelwright's workshops, in Bowland Street, Bradford. Plans may be seen and quantities obtained upon application to H. Hardaker, architect, Ivegate Chambers, New Ivegate, Bradford.

No date. DEVIZES.—Erection of a stone wall in stream on Poulshot Road, also moving and repairing the post and rails, for the R.D.C. Specification and particulars to be had on applying to Jas. M. Butcher, Southbroom Terrace, Devizes.

No date. BAWTRY (near Doncaster).—Erection of a villa residence at Bawtry, near Doncaster. Persons desirous of tendering are requested to forward their names to Garside and Pennington, architects and surveyors, Pontefract and Castleford.

No date. TALYBONT (Cardiganshire).—Erection of a new mission church at Talybont, Cardiganshire. Plans, specifications, and further particulars may be obtained on application to the architects, Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. HECKINGTON.—Alterations and additions to a residence at Heckington, for Ernest H. Godson. Persons desirous of tendering are requested to forward their names and addresses to Herbert Walker and Son, architects, Southgate, Sleaford, when bills of quantities will be forwarded in due course.

No date. BROADWAY (Worcestershire).—Erection of new wing and other work to be extended at St. Saviour's Monastery, Bradway. Persons desirous of tendering may send their names to Robt. Curran and Son, architects, Warrington, with a deposit of one guinea, on receipt of which bills of quantities will be forwarded.

No date. BROUGHTY FERRY.—Extension of Grove Academy, Broughty Ferry:—Mason, joiner, plumber, plaster, slater, glazier, painter, steelwork, heating, ventilation, granolithic paving and tilework, works required for the school board. Plans and specifications may be seen at the office of Maclaren, Sons, and Soutar, architects, 10, Reform Street, Dundee, from whom schedules of quantities may be obtained on deposit of 10s. per schedule.

ENGINEERING.

Oct. 30. HALTON (Chester).—Construction of new Sewerage Works in the parish of Halton, Chester, for the Runcorn R.D.C. The works will comprise about 2¾ miles of 6in. to 12in. earthenware pipe sewers, together with all manholes, lampholes, and other appurtenances. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of James Diggle and Son, civil engineers, Hind-hill-street, Heywood, or at the office of the clerk, on payment of two pounds. Sealed tenders endorsed "Tender for Halton Sewerage Works" to be sent by October 30th, to Geo. F. Ashton, clerk to the council, 71, High Street, Runcorn.

Oct. 31. PENYGRAIG.—Sinking a shaft 20ft. in diameter and approximately 500 yards in depth for the Naval Colliery Company (1897), Limited. Plans and specifications may be seen at the Naval Colliery Offices, Penygraig, between nine a.m. and five p.m. Tenders to be sent in before Oct. 31.

Oct. 31. KIPPAX.—Construction of a circular bacterial filter at the sewage works, Brigshaw Lane, Kippax, for the Tadcaster R.D.C. Plans may be seen, and specifications, with all other information, obtained from H. M. Driver, sanitary surveyor, Garforth. Sealed tenders, endorsed "Kippax Sewerage," to be sent by Oct. 31, to Geo. A. Bromet, clerk to the council, Tadcaster.

Nov. 2. COWES (Isle of Wight).—Supplying a direct acting steam pump, together with connections capable of raising 20,000 gallons per hour to a height of about 45 ft. for the U.D.C. Further particulars may be obtained upon application to John W. Webster, surveyor and water engineer to the council. Sealed tenders, endorsed "Tender for Steam Pump," are to be delivered at the office of H. C. Damant, clerk, High Street, Cowes, I.W., by 4 p.m. on Nov. 2.

Nov. 2. SALFORD.—Supply, delivery and erection at the Corporation electricity station, Frederick Road, Pendleton, of the following plant:—Specification V 16: Cooling towers, tanks, pumps, and pipework, for the electricity committee Specification and forms of tender may be obtained on application at the office of Victor A. H. McCowen, M.I.E.E., borough electrical engineer, Frederick Road, Pendleton, on deposit of two guineas. Extra copies may be obtained at 10s. each, not returnable. Sealed tenders, endorsed "Tender for Cooling Towers, etc.," addressed to the chairman of the electricity committee, must be delivered at the offices of the borough electrical engineer by noon on Nov. 2.

Nov. 3. MALDON.—Sinking a 6 in. tube well, together with other works in connection therewith, at the Maldon workhouse, for the guardians of the union. Plans and specification may be seen, and form of tender obtained at the office of Wm. Arnold, surveyor, 6, Market Hill, Maldon. No copies of plans or specification will be forwarded to contractors. Tenders, endorsed "Workhouse Well," must be sent by Nov. 3, to Alfred W. Freeman, clerk, Gate Street, Maldon, Essex.

Nov. 12. ELLOUGHTON AND BROUGH (York).—Construction of spring collecting works, collecting chambers, covered storage reservoir, 6,420 yds. of 5 in., 4 in., 3 in. and 2 in. cast-iron water mains, with valves, washouts, fire hydrants, consumers' services, and other works in connection therewith, at Elloughton and Brough, in the county of York, for the Elloughton and Brough Water Co., Ltd. Drawings, specification, etc., may be seen with Fairbank and Son, M.Inst.C.E., engineers to the company, Lendal Chambers, York, from 10 a.m. to 5 p.m., except Saturdays. Copies of specification, quantities and form of tender may be obtained on deposit of £3 3s. Sealed tenders, endorsed "Tenders for Elloughton and Brough Waterworks, Contract A," to be sent to E. Hind, solicitor, Goole, before 10 a.m. on Nov. 12.

Nov. 13. LLYN FAWR (Glam.).—Construction of a reservoir at Llyn Fawr Lake, in the parish of Ystradyfodwg, Glamorgan, with works in connection therewith, including a temporary tramroad connecting the works with the Great Western Railway at Hirwain, for the Rhondda U.D.C. Drawings may be inspected and copies of the specification, schedule of prices and forms of tender obtained upon application to J. E. Hughes, M.Inst.C.E., at his office at Tynewydd, Treherbert, upon a deposit of £5. An assistant engineer will accompany attending contractors to the site of the works on Oct. 27, starting from the engineer's office at Tynewydd, Treherbert, at 11 a.m. Sealed tenders, enclosed in envelopes provided, and addressed to the chairman of the council, endorsed "Tender for Reservoir," must be delivered by 10 a.m. on Nov. 13, to W. P. Nicholas, clerk, council offices, Pentre, Glam. Fair wages clause.

IRON AND STEEL.

Nov. 2. WATERLOO-with-SEAFORTH.—Supplying about 380yds. steel-ribbed concrete sewer tubes, 2 ft. 3 in. internal diameter, for the U.D.C. Specifications and further particulars may be obtained on application to F. Spencer Yates, Assoc.M.Inst.C.E., surveyor to the council, town hall, Waterloo. Sealed tenders, addressed to the chairman of the health committee, and endorsed "Tender for Concrete Sewer Tubes," are to be delivered by noon on Nov. 2, to John I. Thompson, clerk to the council, town hall, Waterloo, near Liverpool.

Nov. 3. THORNTON.—Iron and steel work for roofs, etc., of retort-house and coal store at new gasworks, for the U.D.C. Specifications, etc., may be obtained on application to H. Fenton, gas manager, Thornton-le-Fylde, and tenders, endorsed "Tender for Roofs," must be delivered by Nov. 3, to Richard Bowman, clerk, council offices, Thornton, via Preston.

Nov. 3. EGREMONT.—Cutting trenches and laying and jointing about 420 lineal yards of 7in. steel sewerage pipes at Egremont, for the U.D.C. Plan and specifications can be seen and any other information obtained on application to James Cowan, surveyor, town hall, Egremont. Sealed tenders, endorsed "Sewerage Pipe Track," must be delivered by noon on Nov. 3, to John Bowley, clerk to the council, town hall, Egremont.

Nov. 4. WITHNELL.—Supplying 670 yds. of 3 in. cast iron socket and spigot water pipes, for the U.D.C. Tenders to be sent to John Taylor, clerk to the council, 17, Victoria Street, Blackburn, by noon on Nov. 4. Specification and form of tender may be had from Thomas Moss, surveyor, etc., council offices, Brinscall within Withnell, near Chorley.

Nov. 12. WELLINGTON (Salop). — Supplying (1) about 103 tons of 4 in., 3 in., and 2 in. cast iron pipes, together with all special castings required, and (2) laying and jointing about 4 miles of 4 in., 3 in., and 2 in. cast iron pipes, together with standposts, valves and hydrants, meters, construction of meter chamber, and other works in accordance with the drawings and specification prepared by the engineers, for the R.D.C. Drawing and specifications may be seen, and bills of quantities and forms of tender obtained at the offices of the engineers, 63, Temple Row, Birmingham, after Oct. 29, on deposit of three guineas in each case. Sealed tenders, in envelopes supplied and endorsed "Lawley Bank Water Supply, Contracts No. 1 and No. 2," respectively, to be delivered by 10 a.m. on Nov. 12, to John Jones, clerk to the Wellington R.D.C., Edgbaston House, Wellington, Salop.

Nov. 19. SWANSEA.—Supplying (1) about 15,500 ft. of solid drawn steel tubing, 8 in. dia., with forged oval steel flanges, and W.-I. bolts, together with bends, branches and irregular pipes, and (2) about 1,200 tons of C.-I. pipes, 8 in. diameter, with oval flanges, and W.-I. bolts, together with bends, branches, and irregular pipes, for the Swansea Harbour Trustees. Forms of and instructions for tender, contract, specification and conditions and drawings can be obtained on and after Nov. 5, on application to the clerk, on payment of five guineas. Tenders, sealed and marked "Tenders for Pipes," should be delivered by 10 a.m. on Nov. 19, to Talfourd Strick, clerk, Harbour Offices, Swansea.

PAINTING.

Oct. 29. LEEDS.—Painting at Bramley, New Wortley, Woodhouse, and Sheepscar libraries, for the Corporation of Leeds. Specification may be seen and forms of tender and schedule of work obtained at the office of W. T. Lancashire, city engineer. Tenders, properly endorsed, must be received at the town clerk's office by 10 a.m. on Oct. 29.

PLUMBING & SANITARY

Oct. 31. SHREWSBURY.—Reconstruction of the drainage system in iron piping, and renewal of the sanitary fittings and plumbing at the Eye, Ear, and Throat Hospital, and other works connected therewith, for the committee. Schedules of quantities and tender forms may be obtained at the office of the secretary, Robert Pool, St. Mary's Street, Shrewsbury, on payment of £1 1s. Plans may be seen at the hospital on application to the matron. Sealed tenders, marked "Hospital Drainage, etc.," should be delivered by the morning of October 31, to J. W. Pearson, C.E., N.E Sanitary Inspection Association, 9, Albert Square, Manchester. Persons in business in Shropshire are asked to tender.

Nov. 9. SCULCOATES.—Providing and laying about 4 miles 1,592 yards 5in., 4in., and 3in. cast iron water pipes, with all necessary valves, boxes, fire-plugs, etc., for the Sculcoates R.D.C. Plans and specifications may be seen and bill of quantities obtained at the office of the engineer on payment of £2 2s. Tenders, sealed and endorsed, to be delivered by noon on November 9, to William H. Wellsted, M.I.C.E., engineer to the council, Waterloo Chambers, Hull.

ROADS AND CARTAGE.

Oct. 29. MANCHESTER.—Re-paving, concreting, and asphalting at the city abattoirs, Water Street, for the markets committee of the Corporation. Detailed specification may be obtained on application to R. Lawton, works manager, Smithfield Market office, Manchester. Tenders, with full particulars, must be addressed to the chairman of the markets committee, endorsed "Paving," and be delivered at the markets office, town hall, Manchester, by 10 a.m. on Oct. 29.

Oct. 30. LONDON, E.—Supplying 500 tons of blue Guernsey granite spalls to the casual wards, Raymond Street, St. George's, E., for the guardians of the poor of St. George-in-the-East parish. Forms of tender can be obtained at the office of the clerk, or will be sent by post (upon receipt of a stamped and addressed foolscap envelope). Tenders must be returned by 2 p.m. on Oct. 30, to R. Murray Lochner, clerk, guardians' offices, Raine Street, Old Gravel Lane, E.

Oct. 31. SOUTHWICK.—Sewering, levelling, paving, metalling, flagging, channelling, making good, and lighting the street known as Albert Road, Southwick, for the U.D.C. Plans and sections may be seen and the specification, bill of quantities, and form of tender obtained of Geo. W. Warr, surveyor to the council, town hall, Southwick, between 9 a.m. and 5 p.m. (Saturdays 9 a.m. to 1 p.m.). One guinea will be required as a deposit. Tenders, endorsed "Private Street Works," to be delivered by noon on Oct. 31, to J. E. Dell, clerk to the council, town hall, Southwick, Sussex.

Nov. 2. NEWBURN.—Supplying tar macadam to the U.D.C. Forms of tender may be obtained from Thomas Gregory, surveyor, council offices, Newburn. Tenders to be delivered by noon on Nov. 2, to George Wilkinson, clerk, 1, Mosley Street, Newcastle-upon-Tyne.

Nov. 2. ROMFORD.—Supplying 350 tons of best quality blue Guernsey granite, broken to 2 in. cube, and 500 tons best quality blue Guernsey granite, broken to 1½ in. cube; also 500 tons of Rhenish basalt stone, broken to 2 in. cube, for the R.D.C. Specification and form of tender may be obtained from George Lapwood, highway surveyor, Victoria Chambers, Romford. Sealed tenders, endorsed "Tender for Granite, etc.," together with samples of granite and stone, to be supplied, must be sent, carriage paid, to reach William Smith, clerk to the council, 13, North Street, Romford, by Nov. 2.

Nov. 2. HENDON.—Supplying about 500 tons of clean pea or bean shingle; about 500 tons of clean brick rubbish; about 500 tons of coke clinkers; about 300 yds. cube of hard burnt ballast; about 150 tons of Thames ballast, for the U.D.C. Forms of tender and all further particulars may be obtained of S. Slater Grimley, engineer and surveyor, council offices, Hendon, N.W. Tenders to be sent (accompanied by samples of the material), addressed to the chairman of the council, by 5 p.m. on Nov. 2.

Nov. 3. BRENTFORD.—Supply and delivery of 1,500 of best hard Guernsey granite spalls, for the guardians of the union. Forms of tender may be obtained upon application, and tenders upon such forms must be delivered by 4 p.m. on Nov. 3, to William Stephens, clerk to the guardians, Union Offices, Isleworth, W.

Nov. 3. ISLEWORTH.—Supply and delivery of 1,500 tons of best hard Guernsey granite spalls, for the guardians of Brentford Union. Forms of tender may be obtained upon application, and tenders upon such forms must reach William Stephens, clerk, Union Offices, Isleworth, W., before 4 p.m. on Nov. 3.

Nov. 3. EALING.—Making up the accommodation road at the rear of Haven Parade, for the Corporation. Drawings and specifications may be seen, and form of tender, together with schedule of quantities and other particulars, obtained from Charles Jones, M.Inst.C.E., borough engineer, town hall, Ealing, W., any day during office hours, upon deposit of 10s. 6d. Sealed tenders, in the envelopes provided, endorsed "Tender for Making-up ————," must be delivered by 9.30 a.m. on Nov. 3, to Geo. E. Brydges, town clerk, town clerk's office, town hall, Ealing, W.

Nov. 4. HERNE BAY.—Supplying granite kerb, channel, settes, siftings, chippings, etc., for the U.D.C. Specifications and forms of tender may be obtained from F. W. J. Palmer, C.E., surveyor to the council, town hall. Sealed tenders, endorsed "Granite," to be delivered by noon on Nov. 4, to Joseph Jubb, clerk to the council, town hall, Herne Bay.

Nov. 4. LITTLEHAMPTON.—Taking up old pavements, and providing and laying in various roads, in the district about 350 lineal yds. of pennant kerbing, 350 lineal yds. of pennant channelling, 2,800 sup. yds. of flag pavements, together with carriage crossings and sundries, for the U.D.C. Specification can be seen, also maps and drawings, at the office of the council's surveyor, H. Howard, F.S.I., of whom forms of tender and quantities can be obtained. Tenders, under cover and marked "Paving Works," to be forwarded to the chairman of the council, town offices, by Nov. 4. Approved security will be required.

Nov. 6. LUTON.—Paving and other works of private improvement in Brantwood Road and Wimborne Road, for the town council, in accordance with plans, sections, and specifications prepared by the borough engineer, and to be seen at his office, town hall, Luton. Separate tenders for each street, endorsed "Private Improvement Works," must reach Bruce Penny, town clerk, town hall, Luton, by 4 p.m. on Nov. 6.

Nov. 9. STREATHAM.—Making-up and paving that part of Mitcham Lane, Streatham, lying between Moyser Road and the borough boundary, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving Mitcham Lane," must be delivered at the council house, East Hill, Wandsworth, S.W., and may be placed in the box provided for the purpose by 4 p.m. on Nov. 9. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

Nov. 9. WANDSWORTH.—Works of repair upon that part of the carriage-road called Princes Road, Southfield, lying between West Hill and Augustus Road, for the corporation. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Repairing Princes Road," must be delivered at the council house, East Hill, Wandsworth, S.W., and may be placed in the box provided for the purpose by 4 p.m. on Nov. 9. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

MISCELLANEOUS.

Oct. 31. HAUGHTON-LE-SKERNE.—Scavenging the parish of Haughton-le-Skerne, for the Darlington R.D.C. Forms of tender may be had on application to W. Pallister, Union Offices, Darlington.

Oct. 31. DARTMOUTH.—Extension of footpath at Higher Victoria Road. Plans and specifications can be seen and all particulars obtained upon application to Thos. W. Joyce, A.M.I.M.E., F.G.S., borough surveyor. Tenders, sealed and endorsed "Victoria Road Footpath," must be in the hands of the town clerk by noon on Oct. 31.

Oct. 31. MANCHESTER.—Supplying buff terra cotta required in new secondary school for girls, Chorlton, Street, Manchester, for the education committee of the corporation. A copy of the quantities may be obtained at the education office, Deansgate, Manchester, on a deposit of one guinea. Drawings can be seen at the education office. Cheques should be made payable to the accountant. Tenders, on forms provided, addressed to the chairman of the sites and schools buildings sub-committee, must be delivered at the higher education office, Sackville Street, by 9 a.m. on Oct. 31.

Nov. 3. HANDSWORTH, STAFFORD.—Brick and concrete flag paving work within the district, for the U.D.C. All particulars may be obtained on application to H. Richardson, Assoc.M. Inst.C.E., surveyor to the council. Sealed tenders, endorsed "Paving," to be delivered at the office of the surveyor, council house, Handsworth, Birmingham, by noon on Nov. 3. Fair wages clause.

Nov. 4. HERNE BAY.—Hire of a steam roller and scarifier for the ensuing year, for the U.D.C. Specifications can be seen and forms of tender obtained from F. W. J. Palmer, C.E., surveyor to the council, town hall. Sealed tenders, endorsed "Steam Rolling," to be delivered by noon on Nov. 4, to Joseph Jubb, clerk to the council, town hall, Herne Bay.

Nov. 6. EASTWOOD.—Constructing part of the new cemetery at Eastwood, including all relative works, for the Parish Council. Drawings may be seen at the office of Wharrie and College, C.E., 109, Bath Street, Glasgow, from whom copies of the specification, schedule of quantities, and form of tender may be obtained on payment of £1 1s. Tenders, on the form supplied, marked "Tender for New Cemetery," to be delivered by 3 p.m., on November 6, to D. Barrowman, clerk, Parish Council Chambers, 20, Harriet Street, Pollokshaws.

Nov. 9. RYTON.—Removal of house refuse and the cleansing of earth closets, privies, and ashpits within the district, for the U.D.C. Forms of tender and all particulars may be obtained on application to John P. Dalton, surveyor, council offices, Ryton.

Nov. 9. WESTMINSTER (for Madras).—Supplying 12,000 barrels (2,000 tons) of English Portland cement, for the Corporation. Full particulars and conditions, together with the printed forms of tender and contract, can be obtained from the agents of the Corporation, on payment of five shillings per set, which will not be returned. Tenders, on the forms supplied by the agents, and enclosed in sealed envelopes superscribed "Tender for English Portland Cement for the Corporation of Madras," will be received up to noon on Nov. 9, by James Mansergh and Sons, agents to the Corporation, 5, Victoria Street, Westminster, S.W., and must be accompanied by a deposit of £5.

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Advertisements received on Tuesday morning will be found on page xxviii.

ARCHITECTS.—GOOD CLASSIC DETAILS. Architect's Assistant with 10 years' thorough experience in good offices on important classic and renaissance work, disengaged. Give part evenings to competition work; age 28; salary £2 5s.—Apply to W. H. Garwood, 32, Marine Parade, South Lowestoft. 4638

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ARCHITECT and Surveyor's Assistant (24); 8 years' London exp.; working drawings, specifications, superintendence, prizeman and medallist, testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4669

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ARCHITECT and surveyor's assistant, 10 years' good all-round experience, north and south; take charge; capable draughtsman; working drawings, details, quantities; moderate salary.—W. T., 49, Whitstable Road, Canterbury. 4561

ARCHITECT'S Assistant (23), over 7 years' London and Provincial experience; excellent references. Inter.R.I.B.A. Exam.—H. J. Wilson, 17, Clifton Road, Crouch End, N. 4612

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November 4, 1908 Volume 28, No. 717.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The Wellington Monument.

Mr. John Belcher, A.R.A., sent an important letter to "The Times" last week on the subject of the Wellington Monument, urging that in view of the recent lamented death of Mr. Hugh Stannus, who was so long associated with Alfred Stevens, every effort should be made to collect and obtain the rough sketches and evidences of Stevens's ideas for the completion of the Wellington manument in St. Paul's Cathedral. Our readers are no doubt aware that an influential committee has in hand the completion of Stevens's work by placing on the top of the monument the equestrian statue of the Duke, for which the sculptor left behind a rough model. This model was preserved by the late Mr. Stannus, and was handed over by him to the Committee, who commissioned Mr. John Tweed to prepare a plaster cast from it, and this cast was placed in position to judge the effect. It then became evident that a certain amount of finishing would be required before the bronze could be cast, and after Mr. Tweed had carried out these modifications and refinements, the plaster cast was again tried in position. Whether the Committee are now satisfied with the improved model or not we are unable to say, but there appears to be some division of opinion whether the rider should face towards the east or the west. Mr. Belcher's letter is in the nature of a warning as to the stability of the monument, and its ability to bear the weight of the bronze group and its marble surbase. The evidence of Mr. Somers Clarke, F.S.A., late surveyor to the Dean and Chapter, goes to prove that the upper part of the monument is but a hollow box formed of thin sheets of marble, and that it will require some reinforcement to bear the proposed weight. Mr. Belcher states that long copper dowels were used by Stevens in the construction of the work, and these had to be sawn through when the monument was taken down and removed from the south-west chapel to the nave. He is unable to say whether these have been replaced; and as the marble has cracked at the base, there has apparently been some movement since the structure was re-erected. These facts seem to call for some statement from the Completion Committee, which we trust they will afford. We venture to think that everybody will be glad to see tardy justice done to one of the most gifted English sculptors by the completion of his greatest work in the manner he intended; but because of the great value of this work the Committee must expect from the public a certain jealousy of interference, and we trust that they will recognise that this does not emanate from any captious attitude towards their main idea. The fact that they possess funds for their work should not make them indifferent to public anxiety with regard to the monument.

Municipal Works Departments.

We notice, with more amusement than surprise, an attempt to attribute to mere political opportunism the attitude of the federated Yorkshire builders with respect to municipal works departments. The paper in which Mr. J. Davidson stated the case against municipal trading was printed in last week's issue, so that our readers have had an opportunity of judging whether or not it was free from political taint. Our own impression of it was that the *pros* and *cons* of the matter were sifted and weighed, not, perhaps, with judicial severity, but certainly with judicial care and impartiality, and that the author had sedulously avoided all tendency to mere rhetoric, depending for his effects upon the inherent strength of well-ascertained data and just deductions. That is how it strikes a disinterested observer. It appears, however that the "Yorkshire Daily Observer" is not disinterested. It declares that the Leeds meeting at which the paper was read and adopted was "an illustration of the astuteness with which private interests insinuate their influence into electoral contests. . . . When one remembers that at the present moment Leeds Tories are, in the elegant phraseology of their leader, seeking a mandate 'to smash the Corporation Works Department,' it is difficult not to suspect that the Yorkshire builders selected Leeds for this particular meeting with malice aforethought." The writer then proceeds to sneer at Mr. Davidson's arguments, but makes no attempt to controvert them. Like the preacher in the anecdote, having boldly looked the facts in the face, he passes on: to the consideration of such matters of pith and moment as the parlous state of Handel's organ and of the meat trade. As he writes under the happy heading, "Observatory," it is, in his own phrase, "difficult not to suspect" that he sometimes, "of malice aforethought," looks through the wrong end of the telescope, or that considerable allowance must be made for his "personal equation." Mr. Davidson has published a spirited reply that should at least remove this ill-starred journalist's difficulty of not suspecting. It is shown that the meeting at Leeds had nothing whatever to do with local politics or polemics, and that the fixture was arranged months ago, and quite independently of local affairs, by the Yorkshire Federation of Building Trade Employers; who, as he justly remarks, have every right to defend and advocate their corporate interests by every legitimate means. When, as in the present case, they are able to show that their interests happen to coincide to a nicety with those of the general community, the accusation of political opportunism is ludicrous; and, in any case, the political animus of this "Observer" is so blatant, that, even if he had substantiated his charge, "*Tu quoque*" would have been a sufficient answer.

The More Excellent Subway.

The Court of Common Council of the City of London accepted, on October 29th, the tender of Messrs. Perry and Co. for the construction of subways for pedestrians from the north-west corner of Blackfriars Bridge to Queen Victoria Street, with spurs going east and west. The work is to be completed in nine months. Well and good. "Slaughter Corner" will then lose its terrors, and humanitarians will be duly grateful for the concession. It seems, therefore, somewhat ungracious to grumble. But, seeing that the necessity for these subways is at length freely acknowledged, both in London and in Paris, and that the system is likely to be considerably extended, we feel justified in claiming that the entrances and exits ought really to look more lovely than a mere hole in the ground, with inartistic railings round it. This arrangement is a sort of obstruction. One is compelled, willy-nilly, to look at it, and it is one of the cardinal principles of courtesy and comity that what one is compelled to observe ought, as a matter of fair compensation, to be pleasing to the eye. While admitting that the sheer utility of the thing is in itself of the nature of "good consideration," we would nevertheless urge, as we have ventured to urge in these columns on a previous occasion, that subway entrances and exits offer an excellent opportunity for some sort of artistic display, by means of elegant ornamental ironwork, with perhaps the addi-

tion of groups of statuary, which would there have a more than ordinary excuse for their existence. We trust that such an excellent opportunity for helping on the beautification of London, by blending the *utile* with the *dolce*, will not be obdurately ignored. We are anxiously looking to Paris to show us, in this respect, the more excellent subway.

Flash Light Advertisements.

A letter in "The Times" of Monday last, signed by Mr. Ernest George, President of the R.I.B.A., makes clear the attitude of the Institute upon the vexed question of the electric signs and advertisements which nightly disfigure some of our principal streets and buildings. The Institute, it apears, is urging the London County Council to take measures for the stringent control of all public advertisements. With that course we are in entire agreement. But the reasons put forward by Mr. George for enlisting the support of "The Times" and its readers hardly seem to us convincing. We venture to think that the danger to pedestrians from the alternations of bright light and darkness, with the flashing advertisements, is somewhat exaggerated, and we think the mental irritation case is rather given away by the President's naive admission that it "seems to be hardly realised outside the medical profession." Why not state boldly and uncompromisingly, as it is within Mr. George's province to do, that these flashing light signs are abominably ugly, and a hideous disfigurement to the buildings to which they are attached? As to commercial rivals welcoming a restriction that would save their pockets—m'yes!

THE ARCHITECTURAL PROFESSION OF TO-DAY.—VIII.

Perhaps the chief of the many difficulties which beset the earnest student of architecture is that arising from the unfortunate fact that the best and most scholarly books on art can now only be obtained—if at all—on rare occasions, and then at a cost which renders them prohibitive to any but comparatively well-to-do men. Old and rare "first editions" of standard works are by no means necessary to the educational welfare of the future practitioner, for cheap reproductions of the original costly plates would serve his purpose equally well. Yet invaluable as a large and comprehensive collection of plates—reproduced from many of the valuable old works on architecture that are still extant—would be to a large majority of architects, we doubt the possibility of finding a publisher with sufficient enterprise to undertake their publication. And the reason is not far to seek. Scholarship among architects is now held in such small esteem that the sale of any architectural work which appeals solely to the profession is, necessarily, very limited.

Thus, although, *primâ facie*, it would seem there should be every prospect of a ready sale for a series of books for students, issued with the object of bringing examples of the best architectural writers of the past within the, generally, modest means of the young practitioner of the day, yet the experience gained by the few isolated attempts already made in this direction is not to be ignored. Without doubt the republication, in a cheap form, for the benefit of country or colonial students, of some of the most useful and instructive of the many costly works on architecture contained, for example, in the library of the Royal Institute of British Architects, would be excellent—for the student—but what of the publisher? Until more attention is paid by architects themselves to the acquisition of architectural scholarship—until there is more evidence than is forthcoming to-day of a general demand throughout the profession for architectural literature of the best possible kind, it is scarcely reasonable to expect the supply will be forthcoming. And yet it would be well nigh impossible to *over-estimate* the beneficial results to the advancement of the art of architecture, if the correct principles of design were thus widely disseminated throughout the profession.

The R.I.B.A. library, although now much used and appreciated by London students, is only available to country members for purposes of study on rare occasions, and we therefore think the pages of the R.I.B.A. journal might well become the medium through which many scholarly architectural publications of the seventeenth, eighteenth, and early part of the nineteenth centuries could be brought under the notice of the imperfectly trained architects of to-day.

The journal of the transactions of the R.I.B.A. is, we believe, merely intended to be a reflection of the proceedings of that body, but in our judgment it should possess features of far greater value to the architectural world. For instance, we think it should take a leading part in instructing the student in the fundamental essentials of his art, and thus become essentially a journal issued with the intention of assisting in a great and wide-





HOUSE NEAR LEICESTER. S. HARRISON AND SONS, ARCHITECTS.

spread movement instituted, either within or without the profession, for the formation of a thoroughly sound and efficient course of architectural education.

At present the subject matter of the journal of the Royal Institute of British Architects, although ably edited and produced, often makes dull and tedious reading. Lengthy reports of papers, delivered at the R.I.B.A. and elsewhere, on the planning and construction of buildings of such an extremely commonplace and prosaic nature as asylums, hospitals, electric lighting stations, and the like, only varied by the contributions of "specialists" (many of whom have "axes to grind") on sundry new methods of construction, or on diverse aspects of art craftsmanship, are singularly devoid of interest to many architects, much as they may be appreciated by the few members of the profession who may be, at the moment, 'specially concerned in the type of building or subject to which the papers refer. At the same time, while we have no desire to *underrate* the commercial value to the young practitioner of the information he thus obtains, we suggest that, after all, the subject matter contained in a lecture or written paper concerning the building of a special nature can often be far better assimilated and understood by the student after a close study of the actual structure than by any verbal or written description. For this and other reasons we think it is time some effort was made to render the official organ of the R.I.B.A. more useful to the average member of that body, and possibly this object could be best attained by the issue of carefully selected excerpts and plates taken from some of the valuable books in the reference library now only available for purposes of study, to the metropolitan members of the Institute. In view of the general lack of scholarship and learning to be found among architects, it is often amusing to hear successive presidents of the R.I.B.A. or its allied societies laying particular stress, in their inaugural or other addresses to students, upon the fact that the architect is ever a student. Is he indeed? We feel very much inclined to question the correctness of the statement, as in our view the average architect is far too prone to imagine, immediately he is in a position to commence practice, that his education is complete. How else can one account for the fact that, as a rule, an architect's artistic powers are not developed proportionately to the number of buildings he is called upon to design during the course of his practice? Can men who, perhaps, for some thirty or forty years have been engaged in designing building after building in which almost, from first to last, no distinct traces of any improvement in their powers of design are observable, rightly be described as "students"? We think not. Successful architects—in the commercial acceptation of the term — they may be, but what, we would ask, have men of this calibre done for the advancement of architecture? What for the good of their profession? What for the student of to-day?

We have already drawn attention at some length to the very general want of scholarship apparent in the work of many—nay, of most of the architects of to-day, and have attempted to show that this untoward hindrance to the welfare of a great profession may be traced to the following causes:—(1) To an utterly erroneous idea on the part of the public as to the financial aspect of the architect's calling, which, contrary to general outside opinion, is *not* one of a lucrative nature. The public fallacy as to the commercial value of an architect's practice has had the effect of causing a number of men to enter the profession who, artistically, possess no qualifications whatever, whilst others, again, have commenced practice and discontinued their architectural studies almost as soon as they became sufficiently masters of their work to be able to put together a set of working drawings. This misconception of the *nature* and *extent* of an architect's qualifications for his work has had a most disastrous effect upon the architecture of the whole country. It is perhaps not too much to say that to every *single* building, erected within the last few years, bearing evidence that its designer is a master of his art, there will probably be about fifty other buildings of approximately the same date, which exhibit unmistakable signs of their architects' utter lack of scholarship and consequent inability to discriminate between what is good and what is bad in art. (2) To the ridiculous nature of the qualifying examinations imposed upon the student of architecture by the Royal Institute of British Architects, under which no real test of the student's suitability for his chosen profession is made, inasmuch as the applicant's possession of the necessary amount of general culture and scholarship is *assumed, as a matter of course*. We do not suppose that the Institute's scheme of examinations was framed with the deliberate intention of allowing illiterate and ill-trained men to bring disgrace upon the whole profession. But by furnishing them with the means of defrauding the public—by allowing them to pose as properly qualified architects, when, as a matter of fact, many who have passed the examinations do not possess the requisite qualifications —the R.I.B.A. has shown its incompetency to deal satisfactorily with a great problem, upon the successful solution of which the future prosperity of the profession is, in a great measure, dependent.



HOUSE NEAR LEICESTER. S. HARRISON AND SONS, ARCHITECTS.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Nov. 9	*WHITLEY AND MONKSEATON URBAN DISTRICT COUNCIL.—Public Shelter to seat 1,000, and provide promenade accommodation for another 400, at a cost of £1,200. Premium of £20 to merge if successful design is carried out. The Council (with such advice as they may decide to obtain) will be sole arbiters. Particulars from J. P. Telford, Acting Surveyor to Council, may be obtained at his Office, Council Buildings, Whitley Bay, any week-day (except Saturday) between the hours of 10 and 11 a.m., and 4 and 5 p.m. Design, plan and estimate, in sealed covers, to be sent to the Clerk to the Council, Council Buildings, Whitley Bay.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street, Strand, London.
Dec. 14	§BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W.T. Postlethwaite, Council Offices, Swinton, Manchester.

* *These competitions have been unfavourably reported upon by Correspondents.*

§ *The Council of the R.I.B.A. advises Members not to compete.*

Blackpool Library Competition.

We are notified that By Order of the Council of the R.I.B.A., members of that body are advised not to take part in this competition.

From a leader in the *Blackpool Herald* of the 23rd ult., we gather that the Blackpool Town Council has made various concessions under pressure from the R.I.B.A., and a threat from the Assessor, Mr. H. D. Searles-Wood, F.R.I.B.A., that he would decline to act unless the offending conditions were remedied. Had the Council followed the practical advice of Alderman Mather, three times urged upon the Council during the preliminary stages, this regrettable contretemps would not have occurred. Our contemporary states that "the objectionable clause stipulating that although an independent quantity surveyor will be appointed the architect would be held responsible for the accuracy of the surveyor's quantities underwent satisfactory modification, being altered so that the architect's responsibility ceases when he has assured himself that the quantities are reasonable and cover all the particulars that he contemplated in his design. Another concession granted was in the shape of an allowance for architect's travelling expenses, instead of including them in the architect's five per cent. commission. . . . We understand that over eighty applications have been made for copies of the conditions, and this fact indicates extensive professional interest in the competition." Apparently, in view of the R.I.B.A. ban, the concessions made were not sufficient or satisfactory.

In Parliament.

(*By our Press Gallery Representative.*)

Rosyth Docks.

On Thursday of last week, the First Lord of the Admiralty made an important announcement with regard to work at the Rosyth base.

In replying to a question by Major Anstruther Gray, and several supplementary questions, Mr. McKenna stated that invitations to tender for the main contract were being issued, and he thought the tenders were to be put in this year. No men could be employed at Rosyth until the contract was made, but there were now on the site five Admiralty workmen, and 107 men employed by the road contractor.

Granite on Admiralty Works.

Mr. McKenna has informed Sir Gilbert Parker that the only direct contracts for granite let during the last six months were for British granite setts for paving, amounting to £250. In the case of large works contracts, the granite was ordered by the contractor and not by the Admiralty, but it was understood that the cost of the granite to be used in the construction of Portsmouth Lock, the only big work for which a contract had been recently let, was about £55,000, and in this case the stone would be British.

On another occasion, Major Anstruther Gray suggested that the First Lord should insist upon British granite being employed for Rosyth Dock, but Mr. McKenna declared his inability to say anything about Rosyth.

New Cavalry Barracks.

Another big Scottish contract will be the erection of barracks for cavalry at Colinton, near Edinburgh. The site has been acquired; but, from inquiries I have made, it appears that the plans will not be ready for some time. The Director of Barrack Construction is now busy with them.

Military Huts of Papier-Mache.

Sir Gilbert Parker asked the Secretary for War if the War Office had in its possession full particulars as to the methods adopted in the Spanish army for housing the forces debarked at Casa Blanca, the system of constructing the papier-maché huts, field-kitchen, and hospital, and the cost of construction; and, if not, would the War Office think it expedient to instruct the Military Attaché in Madrid to procure full particulars?

Mr. Haldane, in reply, said the War Office is in possession of information regarding the types of huts used for housing the Spanish troops at Casa Blanca. No detailed information has been received regarding the Spanish field-kitchen or hospital. The latter is a hutment similar to those used as barracks for the troops. The field-kitchens are understood to be of the ordinary type, and it has not been considered necessary to call on our military attaché for a special report.

Foreign Slates for Army Buildings.

Mr. Haldane has informed Mr. Berkeley Sheffield that during the last two years 109,170 slates, of which 99,170 were of British origin and 10,000 of foreign origin, were used for slating the roofs of the barracks at Aldershot. The foreign slates were being used experimentally.

Ventilation of the House.

Sir Philip Magnus asked the First Commissioner of Works whether he could now see his way to take any steps to improve the ventilation of the House by the admission of fresh air through other channels than the floor, over which hundreds of persons trod during the day, bringing with them from the roads particles of organic matter, which, by the system now in operation, were forced into the air and distributed throughout the chamber. Mr. Harcourt, in reply, said it has already been shown by the inquiry before the Select Committee upon the subject, that nothing short of a radical reconstruction of the chamber would permit of an alteration of the system of admitting fresh air at the floor level. It should, however, be borne in mind that, in addition to scrupulous cleanliness, any small extent of vitiation in connection with the present system is probably neutralised by the rapid changes of air.

Miscellaneous.

Among other information given by the First Commissioner of Works, in reply to various interrogatories, was that the new gates and lamps at the Marble Arch were expected to be erected by the end of this year, that a definite date could not be fixed for the completion of the memorial statue to Queen Victoria in St. James's Park, as much depended upon the progress made in the next three or four months, and that he was unable to recommend that the road leading from Prince's Gate to Bayswater Road should be continued from the Serpentine in a straight line for Paddington Station.

The Wesleyan Connexional Building at Westminster is likely, Sir Robert Perks recently told an interviewer, to be ready for use by the spring of 1911. It is to be called Victoria House, and will include a great hall with 2,500 seats. The cost is estimated at £146,580, the lowest tender, that of Messrs. Dove Bros., of London, having been accepted.

* * *

Association of Teachers in Technical Institutions. — The annual general meeting of this association will be held at the St. Bride's Institute, Bride Lane, Fleet Street, E.C., on Saturday, November 7th, commencing at 3 p.m. The annual meeting of the London branch of the association will be held at the same place in the evening, commencing at 6 p.m. At 7 p.m., a paper will be read by Mr. W. J. Lineham (chairman of the branch), on "Technical Education at the Franco-British Exhibition, 1908."

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Preliminary work upon London's new County Hall, which is to be built on the south side of the Thames, and east of Westminster Bridge, at an estimated cost of rather more than a million sterling, is to be started very shortly. At the meeting of the London County Council on October 27th, the Establishment Committee recommended the acceptance of a tender of £62,662 for the construction of the embankment wall and incidental work.

R.I.B.A.

The Presidential Address.

The seventy-fourth session of The Royal Institute of British Architects was inaugurated on Monday last, November 2nd, at 9, Conduit Street, W. Mr. Ernest George delivered his first Presidential address as follows:—

I am called upon to-night to give my views on architecture and its present position, for such a pronouncement is expected of each President. I speak with diffidence, knowing there are those here at whose feet I well might sit. Still, it takes many sorts to make a world, and during a lifetime we each acquire some knowledge or personal outlook that may be worth imparting.

In the days of my pupilage the battle raged around the Styles. Students who sought medals and architects who entered upon competitions felt that their chances depended largely upon whether the Assessor was a Gothic or a Classic man. The Law Courts were leaving their ancient Hall at Westminster, and it was decided that there new home should be of Gothic character. For the new Government offices Sir Gilbert Scott's Gothic scheme was chosen, when, with a change of Ministry, he was required to convert his design from its mediævalism to that which we see now. A religious revival and church building era was entered upon. Following the Pugins, Gilbert Scott and George Street were building and writing, while John Ruskin in beautiful and forcible language set forth his own views of art and its aims, and enthusiasm was stirred.

From the vernacular mode of building, with its sobriety and dulness, there was a reaction. Gables broke the sky, and there was a general movement for the Picturesque, which, though one of the various forms of architectural charm, is not the highest. Medley took the place of lost traditions, and it was questioned if order or harmony would ever be touched again.

Well, after all the experiments we have been through in styles of various periods, whether the *motif* were Gothic, François-Premier, or Dutch, we seem now, at least in our street architecture, to be approaching a common language in a version of English Renaissance; a style that is not rigid in its laws, and which adapts itself to varying requirements and uses. At the same time, individuality is somewhat lost, and the architect's handwriting cannot always be identified. In the competition drawings for the County Hall, lately seen together, it was curious to note how little one author was distinguishable from another, with any certainty; the compositions were good or bad on very similar lines.

The possibility of all working again in a universal style has often been discussed; I do not think it will ever be attained, nor do I feel sure that it would be a gain. We should be the losers if our painters, writers, and musicians were all of one school. Those who desire uniformity probably hope that their neighbours will make the change of step. In earlier days, while tradition lasted, it was natural for all to work in one manner. There are now too many forms in our vocabulary, to be set aside by a process of selection.

We are a *free* people, and we feel at liberty to do what we please, especially with a freehold possession. Certain laws are enacted and enforced for the sanitary fitness of buildings, the safety of construction, and the prevention of fire; but there is no law to protect us from monstrosities, and our sense of beauty may be constantly wounded, much as the senses are pained by street music and by the noise and stench of motors.

It is seriously under consideration whether rules and conditions of building may not be made to secure us against flagrant breaches of taste, at least in our streets, designs being submitted, before perpetration, to some constituted authority or committee of taste. I am fully aware of the difficulties or drawbacks to such a scheme. We must avoid dictation from mere official judgment, which would often be irritating and probably blind to a work of genius. A Vigilance Committee under a Minister of Fine Arts might not always act wisely, and would possibly be composed of old-school men with their prejudices, perhaps including a time-being President of the Institute.

Among ourselves we might have a Consultative Committee of three or four men of judgment, to whom, as a matter of grace, designs would be shown, with adjoining buildings indicated. Errors of taste could thus be pointed out before being committed to stone. In great Public Works such consultation would be valuable, and in France we find leading men working in unison to the advantage of their art.

We must always regret the opportunity lost in the Strand, the County Council having taken expert advice on a grand scheme for rebuilding that quarter of the town, a scheme which was allowed to die a natural death. My personal feeling is against the rigid following of a set elevation through the length of a street. We do not wish to see London "Haussmannised." Violent diversity should be avoided, while the cornices and leading lines of buildings should be taken up where practicable.

The case of the Regent Quadrant is exceptional, and we value the decision of the Crown that the original scheme of Nash shall be followed in a glorified form, as we already see it in the strongly characteristic new portion just completed. It is at the sky-line that the beauty of the curve or sweep of the Circus can be appreciated, and this line can only be preserved by the following of one design. It is, nevertheless, a misfortune that in this first note of this new harmony, havoc has been made of the said sky-line, for back buildings which come very near to the front are jumping up in a most unrestrained way. The Circus carried out on Mr. Norman Shaw's design will have great distinction, and will form a dignified example of street architecture. We regret that with it we cannot have a wider street, for the necessarily increased height and the broad scale of the detail lessen the apparent space. In this street of shops we must not, as practical men, ask for a restoration of the Colonnade, which in my youth I can remember as an interesting architectural feature in the Quadrant.

When we look at Nash's work, albeit in stucco, we feel what a much simpler problem he had to deal with than falls to us. With but two storeys of windows above his ground floor, it was easy to make effective spacing, with here a group of columns and there an attic storey or pediment. With increased land values the demand is now for five or six storeys in height and another two in the roof, giving a monotonous repetition of parts. When such new buildings take the place of old in existing streets, there is a proportionate loss of light, and it should be our effort to catch all that is granted us of London's diluted sunlight.

I remember when submitting plans to the late Duke of Westminster, who personally considered all rebuilding schemes on his estate, he made the wise proposal that the south side of the street should be kept lower than the opposite side, to admit sunlight. My building was docked of a storey, but I felt the decision was the result of enlightened legislation.

Leigh Hunt said of Nash that "he found us all brick and left us all plaster." Now the brick and the plaster are disappearing, making way for Portland stone, than which no finer material will be found, with its pearly whiteness, at least on its south and west sides, even in our sooty city. Terra-cotta has been tried and found wanting; its surface cannot resist the insidious combination of sulphur and damp that makes our London atmosphere.

We must not ignore the new material known as "Carrara," a Doulton ware. It shares with terra-cotta the weakness of being a pottery casing filled in with alien matter, but the surface is satisfactory, as seen in several important examples in our streets, it avoids the glitter of most tile surfaces, while the mouldings or modelling upon it are clean and sharp, telling their tale without the coarseness that is sometimes resorted to in making telling features in stone, big rustics, keystones, etc.

Various types may be taken in starting the lines of a really modern house, avoiding both pedantry and mediævalism. I speak of types, for I believe that when the utmost originality is intended, there is, consciously or unconsciously, a reminiscence of something that has been before, and that has left its influence with us. I say this, not forgetting that we have amongst us "l'Art Nouveau"; but in that old forms are resuscitated, chimney-stacks and gate-posts following the obelisk or pylon of Egypt.

Looking at the examples that we may class as "New Art," we find much freshness, with an earnest effort to avoid familiar forms and ways, yet sometimes without rhyme or reason. We have seen architraves to the jambs of windows which, when they get near the top, suddenly cease, leaving the window-head without shelter. Such treatment is original, for it has not been done before; I hope it will not be done again. That which is surprising may be attractive in a sketch or tolerated in a competition drawing, but in a permanent building a freak or surprise, I am sure, should be avoided. This phase is infecting the old world, and I have seen its wildest manifestations in new hotels in old Spanish towns.

There is with us a tendency to exaggerate features—keystones so large that they dominate a building, or stone blockings upon columns that smother the shaft. In spite of such efforts, tradition has still its strong hold: the love for time-honoured buildings, the associations with them, their texture and mellowness, instinctively appeal to us. The client for whom we build dreads seeming startlingly modern with his new house. Instead of feeling a just pride in the creation of his "pleasaunce," he would rather it should seem to belong to the past.

(To be continued.)

Proposed New Works.

Aberystwyth.—A Local Government Board inquiry was held here on the 26th October regarding the application of the Town Council to borrow £3,000 for the erection of 18 houses for the working classes. The Inspector, Mr. Meade King, was urged to secure the sanction of the loan as early as possible, owing to the depression in the local building trade.

Barnsley.—The Town Council has approved plans for the following:—Holden Bros., warehouse off York Street; Wardens of St. John's Church, Institute to St. John's Church; Crookes Trust, additions to premises, 20, Church Street; S. and E. Cowood, 12 dwelling-houses, Blenheim Gardens, off Blenheim Road; George Firth, six dwelling-houses, Denton Street; Leonard Atkinson, alterations to house, Queen's Avenue.

Bedford.—The Town Council have approved plans for the following:—Six houses in Trinity Road, for Mr. R. Jeakings; two houses, Beverley Crescent, for Mr. T. Dickens; ten houses, York Street, for Messrs. Mason and Corbett; seven houses, Denmark Street, for Messrs. Jacobs and Burton; six houses, Trinity Road, for Messrs. C. Melcombe and Son; alterations to premises, 12, Harpur Street, for Mr. W. A. Walker; alterations to premises, 10, Bromham Road, for Messrs. S. Freshwater and Son; and a house in St. Augustine's Road, for Mr. E. Whitmore.

Cambridge.—The Town Council have passed plans for the following:—House, Grange Road Extension, Miss Clover, Girton College; lock-up shop, Mill Road, Mr. J. V. Pryor, Petty Cury; new basement and workshop, Sydney Street, the Cambridge University and Town Gas Light Company, Sidney Street.

Doncaster.—The Governors of the Infirmary have begun to think about the erection of a new building upon a better site.

Eastbourne.—The Town Council have approved plans for the following:—O. C. T. Eagleton, addition to Canfield, Saffrons Road; T. Dunlop, detached house, Kitchenham Road; H. Kent, addition to Bishopsbourne, Carlisle Road; J. McCann, two houses, Milton Road.

Hull.—The City Engineer has been instructed by the Markets Committee to prepare plans and estimates for extending the Cattle Market.

London (Lewisham, S.E.). — The Borough Council has approved plans for the following:—W. J. Scudamore and Sons, Chalcroft Road, five houses; W. Wilkinson, Bexhill Road, twelve houses; Norfolk and Prior, Riseldine Street, twelve houses; Norfolk and Prior, Muirkirk Road, nineteen houses; Weber and Co., Manor Park, four houses; F. E. Wright, Beacon Road, premises at the rear of 211, Hither Green Lane; G. Parker, Champion Park, redrain the school and schoolhouses of St. Michael's Schools.

Rugby.—The Urban Council have decided to erect new public baths in Moat Street, at an estimated cost of £4,500. The swimming pond will be 75ft. by 30ft.

Upton-on-Severn.—The Rural District Council have approved plans by Messrs. Sheppard and Son, of Worcester, for additions to the Isolation Hospital, estimated to cost £1,150.

Watford.—The Urban District Council have passed plans for the following:—Alterations and additions to sanitary accommodation, Park Gate Road School, Herts County Council; two houses, King Edward Road, Mr. Wright; new house, The Avenue, Nascot Estate, Mr. H. Martin; thirteen cottages, Oxhey Road, Mr. Cartwright; new shop fronts, 54, 56, and 58, Market Street, Mr. F. Warren; new stable and motor house, Clarendon Road, Dr. Smith; alterations and additions, Nos. 9, 11, and 13, Water Lane, Mr. Rodwell.

Wellington, Shropshire.—The Urban Council has approved plans for the following:—New buildings in Bridge Road, submitted by Mr. Ensor; shop front in New Street, submitted by Messrs. G. H. York and Co.; and a new bakery, submitted by Mr. Heath.

Correspondence.

Unemployment Assurance for Architects' Assistants.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—The suggestion embodied in Mr. Dixon's letter in your issue of the 21st ult. is a matter that was anticipated two winters ago by the Students' Committee of the Society of Architects. A letter was circulated amongst the students of the Society asking several questions; one of which suggested the formation of a section whereby those joining the section were to pay a small sum weekly, and in return to receive about a pound a week when out of employment. This, to be a success required a larger number to participate therein than the Society could muster, although the idea was well received. The proposal was to make arrangements with some insurance company willing to take the matter in hand, but through lack of numbers the matter was for the time being abandoned.

The fact of an architectural assistant's occupation being classed as professional will in no way alleviate the cravings of the inner man, or be a satisfactory substitute for non-payment of rates when such fall due. The stumbling-block has been and is in the fact of possessing sufficient pride (false?) to prevent the disclosure of his need. It is high time that steps be taken in the same direction as Trade Unions, and some method of insuring against bad times be adopted. I have no doubt that the Society of Architects would take the matter in hand if the numbers were sufficient. H. S.

Relations Between Architects & Insurance Surveyors.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In reply to your correspondent's letter appearing in your issue of the 21st October, I would refer him to several of your previous issues, in which you have printed in full the various rules of the fire offices for the different grades of "Standard Fire Resisting Buildings." The discounts applicable vary, but any office will, I believe, gladly give full information to any prospective insurer.

I also annex particulars of rates for some fire insurances in the Cripplegate area.

I have taken first of all, for example, an imaginary building (though many can be found answering in every respect thereto), just south of Jewin Street, and against the items of the rating I have made notes showing approximately how the different extras can be avoided, but full particulars should in all instances be first obtained from the insurance company interested in the risk.

Then I have given an alternative for buildings constructed according to the special requirements of the offices, particulars of which can also be readily obtained on application.

My attention has recently been drawn to a case where the owners had, through their architect, approached the insurance surveyor, and every possible precaution was taken so that a minimum rate was obtained. Shortly afterwards an inquiry was made at the office as to what doors were necessary to lift openings, and on the insurance surveyor going to investigate matters he found that practically the whole of the special construction had been stultified by the erection of a lift through all floors, partially enclosed with match lining!

(1) Ordinary building in Cripplegate area:—

(a) Normal.—Cubical capacity of the warehouse under 100,000 c. ft.
(b) Skylight.
(c) Structural iron work, not covered with brick, plaster or cement at least ¾in. thick.
(d) Walls and ceilings lined with wood, etc., and/or ceilings and soffits not of plaster, lath and plaster, and provided with doors
(e) Floor openings,—Staircases enclosed with to all openings, are allowed.
(f) Exposure to neighbouring buildings.
(g) Tenants—more than one, not more than four.
(h) Trade processes—by power.
(i) Block extra.

The rate for a building of this description is 29s. per cent., but the additional for items "c," "d," and "e" are easily obviated. This would reduce the rate by 2s. 6d. per cent.

(2) If the building were constructed under the special requirements of the fire office, the rate for the structure would be reduced by 5s. per cent., in addition to the 2s. 6d. above-mentioned, and that for the contents by 3s. 4d. per cent., also in addition to the 2s. 6d.

Besides which, if the premises are fitted with approved fire-extinguishing appliances, discounts ranging from 20 per cent. to 50 per cent. can be obtained.

AUDI ALTERAM PARTEM.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Referring to the letter signed "The Man Who Pays" in your issue of the 21st October, if the writer of that letter will apply to any tariff fire insurance company (or to their surveyor) he would be furnished with half-a-dozen or more schedules showing the mode of construction of fire-resisting buildings necessary to ensure various reductions in the rate of premium. I think he will find they even apply to a Manchester warehouse in the Cripplegate district.

A recent case occurred in which a well-known architect consulted a fire office, and with the aid of their surveyor was enabled to erect a large building, that, when completed and stocked, was rated at more than 50 per cent. below the rate for a normal building in the like occupation.

I have had some experience, and have usually found that architects are simply prepared to discuss the necessity for the construction asked for by the office, and to assert their opinion of the inutility of the office requirements.

Their surveyor, however, is acting under the instructions of the combined offices, whose requisitions have been elaborated, after long and careful consideration, guided by statistics and conclusions drawn from many years' experience of the result of fires.

The greatest obstacle to the carrying out of some of the office regulations for the erection of fire-resisting buildings is undoubtedly the building by-laws in town and country. Were these modified

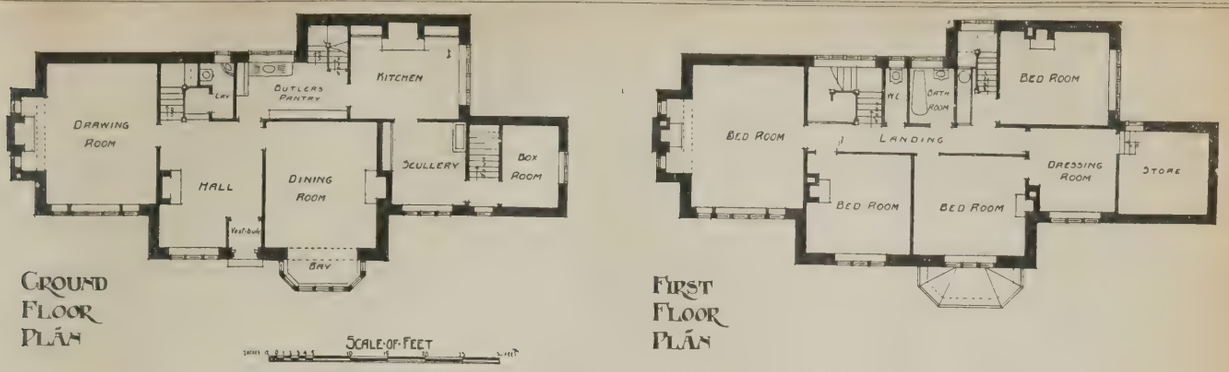


RESIDENCE, RISHWORTH, YORKSHIRE



CLUB AND INSTITUTE, BAILIFFE BRIDGE, YORKSHIRE.

JOSEPH F. WALSH AND GRAHAM NICHOLAS, F.R.I.B.A., ARCHITECTS.



HOUSE AT RISHWORTH, YORKSHIRE. WALSH & NICHOLAS, ARCHITECTS. *(See Centre Plate.)*

in the direction indicated by insurance companies, especially in the case of reinforced concrete structures, money might be saved in construction and in the cost of insurance.

London. R. A. W.

"DETAILS," a weekly journal for all interested in architecture and the allied arts, of which the first issue is announced for December 3rd, has for its essential aim, the prospectus states, the provision of examples of good work in which the practising architect will take a keen interest. The paper will consist entirely of illustrations, which will be made from specially-taken photographs, reproduced to a large size, and accompanied in every case by measured or scaled drawings, and by such particulars as appear to be necessary or interesting. The scheme is not confined to any phase or period, and will embrace all the arts and crafts allied to architecture. Examples of modern work of all countries, as well as examples of old work, are to be given. The best possible style of production is promised—fine printing on art paper, and the price is to be twopence weekly. The editorial and publishing offices are at 392, Strand, London.

* * *

MESSRS. FARADAY AND SON have removed their show-rooms for electric-light fittings to more commodious premises at 146-150, Wardour Street, W., 200 yards south of their old premises in Berner Street.

* * *

The Edwardian chimney-pot (Mark Fawcett's patent), we are informed, has been fixed on several Royal palaces, and is also a feature on the skyline of blocks of artisans' dwellings erected for the Sutton Trust. Truly a wide range of utility!

Our Plate.

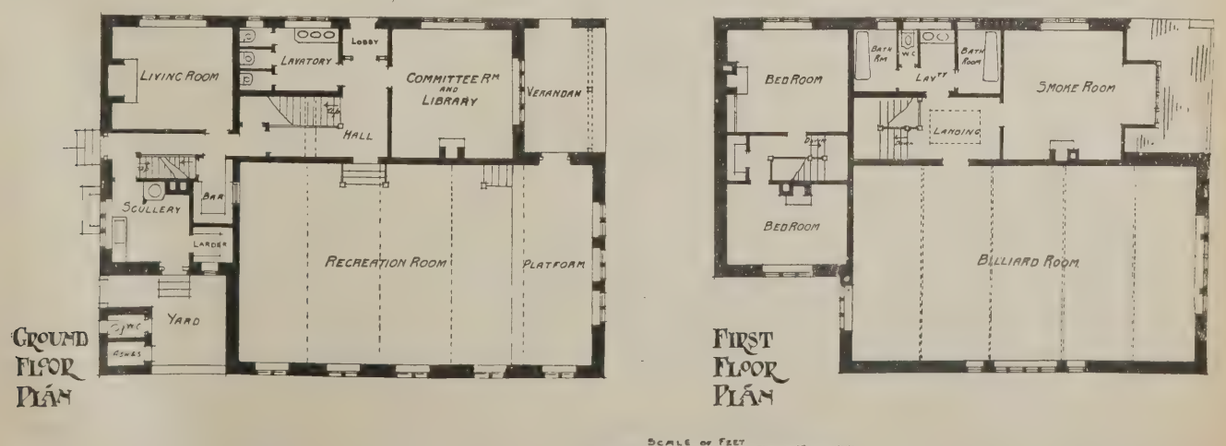
We illustrate this week two recent works by Messrs. Walsh and Nicholas, F.R.I.B.A., of Halifax.

House at Rishworth.—This house has been erected for Mr. D. G. Wheelwright, at Rishworth, in the Ryburn Valley, one of the most picturesque spots in the West Riding, and is at the foot of the easterly slope of the Pennine Range. It is built of local millstone grit, walled in random courses, and the roofs are covered with local "self-faced" stone slates. As far as possible, stones having natural iron-stained faces, have been used, with the object of getting as much variation in colour as possible; the windows are leaded lights in metal casements. The work has been carried out by local contractors under the separate trades.

Club and Institute Bailiffe Bridge, Yorks.—This building has been erected near the carpet works belonging to Messrs. T. F. Firth and Sons, Ltd., by the senior director of the firm, Mr. Thos. F. Firth, conjointly with his eldest son, Mr. Algernon F. Firth, in commemoration of the latter's silver wedding. The building is to be for the use of the people of the village. Externally, the structure is entirely of natural faced local "delf wall-stones," from the Elland Flagstone formation. These are walled in random block courses, the natural faces being of varying shades of red, caused by the deposit of iron. The roofs are covered with natural "self-faced" local stone slates. The windows are of plain leaded glass in steel casements. The building is so planned that the ground and first floors may be used either together or separately, there being a secondary entrance to the recreation room without passing through the chief entrance, so that public lectures or meetings will not interfere with the privacy of the members. The floor of the recreation room has a slight spring, so as to be suitable either for gymnastics, dances, concerts, or ordinary meetings. The heating is by low-pressure hot-water radiators, and a cast iron sectional boiler. The work has been carried out under separate contracts for each trade, with the superintendence of the firm's clerk of works.

R.I.B.A. MEETINGS.

The R.I.B.A. list of ordinary meetings, to be held at 9, Conduit Street, Hanover Square, London, W., on alternate Monday evenings, at 8 p.m., includes the following items:—November 16: "The Elizabethan House as Illustrated by Contemporary Architectural Drawings," by J. Alfred Gotch, F.R.I.B.A., F.S.A. December 14, "The Elements of Design in Internal Decoration," by T. R. Spence. January 18, 1909, "Public Abattoirs," by R. Stephen Ayling, F.R.I.B.A., and award of prizes and studentships. February 1, President's address to students, and presentation of prizes. February 15, "Town and Country: Some Aspects of Town Planning," by H. V. Lanchester, F.R.I.B.A. March 15, "American Architecture," by Francis S. Swales. March 29, "Buildings for Higher Technical Education," by Sir Aston Webb, F.R.I.B.A., R.A. April 19, "The Architectural Work of the London County Council," by W. E. Riley, F.R.I.B.A., Superintending Architect of Metropolitan Buildings, and Architect of the London County Council. May 17, "Smoke Abatement," by Sir W. B. Richmond, K.C.B., R.A. (Hon. A.R.I.B.A.). June 21, Presentation of the Royal Gold Medal.



CLUB AND INSTITUTE, BAILIFFE BRIDGE, YORKSHIRE. WALSH & NICHOLAS. ARCHITECTS. *(See Centre Plate.*

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.

SPECIAL NOTICE TO ENQUIRERS.

Answers by Post.

We are constantly receiving enquiries to which an immediate reply is requested and with which stamped addressed envelopes are often enclosed. Under our present rules it is impossible to comply with this request, and the immense number of enquiries received, and the exigencies of space often prevent us from publishing the replies as speedily as we should like, or in time to be of value to our correspondents. To meet this difficulty we have decided to open a department for "Answers by post." Correspondents desiring an immediate reply must enclose with their enquiries a stamped addressed envelope and a postal order for 1s., made payable to Technical Journals, Ltd., and crossed. Enquiries should be addressed to "Answers by post" Department, Builders' Journal, Caxton House, Westminster. We reserve the right to publish any of these enquiries that may be of general interest; and we reserve our right to return any enquiry and remittance where the request is for a design or for information on some elementary matter of building construction which should be within the knowledge of the enquirer. It need hardly be added that the fee to be paid for immediate replies does not pay for our experts' opinions, or for the special arrangements now required to deal with these enquiries. It is solely a protection against the receipt of innumerable questions of no particular interest or urgency.

Other enquiries will be answered, as heretofore, in the "Enquiries answered" columns of the Journal.

Ascertaining Cubical Contents of Plot of Land.

SCARBOROUGH. — "TENNIS LAWN" writes: "What is the simplest, accurate method of calculating the cubical contents of the piece of land to be excavated, as shown upon the enclosed tracing? (not reproduced). The piece of land to be excavated is bounded on the upper surface by the letters A B D and E, and on the lower surface by G C D E."

Calculate the areas of the vertical cross sections at D F H and at E; divide their sum by two; and multiply this by the length E F, plus half the horizontal equivalent of the slope at F.

F. S. I.

Delivery of Building Materials.

SURREY.—"A. B." writes: "A agrees to deliver a large amount of building materials to a certain building. B agrees to fix the same, the materials to be delivered on site free of cost. Who is liable for the cost of unloading? A claims that delivery on site does not include unloading; B says it does, and that it is not his business to provide men for the purpose. Please advise."

A having agreed to deliver the building materials "on the site," must, of course, unload them in a reasonable way, but he is not liable for placing them precisely upon the spot where they are required, nor for elevating them to the scaffold, etc. Would it not be well for each party to provide a man for the unloading? F. S. I.

Construction of Tennis Courts.

HINCKLEY.—"TENNIS" writes: "Please give particulars of tennis courts constructed of gravel or granite."

The whole secret of making a tennis court of gravel is to take care that the drainage is good, in order that these courts may be played upon in damp weather, and when it is impossible to use a grass court. I suggest that a layer of 3in. or 4in. of granite broken to pass in all directions through a 2in. ring be laid as a foundation, and that fine granite gravel be used to fill in the interstices, and laid to a depth of, say, an inch on top; use the softer kind of granite, which will bind on rolling, rather than the very hard varieties.

F. S. I.

Verandah Disapproved by Local Authorities

LONDON, S.E.—"LEICESTER" writes: "(1) Is there any by-law against the erection of a verandah above windows as shown upon the accompanying plans and section (not reproduced)? (2) The borough surveyor orders that the verandah shall be pulled down (it has only just been erected). What should the owner do in the matter?"

(1) It appears to me to be a little doubtful whether the verandah in question is of sufficient importance to warrant any interference by the borough surveyor; but it also appears to be perfectly clear that it is not enumerated amongst the exempted buildings to which the by-laws do not apply. I fear, therefore, that if it be insisted upon, you will not be able to resist an order for its removal. (2) I should await events, and do nothing. It is probable that nothing further will transspire. F. S. I.

Street Naming.

LONDON, S.W.—"FAIR PLAY" writes: "A building owner having some private houses in the centre of a long main road is converting them into shops. Can he name his row of shops as a terrace or parade in that road without any reference to the local urban district council? The local council, on being asked permission, begin to dictate and assume authority which possibly they do not possess. Has an urban district council power to administer the Towns Improvement Clauses Act of 1847?"

There is nothing to prevent an owner naming his property as he chooses, without any reference to the local sanitary authority. It is usual, however, to name a new street at the time of submitting the drawings for it, for approval. The Towns Improvement Clauses Act of 1847 is now incorporated with the "Public Health Acts," and can be administered by an urban district council, so far as it applies to them. F. S. I.

Damage from Settlement of Building.

BOLTON.—"R. H. C." writes: "During certain constructional alterations to the ground floor of a three-storey building, a number of cracks have appeared in the walls of the upper rooms, showing that a certain amount of settlement has taken place. A number of rooms consequently require redecorating. Is not the contractor responsible for this? The usual clause with respect to damage to existing buildings, etc., is in the bill of quantities, to be made good at contractor's expense. The form of contract is the R.I.B.A."

I am of opinion that the building contractor is not legally liable for the damage you mention as arising out of the recent operations, unless it has been caused by neglect or carelessness on his part. F. S. I.

A Question of Water Supply.

ASHBY-DE-LA-ZOUCH.—"DELA" writes: "A village is dependent for its water supply on a spring conveyed through pipes. The owner of the land and of almost all the village proposes to divert the supply at a high level and use it for milk cooling. During this process, the village would probably be derived of its entire supply. Failing a legal remedy as to the diversion, could the owner be compelled to provide fresh supply?"

In the absence of any deed or legal agreement to the contrary, the owner may certainly divert the water from the trough entirely, or may modify it as he chooses, whether the property which it supplies belongs to himself or to others. The reason for this is to be found in the fact that the pipes form an "artificial" channel, and the water is not flowing in a "natural" course. The district council have no powers to compel a landowner to provide a new water supply to existing houses (though they have such powers with regard to newly-erected houses); but if by reason of the absence of water a "nuisance" arises which can be dealt with under the "Public Health Acts," they may call for that nuisance to be abated. F. S. I.

Bad Case of Dry Rot.

ASHBY-DE-LA-ZOUCH.—"DELA" writes: "Dry rot having infested some boarded floors, the boards were taken up and woodblocks were substituted. These blocks have gradually risen ⅛in., and there is fungous growth behind the architrave of a door. What is the best method of dealing with the difficulty?"

The fungoid growth is no doubt caused by damp, and unless that cause can be removed, the trouble will continue. Are the walls provided with proper damp courses, and has the building sound rainwater spouting? The boarded floor should be supplied with air underneath the boards. F. S. I.

Meaning of Finishing Two Tints.

NEWPORT, MON.—A. writes: "I have a painting specification of which the wording is as follows:—Knot, stop, and paint four coats, and finish two tints. I shall be glad if you will kindly say in your next issue how many coats of paint the architect can compel me to put on under this specification?"

Four coats. The clause seems perfectly clear. Presuming that the work is new, you will prime (1st coat), knot and stop, and then give three more coats, which will make the four coats specified. "Finish two tints" simply means that the last coat is not to be in one colour, but in two. For example, the doors would be finished in one colour for the stiles, muntins, and rails, and another colour in the panels. As a rule, these colours are mixed to match, or at least, harmonize with the wall paper, Three coats having been given, including the priming, it is only necessary to mix two batches of colour for the final coat, so that no part of the work receives more than the four coats. J.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

REINFORCED CONCRETE PILE-MAKING AND DRIVING.

By Vere Sussex Hyde.

One of the most interesting subjects in the construction of reinforced or armoured concrete is piling, which has for the past seven or eight years been extensively used in this country in cases of bad foundations and for pier and jetty work. The writer proposes in this article to deal with the practical side only of making and driving ferro-concrete piles, and he trusts that this may be of a little assistance to those who have the supervision of this work while in progress.

Framing the Skeleton.

The first thing to be done is to make the steel skeleton framework. For this purpose it is necessary to take out from the rods (which have already been sorted out on the works) any bends, curves, or twists; but this must be done without heating. When this is done, the wire-workers should be set to frame up the skeleton, adhering strictly to the engineer's drawings detailing the manner of the reinforcement. While this is in progress, the joiners should be set off to prepare the necessary number of moulds, which should be constructed of good dry straight timber, not less than 1½ins. to 2ins. in thickness, wrought on the inside face, and properly and securely braced where necessary.

The Moulds Required.

Some systems advocate the use of a square pile, and others a round. The mould required for a square pile is a very simple matter constructed with three sides, the uppermost side being left open for placing in the steel skeleton and concreting. It is essential, however, that the mould should lie perfectly level, and that the skeleton be securely suspended in the correct position, and dead level, so that it may be entirely surrounded by concrete. The ends of the rods must be properly placed in the cast-iron shoe at the end of the mould.

For a round pile, a mould is constructed with two circular sides or cheeks made with narrow battens, after the fashion of a barrel bound with straps, with two flat sides; so that when the pile is complete, it has two flat surfaces, wide enough to lay flat up against the leaders of the piling frame to facilitate the driving.

In forming this mould, a straight plank is used, through which bolts are passed about 2ft. apart, for the purpose of holding down the straps that bind the circular sides. This plank is laid down dead level on sleepers. The skeleton frame is next laid on this plank, and then the circular sides or cheeks are attached and bolted through the straps at the top, as shown in the sketch. The open space at the top is of the same width as the bottom flat plank. The opening is left for the concreting. (See Figs. 1, 2, and 3.)

As in the case of the square pile, the skeleton framework is suspended by hooks to the top bolts to keep it in the correct position; the hooks being removed when the concrete is half-way up the mould, so that there is no chance of the steel framework getting disturbed from its correct position.

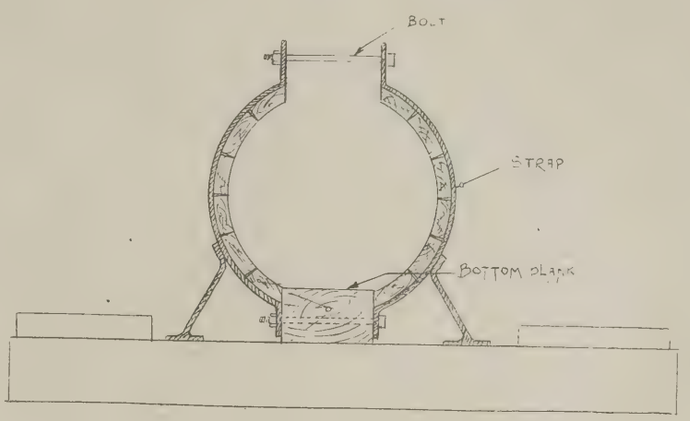


FIG. 1

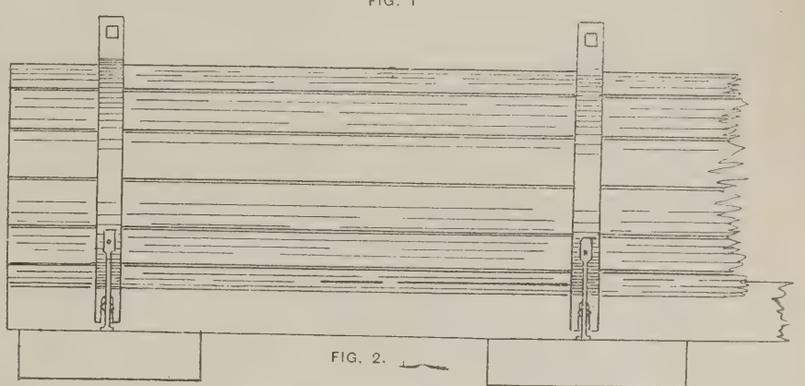


FIG. 2.

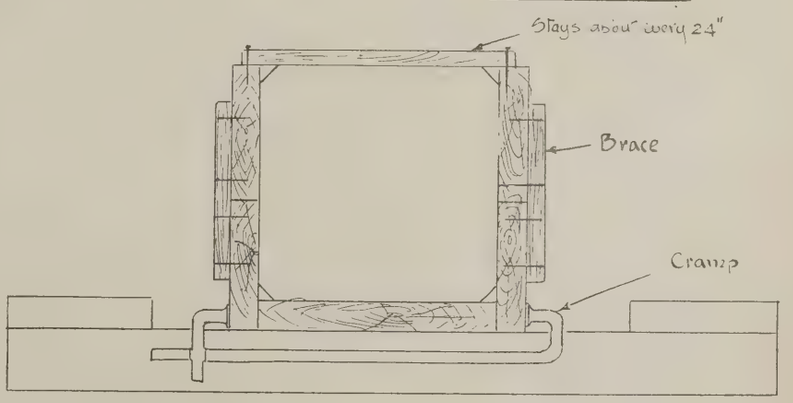


FIG. 3.

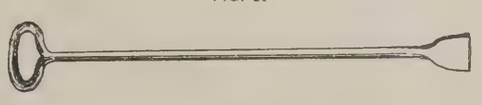


FIG. 4.

Concreting the Piles.

For the concreting of piles, it is advisable to use a suitable rammer with rounded shoulders, about 1½ins. to 1¾ins. in breadth at the base (see Fig. 4), and not in the form of a golf club, as with the latter there is a tendency to catch the reinforcement, which is generally of a close form in ferro-concrete piles. The ramming or punning must be very thoroughly performed; and keen supervision should be exercised, so that when the concreting is completed, the whole is a compact monolithic and non-porous mass. In ordinary circumstances, the moulds may be removed in four or five days after concreting. In hot weather, it is a good practice to water the piles

with an ordinary water-pot and rose daily, for about a week or ten days, say, ten hours after the concreting has been completed. A well-made pile may be safely driven seven weeks after making; but, for obvious reasons, the longer it is permitted to remain undisturbed, the better. In practice, the following specification for concrete to be used for pile-making will be found a good one: 27 cube ft. of good Thames or river ballast, entirely free from all loam or blue clay, and in no case larger than that which will pass ¾in. mesh; 13½ cube ft. of clean sharp sand, free from salt and other impurities, the grains to be of various sizes; 7¼ cwts. of high-grade cement of the British Standard specifications. The concrete mixture, if properly mixed and rammed, will make up a volume of 31 cube ft.

The writer has found that, in cases where a wooden dolly alone is used, without a cast-iron helmet, for pile driving, it is advisable to strengthen further the head of a pile for about 2ft. down with a stronger mixture than before mentioned; the aggregate for this purpose to be composed of 2 parts of granite chippings, free from all granite dust and washed, and not larger than that which will pass a ½in. ring; 1 part of clean sand, as before, and 1 of cement, making a concrete of 2—1—1, otherwise 3 to 1 concrete. Concrete thus proportioned sets like rock, and will not be damaged by driving when no helmet and cushion is used.

Driving the Piles.

Reinforced concrete piles are driven with a special pile-driving machine or engine, among the best known being the Lecours, Sykes, and Lidgerwood. These drivers are generally fitted with a 2-ton monkey or ram, which is hoisted by a steam winch. The ram can be driven at various speeds up to thirty blows a minute, and may be, if necessary, regulated and pulled up in its fall. Care and judgment must be used to drive with steady uniform blows, with a short drop, otherwise damage may be done by splintering or cracking the pile-head, however good or hard the concrete may be. But with a trustworthy gauger driver, who will exercise care, piles may be driven without a crack. Owing to the great weight of a long pile, say, 35ft. to 45ft. in length, special arrangements should be made for careful handling, hoisting, and placing in position for driving. When a pile has been hoisted to its position, it must be plumbed up, then bolted on, or rather through, the two leaders of the piling-frame, and then plumbed up again, before any blows are given.

In a case where a cast-iron helmet is used, it is necessary to make a strong cushion of sawdust in sackcloth, and to pack it inside the helmet, to relieve the head of the pile from the severe impact caused by the fall of the ram, thus saving the head of the pile from shattering, or being otherwise severely damaged. When a helmet is not specified for driving, an elm block or dolly, about 3ft. high, should be placed on the head of the pile.

Testing the Pile.

Everything being ready, the pile-driver proceeds with the driving (which may be regulated as the case necessitates), and drives until the specified set is reached; the set or test to be as stated in the engineer's or architect's specification. The usual test is that the pile does not sink more than ½in. or ¼in. under ten blows of a 2-ton monkey at a drop of 3ft. The test is, of course, always regulated according to the conditions of the soil, and the kinds of strata through which the pile has to penetrate.

The testing of a ferro-concrete pile is obviously one of the most important points to be considered during the execution of works on which piles are being driven, and one which is open to much abuse. The writer desires to take this opportunity of pointing out a few necessary precautions, when taking the set of a pile, and thus illustrating how a set or test can be "faked" and generally juggled with.

For measuring the test, it is necessary that the distance should be determined for the drop of the monkey or ram to the head of the pile. This should be clearly marked on the driving frame, so that it can be seen that the ram is hoisted to the right height for each blow. For marking the pile, a gauge rod is hung from the leaders of the piling-frame, so that it may swing. A line is drawn with a pencil on the pile at the level reached by the bottom of the gauge. The specified number of blows is then given, and the pile is again marked with a pencil, with the aid of the gauge. The space between the two lines thus marked on the pile determines its going after receiving the blows.

Points in Testing.

It is necessary for the clerk of works or inspector, when called upon to witness and pass a test, to observe very minutely the following points:—

(a) To note that when a helmet is used for capping a pile, the sawdust cushion is the same one that has been used in the driving, and that another has not been substituted, or that a new one has not been packed into the helmet and the old one placed under it, so that on looking up into the helmet the Instructor sees the old cushion apparently undisturbed. This little ruse has come under the writer's notice on several occasions. It is quite obvious that under these conditions a pile does not get the full benefit of the blow.

(b) To see that the ram is raised each time to the height marked on the piling-frame, and that the men holding the ropes do not regulate the fall of the ram so that it loses its force just before striking the head of the pile. He should take the precaution of putting the ordinary measuring rule over the gauge rod used for marking the fall of the ram. The writer has known this gauge to be secretly shortened an inch or two unobserved after being passed as correct, the idea being that, having once been passed, it would not be measured again.

(c) Another very 'cute device that has also come under the writer's notice is that, when drawing the lines on the pile with the aid of the gauge, the pencil is held at an angle from the latter, instead of at right angles, thus drawing the lines closer together; the only remedy for this is for the clerk of works or inspector to insist on marking the piles himself.

(d) When pile-driving is being carried on at night, a very keen look-out must be kept to see that the pile shoes are not tampered with or knocked off preparatory to lowering them into position for driving.

Piles are, as a rule, placed in groups of two, four, or six, at the points where the weight has to be supported. It will occasionally be found that, in driving, the first pile of a group may be driven right into the ground and then will not take the set, going always, say, 1-16in. to ¼in. more than allowed. In such an instance the following method may be employed to get it to pass the test—namely, to stop driving the pile, and drive the one next to it, then return to the former pile next day, and to give it 120 blows with a 3ft. drop before applying the test. In the majority of cases, the pile will not, under these circumstances, go more than 1-16in., and probably not that. This would probably satisfy most engineers.

THE SUPERVISION OF CONCRETE.

By a Clerk of Works.

Architects and engineers have recognised the importance of the good quality of the concrete used, and stringent specifications are often met with dealing with the class of matrix and aggregate to be used, and the proportions in which these are to be gauged, etc., and clerks of works, who really are the inspectors of the quality used, are bound to be particular in their supervision under such conditions; and, in fact, it is not uncommon for contractors to complain that some clerks of works are more exacting in their requirements than the specification warrants; too often because the clerk of works is young and inexperienced, and hopes to please the architect by a show of zeal.

No matter whether the clerk of works or inspector is old or young, experienced or inexperienced, crabbed in temper or gentle in manner, there is no doubt whatever that one of the most important items requiring constant supervision is concrete: no matter what position it is to occupy in the work. And there is no doubt either that an incomplete or faulty specification for concrete work is a curse to the contractor and the architect alike, as it gives opportunities to the unscrupulous contractor to scamp his work, and affords an exacting and bad-tempered clerk of the works unnecessary opportunities to worry a conscientious builder.

A word first, therefore, on the materials forming the concrete. Of these there are two distinct parts—the matrix and the aggregate. If the matrix, or cementing material, is specified of standard quality, it is all that can be desired. As regards the aggregate materials, the specification should be exact as to their requirements. The following clauses from a specification would enable a clerk of works to be perfectly certain that he was getting out of the builder all that the architect desires:—

"The whole of the cement used on the works shall be the best highly burnt pure Portland cement of a uniform dark-grey colour, and free from lime, slag, dust, or foreign material after leaving the kiln; it shall in all cases not weigh less than 112lbs. per imperial (striked) bushel when poured in quietly, and shall be obtained from some manufacturer approved by the architect."

"The cement shall be gauged extremely fine, and so that 08 per cent. at least will pass through a sieve of 5,876 meshes to the sq. in."

"The cement will be gauged neat, with from 17 per cent. to 15 per cent. of

its own weight of water, and shall be capable of sustaining a tensile stress of 400lbs. per sq. in. of sectional area, eight days after having been made in a mould and immersed in water during an interval of 7 days. At the expiration of 28 days, the briquettes shall have shown a steady increase of bearing a tensile stress of 580lbs. per sq. in., having been immersed in water during the last 27 days."

"The concrete will further be tested along with the sand to be used in the work. It will be gauged with three times its weight of clean dry sharp sand, which has passed through a sieve of 400, and been retained on one of 900 meshes to the sq. in."

"The cement and sand having been well mixed dry, about 10 per cent. of their weight of water is to be added, and the briquettes formed in the moulds. The briquettes having in the meantime been kept in a damp atmosphere, are to be put in water 24 hours after having been made, and will remain in water for a period of 28 days from the time of gauging, when they will require to stand a tensile strain of not less than 180lbs. to the sq. in."

"In addition to these tests, the cement shall, when subjected to a chemical test, yield a satisfactory result, and shall have a specific gravity of 3.1."

"The contractor shall provide at some convenient part of the site a suitable shed, or other approved building, having a damp-proof floor, with all necessary subdivisions, so that each consignment may be kept separate, of sufficient size to contain such quantity as the architect or clerk of works may order to be kept in store."

"All cement before being used shall be spread upon this floor in a layer not exceeding 12ins. in thickness, and allowed to remain at least 14 days, or for a longer period if the condition of the cement requires it, the contents of the various bags or casks being thoroughly mixed with each other in spreading out on the floor, and the cement shall be turned over from time to time as the clerk of works may direct."

"The builder shall take precautions to keep all cement dry, and shall provide all necessary waterproof sheeting or tarpaulins for the protection of the same on the works."

"The builder shall always keep sufficient stock for 14 days' requirements at least, and with each delivery of cement he shall furnish the architect or clerk of works, in writing, the quantity sent in, the maker's name, date when taken from the kiln, and samples taken from the consignment, in the presence of the representative of the architect, for testing purposes, and deliver the same at the office of the latter, properly marked and labelled."

"The cement will be tested by the architect, and all that fails to comply with the above standard of strength will be rejected, and must forthwith be removed from the site at the expense of the builder, and an average of three briquettes shall be considered conclusive. No cement to be used until after being tested."

"The first consignment of cement to be put in store immediately after the signing of the contract, for the purpose of testing in accordance with the terms of this specification, and the architect and his clerk of works shall have free access to the store at all times, and shall be at liberty to take samples of cement when they may desire."

The clauses given above are almost as severe as it is possible to make them, but to no one of them could an honest builder take exception. They have been framed to ensure as near perfection as is possible, and such explicit particulars define exactly what is required of the clerk of works, equally as it does of the builder.

It is possible to criticise even such a model specification as the above, but this is stringent enough for all ordinary work. In works of very great magnitude it would be desirable to settle the supply of the cement on a separate specification, and this, in fact, is the usual course.

Without reproducing the clauses that govern the supply of the materials forming the aggregate and the making of the same into concrete, it will be seen from those given for the Portland cement that, by carefully describing in detail all the requirements of the materials, the clerk of works will be assisted to a large extent in his work of supervision.

If the specification is vague on the point of the materials, and the clerk of works is to be the arbiter of the quality of those supplied, it is not at all unlikely that grave injustice may be done to the contractor, or that some very peculiar substances may be brought on the site for aggregate. A few weeks ago, the writer, visiting a job in London, arrived in time to see four yard-cart loads of old pantiles brought to the site as aggregate for concrete. The contractor evidently had some buildings to demolish close by, and rather than cart them away to a tip, had the hope of utilising them on his neighbouring jog for the purpose mentioned. They were black with age, covered with soot, moss, and even small fibrous roots. The only point in their favour for the purpose the builder had in view was their hardness, but otherwise their dirty condition and sameness of shape (even when broken up to pass the specified gauge) was sufficient reason to reject them out of hand. Old drain pipes, slimy when wetted; old bricks, previously used for flues and coated thickly with soot; and old concrete, made originally of weak lime, and now crumbling at the touch, are some of the materials brought forward as substitutes for good ballast, etc., and if the clerk of works is inexperienced, and the specification weak or vague, such materials may find their way into the new work, to the detriment of its stability.

No matter how exactly a specification is written concerning the materials, inferior concrete may result owing to bad workmanship in the making, mixing, depositing, ramming, etc., all of which faults could be avoided with proper care and supervision.

One of the most important points is the proper proportioning of the ingredients. The particular proportions should be defined in the specification, and for this purpose proper gauging or measuring-boxes must be brought into use. The capacity of the one for measuring the cement will be proportional to the volume of the aggregate to be used, and is best made with a bottom to it, so that the cement may be placed on top of the aggregate after measurement. That the boxes are of the correct capacities the clerk of works will have beforehand determined for himself. The supervision of concrete must be constant, for which reason the mixing should take place in full view from the window of the clerk of works' office; if this is impossible, the clerk of works must be always outside whilst the mixing is in hand. And at this time the hours of the clerk of works should be those of the workmen. The boxes should be filled; an inch too much of the large box and an inch too little of the small one will make all the difference between a good or a bad gauge, and must be avoided. A common dodge of foremen is to have the aggregate stored around the mixing platform, and if the latter is only just sufficient to hold the whole contents of the gauge, in mixing and turning over, the gauged part frequently comes perilously near the ungauged portion, and unless the clerk of works keeps a close look-out, shovelfuls of the latter will be added to the former, to the loss of the true proportions as specified. This the clerk of works can remedy or avoid by seeing that a clear space is left all round the platform, or if the site is too cramped to allow this, then scaffold-boards or running planks can be stood on edge to separate the two classes of materials. The mixing platform is easily formed of scaffold or similar boards of the same thickness.

In addition to the exact proportioning of the materials, the mixing itself requires close supervision. The platform should be well stiff-broomed prior to receiving the first of the ingredients, at each gauging, to free it from all loose dust, dirt, or soot. The aggregate should be watered if it is composed of broken brick or stone or similar porous substances, to avoid their soaking up the water required proper to the mixing. When one gauge has been brought to the platform, it must be turned over at least twice a day, before any water is given, which last should be added through the rose of a hose-pipe, or, if a large supply tank is near at hand, a watering-can with rose may be used, but there is always a risk of the "turners-over" continuing their work whilst the can is being replenished, so that some parts do not receive their proper share of water; on the other hand, if a hose-pipe is used, it must have a "waste-not" cock at the rose end to allow of the man manipulating it checking or stopping the supply to avoid saturating and drowning the mixture. The turning over whilst wetting forms the third turning; it should be turned over at least once more before being wheeled away to be deposited—twice for preference.

If the size of the job warrants it, a mechanical mixer can be used, which gives good results, and on large works the concrete produced is considerably cheaper in cost per cubic yard. The clerk of works still has to see that it is accurately gauged, etc.

Prior to depositing, if the work is to be in trenches, the clerk of works is bound to see that the excavations are of the correct width and depth, and that a sufficiently good and level bottom is obtained, and that the trenches are free from water, mud, etc. If the trenches have been got out too wide, the extra width must be made up with concrete, and in no case must the proper width be kept by boarding, to be taken away as the concreting proceeds, nor must the void be filled with returned earth. If the concrete is to be deposited inside moulds, sheeting, etc., these must be inspected to see that no shavings, dirt, dust, or blocks of wood, etc., have been left in the same, which would occupy space that should be filled with concrete.

Experience has shown that no advantage is obtained by tipping concrete from a height to the level it is to occupy; at one time it was thought to consolidate

it, but it is now seen to separate the particles forming the mass, in falling, which is to be avoided. The concrete, after mixing, should be rapidly filled into barrows, wheeled to the side of the trench, etc., and gently lowered into position. It should then be punned, care being taken that this is not overdone; the time to cease in this work is when the cement-laden water rises to the top. If the concrete is to form reinforced columns, etc., care must be taken in the ramming to avoid shifting or moving of the steel rods. When once the cement has commenced to set, punning must cease, and in the case of quick-setting cements it is advisable to dispense with the punning altogether.

In deep trenches, etc., the concrete is best laid in truly horizontal layers of about one foot to 18 inches in depth, which are rammed and allowed to set before another layer is added. For the surface of the layers not to be level is to form a means of escape for the cement, as it will be carried away with the running water on the top. Each surface should be well brushed before the next layer is added, to remove loose dust, etc. In order to form a key on the lower bed, to receive the upper one, the former can be gently pickaxed to roughen its surface as left by the punners. The lower bed should also be wetted prior to depositing on it the succeeding layer.

The depositing requires care, as to tip from the barrow carelessly into the trench often results in the freshly made concrete striking the sides of the trenches, which, in addition to covering it with soil or earth, and thereby spoiling its strength and setting powers, etc., and entailing loss of time in removing such damaged concrete, besides the loss of the concrete itself, there is also the cost of re-preparing the trench afresh by removing the fallen earth, and the making good the vacancy on the sides of the trench with concrete.

The time of the year and state of the weather must guide the clerk of works as to the advisability of proceeding with the concrete, or leaving it in abeyance for a time, until more favourable conditions prevail. Frost will damage the solidity of the resulting mass and retard the setting. Heavy rains will probably help to drown the cement if occurring whilst mixing, washing it completely off the mixture and from the platform, leaving insufficient to form a good cementitious material. It is hardly necessary to insist that once concrete has commenced to set, ramming must cease; also no clerk of works should allow concrete once mixed and left for a time to be knocked up again, with addition possibly of more water, as the setting power and final strength of the knocked-up concrete is much lower.

LIVERPOOL ARCHITECTURAL SOCIETY.

The annual report of this society for the official year 1907-8 shows that the membership consists of fifty-six Fellows and sixty-nine Associates—total, 125. Improved financial conditions have enabled the council to increase slightly the expenditure upon the library and for students' prizes, and to make a donation to the Architects' Benevolent Society. The President of the Liverpool Society, which is now in its sixtieth session, is Mr. T. E. Eccles, F.R.I.B.A.; Mr. E. P. Hinde, A.R.I.B.A., and Mr. C. H. Reilly, M.A., A.R.I.B.A., being vice-presidents; while the honorary secretaries are Mr. Gilbert W. Fraser, A.R.I.B.A., and Mr. Ernest C. Aldridge.

REINFORCED CONCRETE AND INSURANCE RATES.

One of the first considerations in every prospective building is the rate of insurance which the owners will be called upon to pay when the building is completed. It is the attitude of the insurance companies on this question that to some extent causes a hindrance to building operations at the present time. Various methods of making buildings more or less fireproof have been adopted by the architects on the suggestion of the insurance surveyor, but too often these suggestions, when adopted, though making for an increase in the cost of the building, and in the fire safety thereof, have not resulted in a reduction in the rate per cent. charged by the insurance company. Valuable work in the direction has been done by the Fire Prevention Committee, who claim that through their efforts, and by the adoption of their regulations, millions of pounds worth of damage by fire have been saved.

This, however, is hardly sufficient in the interest of the ordinary commercial man, for though the avoidance by fire is to be greatly desired, he would be the more pleased if, in addition, it were possible to reduce his insurance cost. As an illustration, assuming a printer's risk to be taken, although the owner of a building may adopt all possible methods of fire prevention, yet, despite the consequent increase in the cost of his building, he still has to pay an enormous insurance rate, varying from 10s. to 21s. per cent. or more. The rate applies not only to the particular building in question, but to adjacent buildings also. Obviously, this must militate against building operations, because the owner, when considering the details of the prospective building, naturally asks himself what modern fireproof invention is likely to benefit him over and above the avoidance of dislocation to his trade consequent upon a fire; and practically the only answer is that he gets no benefit. The natural result follows that he must give up his idea of building, or content himself with a type of building which is not the best from a fire-risk view.

To this selfish attitude of the insurance ring, the builders owe much of the depression in their trade, and it behoves the various associations of one kind and another connected with the trade to see how far their efforts might be successful in bringing about a more intelligent attitude on the part of the insurance companies towards the question. The word "intelligent" is used advisedly, because it can scarcely be described as intelligent to prescribe a rate calculated to act as a deterrent upon buildings of a high-class character. Though a reduced rate would perhaps decrease premium receipts to some extent, yet it must necessarily increase insurance profits, if thereby prospective builders are induced to erect high-grade fire-resisting structures, which make burn-outs practically impossible.

The advance in reinforced concrete, as seen in the last few years, affords proof of the readiness of builders to adopt progressive methods, despite the lack of encouragement referred to; but it is beyond doubt that the advance, rapid as it may have been, is small when compared with the progress consequent upon any tariff preference given by insurance companies to constructions of this kind.

The argument so often used against such preference is the absence of any practical demonstration of the superiority of reinforced concrete as a fire-resistant. The absurdity of such an argument is at once apparent if any value can be attached to the fire tests carried out by the Fire Prevention Committee, and the high awards given to reinforced concrete specialists. It may be said of such tests that they are more or less unpractical—in other words, that the actual conditions of a real fire are absent. This objection may be answered by reference to a fire that recently took place at the Dayton Motor Works, a short account of which may prove interesting.

Two buildings were erected side by side, one of which was constructed in brick, and the other in reinforced concrete on the Kahn system. A fire broke out on the fourth floor of the reinforced concrete building, and burnt out the entire contents of the floor. The fire doors not being in position, the fire communicated into the brick building, which was fitted with a sprinkler system, despite which two of the floors were completely gutted, and the entire building was, for practical purposes, demolished. The total repairs to the reinforced concrete building involved a cost of only £100, and were completed and work resumed after a test had been carried out of double the load for which the building was designed within one month from the date of fire. The brick building, so far as we know, is incomplete to-day.

The fire proved almost beyond a doubt that under modern conditions of extraneous fire prevention, a reinforced concrete building cannot be burned out. It has been demonstrated at this and other fires that an intense heat will affect only the outer layer of concrete to a small degree, and where bars with rigidly attached diagonals are used, such as in Dayton Motor Co.'s works, the lower inch of concreting being used for fireproofing only, the strength of the main girder is unaffected. These are important points to every business man, because thereby he has the three-fold knowledge, assuming his building to be of reinforced concrete, first, that it is the highest form of fire-resistant; secondly, that if a fire does break out it must needs be confined to one floor; thirdly, that the necessary repairs resultant upon a fire may be speedily completed, and work resumed. If, in addition to these advantages, he could secure, say, a 10 per cent. preference on his insurance premium, then, beyond question, we should see a much-needed improvement in the building trade, and a decrease in fires. The illogical, not to speak of arbitrary attitude of the insurance ring towards the question has induced several well-known firms to take up their own fire risks with satisfaction to themselves. It may be if there be no other solution to the difficulty, that an association of capitalists for the purpose of dealing specially with the insurance of reinforced concrete constructions would act beneficially, not only for themselves, because the risk is small, but for the prospective builder, and trade in general.

The enormous profits and huge salaries paid by insurance companies show clearly that there is an ample margin as far as they are concerned. These excessive profits can only be made at the expense of the commercial man who is already burdened with heavy taxation and keen competition, therefore the need for protest and action is urgent.

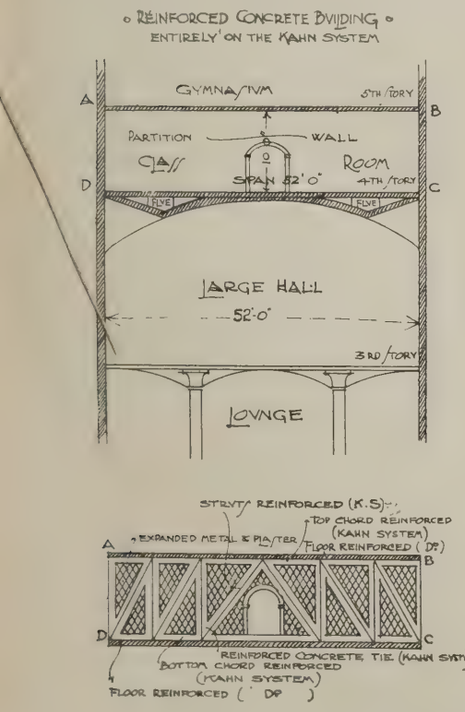
REINFORCED CONCRETE MEMBERS SUBJECTED TO DIRECT TENSION & BENDING COMBINED. PROPOSED NEW FORMULÆ:

By D. A. Kambero.

Recently I had to design two partition walls of a building intended to be constructed of reinforced concrete; these two partition walls were between the fourth and fifth floors of the building, and underneath them was a large hall, so that the walls were only supported by columns at the extreme ends. In addition to the dead weight of the walls, they had to carry the floors of the fourth and fifth storeys. The dimensions and weights were as follows:—Clear span=52ft., height of the wall=10ft. 10ins., thickness=9ins., dead load of the wall per foot run of the span=1,120-lbs., weight of the fourth storey floor=4,245-lbs. per foot run of the span, weight of the fifth storey floor=4,155-lbs. per foot run of the span, reactions R_1 and R^2 of the ends of the walls considered as beams=110.5 tons, total weight to be carried, per foot run of the span=9,520-lbs., bending moment in the middle of the wall considered as a beam=38,613,120-inch lbs.

The accepted design for each of those two partition walls was that of a trussed beam with chords, struts, and ties of reinforced concrete on the Kahn system, with the spaces between the ties and struts filled with expanded metal and plaster.

The accompanying sketches show the different arrangements.



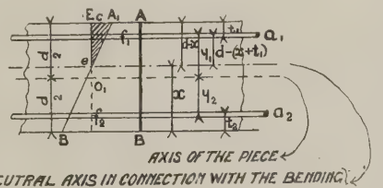
In calculating the stresses of the chords, ties, and struts, I met with the difficulty that the portions of the bottom chord were subjected to direct tension on account of the truss action, and at the same time to bending on account of the continuous floor of the fourth storey.

Although I consulted several standard books, I was unable to find any literature dealing with a similar case of reinforced concrete being subjected to direct tension and bending combined, so I was obliged to consider the case without their aid. I give the following calculations in the hope that they will be of some use to engineers who meet with similar cases to the above, and they also apply to reinforced concrete bridges for general traffic, of the bowstring or trussed beam type, where the bottom boom of the main girders has to carry the outer edges of the deck slab.

The following symbols are used in the calculations:—

B = the bending moment the piece is subjected to;
T = the direct tension the piece is subjected to;
d = the depth of the piece;
*C = the breadth of the piece;
a_1 = the sectional area of the top reinforcement;
a_2 = the sectional area of the bottom reinforcement;
c = maximum compressive stress per square unit of the concrete;
f_1 = tensile stress per square unit of the metal of the top reinforcement;
f_2 = tensile stress per square unit of the metal of the bottom reinforcement;
f_t = the same as f but is indicated thus, when in conjunction with the symbol f_c
f_c = compressive stress of the metal per square unit;
t_1 = the distance of the centre of the top reinforcement from the upper surface of the piece;
t_2 = the distance of the centre of the bottom reinforcement from the bottom surface of the piece.
y_1 = the distance of the centre of the top reinforcement from the axis of the piece.
y_2 = the distance of the centre of the bottom reinforcement from the axis of the piece.
x = the distance of the *neutral axis* from the *bottom* surface of the piece.

1st Case.—Let us assume that the bending moment is not sufficient to eliminate the tension on the compression side of the piece, and that at both sides exists tension; also that the reinforcement is of small sectional area and depth, and is at both sides of the piece.



Examining the section AB, we may suppose it to take up the position A_1B_1 under the effect of the direct tension and the bending moment, where f_2 and f_1 are the maximum and minimum stresses in the metal respectively; the concrete under the effect of the bending moment will be compressed according to the triangle EOA, *and since we neglect any tension existing in the concrete.*

It is evident that:

$$T = f_1a_1 + f_2a_2 - \tfrac{1}{2}c\,(d-x)\,C \quad \ldots\ldots(1)$$

and

$$B = f_2a_2y_2 - f_1a_1y_1 + \tfrac{1}{2}c(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C \quad (2)$$

taking moments round o_1, and considering as + the clockwise moments and as − the counter-clockwise moments.

Now it is evident again, we cannot determine both f_1 and f_2 from c, since the compression in the concrete is quite independent of the initial tension——

The only thing we can do is to determine the difference $f_2 - f_1$ from c.

Assuming the hypothesis of the conservation of plane sections, we have:

$$f_2 - f_1 = c.\ \frac{d-(t_1+t_2)}{d-x}$$

and

$$f_1 = f_2 - c\ \frac{d-(t_1+t_2)}{d-x} \quad \ldots\ldots(3)$$

substituting the value of f_1 in the equation (1) and (2) we get:

$$T = f_2a_2 + \left(f_2 - c.\ \frac{d-(t_1+t_2)}{d-x}\right)a_1 - \tfrac{1}{2}c\,(d-x)\,C$$

or,

$$T = f_2(a_2+a_1) - c.\ \frac{d-(t_1+t_2)}{d-x}a_1 - \tfrac{1}{2}c\,(d-x)\,C$$

or,

$$T = \frac{c}{d-x}\Big\{(a_2+a_1)(d-x)n - [d-(t_1+t_2)]a_1 - \tfrac{1}{2}(d-x)^2\,C\Big\} \quad (4)$$

where $n = \frac{f_2}{c}$.

Similarly we get from equation (2)—

$$B = f_2a_2y_2 - \left[f_2 - c\ \frac{d-(t_1+t_2)}{d-x}\right]a_1y_1 + \tfrac{1}{2}c\,(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C,$$

or,

$$B = f_2(a_2y_2 - a_1y_1) + c\,\frac{d-(t_1+t_2)}{d-x}a_1y_1 + \tfrac{1}{2}c\,(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C$$

or where $n = \frac{f_2}{c}$,

$$B = \frac{c}{d-x}\Big\{(a_2y_2 - a_1y_1(d-x)n + [d-(t_1+t_2)]a_1y_1 + \tfrac{1}{2}(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C\Big\} \quad (5)$$

and in the case of a symmetrical reinforcement we have—

$$a_2 = a_1 \text{ and } y_2 = y_1,$$

again substituting for $n = \frac{f_2}{c}$ the value

$$\frac{16000}{400} = 40,$$

and since usually $t_1 = t_2$, we get,

$$T = \frac{c}{d-x}\Big\{40 \times 2a(d-x) - (d-2t)a - \tfrac{1}{2}(d-x)^2C\Big\}$$

or,

$$T = \frac{c}{d-x}\Big\{[79d - 80x + 2t]a - \tfrac{1}{2}(d-x)^2C\Big\} \quad \ldots\ldots(6)$$

Similarly from equation (5).

$$B = \frac{c}{d-x}\Big\{\tfrac{1}{2}(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C + (d-2t)\,ay\Big\} \quad \ldots\ldots(7)$$

Now supposing the bending moment becomes greater and greater, it will gradually eliminate the tensile stress f_1, and at the limit when the skin compression caused by the bending moment is equal to the skin tension due to the direct pull, f_1 will equal zero, and from equation (3) we shall have,

$$\frac{f_2}{c} = \frac{d-(t_1+t_2)}{d-x} = 40$$

or

$$d - 2t = 40(d-x),$$

and substituting in the above equations (6) and (7), we get,

[*It is unusual to represent the breadth by C; but, from a misprint in setting we are obliged to leave it as it is throughout the following calculations.]

$$T=\frac{c}{d-x}\left\{40\times 2a(d-x)-40(d-x)a-\tfrac{1}{2}(d-x)^2C\right\}$$

or

$$T=c[40a-\tfrac{1}{2}(d-x)C] \quad \ldots\ldots(8)$$

similarly,

$$B=\frac{c}{d-x}\left\{\tfrac{1}{2}(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C+40(d-x)ay\right\}$$

or,

$$B=c\left[40ay+\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{u}{3}\right)C\right] \quad ..(9)$$

and

$$\frac{B}{T}=\frac{40ay+\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\tfrac{1}{2}(d-x)C} \quad ..(10)$$

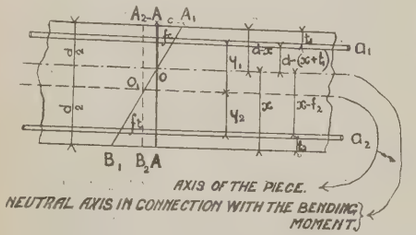
Now it is obvious that in the case when $f_1 > O$ we shall have—

$$\frac{B}{T}<\frac{40ay+\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\tfrac{1}{2}(d-x)C}$$

therefore, when compression does not exist in the piece, $\frac{B}{T}$ will always be

$$\leq\frac{40ay+\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\tfrac{1}{2}(d-x)C} \quad ..(11)$$

2nd Case.—Let us assume now that the bending moment is quite sufficient to eliminate the tension on the one side of the piece, and that at the bottom exists tension, while at the top exists compression; also that the reinforcement is of small sectional area and depth, and is at both sides of the piece.



Examining the section AB, we may suppose it to take up the position of A_1B_1 under the effect of the direct tension, and the bending moment where f_t and f are the tensile and compressive stresses of the metal respectively; the concrete under the effect of the bending moment will be compressed according to the triangle OAA_1.

It is evident that the direct tension:

$$T=f_ta_2-f_ca_1-\tfrac{1}{2}c(d-x)C \ldots.(12)$$

and the bending moment

$$B=f_ta_2y_2+f_ca_1y_1+\tfrac{1}{2}c(d-x)\left[\frac{d}{2}-\frac{1}{3}(d-x)\right]$$

or

$$B=f_ta_2y_2+f_ca_1y_1+\tfrac{1}{2}c(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C \quad (13)$$

by taking moments round o_1, and considering as + the clockwise moments, and as − the counter-clockwise moments.

But now it is evident that we can determine both f_t and f_c from c.

Assuming the hypothesis of the conservation of plane sections, we have:

$$\frac{c}{E_c}\times\frac{d-(x+t_1)}{d-x}=\frac{f_c}{E_f}$$

where Ec=the modulus of elasticity of the concrete in compression, and Ef=the modulus of elasticity of the metal.

$$\therefore f_c=r.c.\frac{d-(x+t_1)}{d-x} \quad \ldots\ldots(14)$$

where r=the ratio of the moduli of elasticity Ef:Ec.

Similarly we have

$$\frac{f_t}{E_t}=\frac{c}{E_c}\cdot\frac{x-t_2}{d-x}$$

$$\therefore f_t=r.c.\frac{x-t_2}{d-x} \quad \ldots\ldots\ldots(14a)$$

Substituting equations (14) and (14a) in the equations (12) and (13) we get,

$$T=r.c.\frac{x-t_2}{d-x}a_2-r.c.\frac{d-(x+t_1)}{d-x}a_1-\tfrac{1}{2}c(d-x)C$$

or

$$T=\frac{r.c.}{d-x}\left[(x-t_2)a_2-\left\{d-(x+t_1)\right\}a_1\right]-\tfrac{1}{2}c(d-x)C$$

or

$$T=\frac{c}{d-x}\left\{r\left[(x-t_2)a_2-\left\{d-(x+t_1)\right\}a_1\right]-\tfrac{1}{2}(d-x)^2C\right\} \ldots\ldots(15)$$

similarly from equation (13) we get,

$$B=r.c.\frac{x-t_2}{d-x}a_2y_2+r.c\frac{d-(x+t_1)}{d-x}a_1y_1+\tfrac{1}{2}c(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C$$

or

$$B=\frac{r.c.}{d-x}\left[(x-t_2)a_2y_2+\left\{d-(x+t_1)\right\}a_1y_1\right]+\tfrac{1}{2}c(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C$$

or,

$$B=\frac{c}{d-x}\left\{r\left[(x-t_2)a_2y_2+\left\{d-(x+t_1)\right\}a_1y_1\right]+\tfrac{1}{2}c(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C\right\} \ldots.(16)$$

and in the case of a symmetrical reinforcement, we have,

$$a_1=a_2 \text{ and } y_1=y_2$$

again substituting for r its usual value 15, we get,

$$T=\frac{c}{d-x}\left\{15\left[(x-t_2)a-\left\{d-(x+t_2)\right\}a\right]-\tfrac{1}{2}(d-x)^2C\right\}$$

and since usually $t_1=t_2$,

$$T=\frac{c}{d-x}\left[15a(2x-d)-\tfrac{1}{2}(d-x)^2C\right] \quad (17)$$

and

$$B=\frac{c}{d-x}\left\{15\left[(x-t_2)ay+\left\{d-(x+t_1)ay\right\}\right]+\tfrac{1}{2}c(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C\right\}$$

and since $x-t_2+d-(x+t_1)=2y$, we get

$$B=\frac{c}{d-x}\left\{30ay_2+\tfrac{1}{2}c(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C\right\} \ldots.(18)$$

Suppose now, we have a symmetrical reinforcement and want to *determine the dimensions* of a piece knowing the values of B and T.

We can follow two methods:—

1st Method.—We give a value to the percentage of the reinforcement $p=\frac{2a}{Cd}$, where 2a is the whole area of the metal to be used, and d, C the depth and breadth of the piece respectively.

Again giving to t its usual value 2ins, we get $y=\frac{d-4}{2}$; but we have also for C the usual value of 12 inches.

Therefore equations (6) and (7) become

$$T=\frac{c}{d-x}\left\{\left[79d-80x+4\right]\frac{Cdp}{2}-\tfrac{1}{2}(d-x)^2C\right\}$$

or

$$T=c\left\{\left[79d-80x+4\right]\frac{Cp}{2}\cdot\frac{1}{1-\frac{x}{d}}-\tfrac{1}{2}(d-x)C\right\}$$

We represent the ratio $\frac{x}{d}$ by μ, therefore,

$$T=400\left\{\left[79d-80\mu d+4\right]\frac{6p}{1-\mu}-6d(1-\mu)\right\} \ldots.(19)$$

Similarly we have

$$B=\frac{c}{d-x}\left\{\tfrac{1}{2}(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C+\frac{Cdp(d-4)^2}{4}\right\}$$

or,

$$B=c\left\{\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C+\frac{C\,d\,p\,(d-4)_2}{4\,(d-x)}\right\}$$

or,

$$B=c\left\{\tfrac{1}{2}(d-d\mu)\left(\frac{d}{6}+\frac{d\mu}{3}\right)C+\frac{Cp(d-4)^2}{4(1-\mu)}\right\}$$

or,

$$B=400\left\{6d^2(1-\mu)\left(\frac{1}{6}+\frac{\mu}{3}\right)+\frac{3p(d-4)^2}{(1-\mu)}\right\} \ldots.(20)$$

Equation (19) contains the 1st power of d, while equation (20) contains the second.

Therefore, giving different values of μ (ratio of x to d, and $\mu<1$), we find one value of d from equation (19), and another from equation (20), solving both for d. We plot the values of μ on squared paper at the axis of x, and the two correspondent values of d from the two equations (19) and (20), as ordinates. The intersection of the two curves will give us the proper value of d; then the value of x is found from the equation—

$$\frac{x}{d}=\mu$$

when μ is found from the diagram.

We then determine the value of *a* from the equation

$$a=\frac{Cdp}{2}$$

and the value of f_1 from the equation

$$f_1=f_2-c\frac{d-4}{d-x}$$

where f_2 = 16,000 lbs. and c = 400 lbs.

2nd method.—We assume a value for d and C; then $y=\frac{d-4}{2}$ where t=2 in.

Equations (19) and (20) must be considered now as for p and μ.

Giving different values to μ we determine two values of p from the two equations, and plotting them on squared paper, we get two curves, the intersections of which will give us the proper values of p and μ.

Then from the equation

$$p=\frac{2a}{Cd}$$

we determine a, the sectional area of the reinforcement, and from equation—

$$\frac{x}{d}=\mu$$

we determine x.

The value of f_1 is determined from the equations

$$f_1=f_2-c\frac{d-4}{d-x}$$

where f_1=16,000-lbs. and c=400-lbs.

But it is obvious that the values of d, x, c, a, as found above, must satisfy the expression—

$$\frac{B}{T}\leq\frac{40ay+\tfrac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\tfrac{1}{2}(d-x)C}$$

If this expression is not satisfied, we may alter our first assumptions, in either case, until the proper values are found satisfying the above expression, or we consider the case where compression exists.

2nd Case.—In the case—

$$\frac{B}{T} > \frac{40ay \times \frac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\frac{1}{2}(d-x)C}$$

we shall have compression on the one side of the piece, and we proceed as follows.

1st Method.—We assume a value for the percentage of the reinforcement $p=\frac{2a}{Cd}$ also C=13ins. as before, and t=2ins., therefore—

$$y=\frac{d-4}{2}$$

substituting the above values in equations (17) and (18) we get—

$$T=\frac{c}{d-x}\left[15\frac{Cdp}{2}(2x-d)-\tfrac{1}{2}(d-x)^2C\right]$$

or

$$T=c\left\{\frac{15}{2}\cdot\frac{2x-d}{d-x}Cdp-\tfrac{1}{2}(d-x)C\right\}$$

and representing $\frac{x}{d}$ by μ as before,

$$T=400\left\{\frac{15}{2}\cdot\frac{2d\mu-d}{d-d\mu}Cdp-\tfrac{1}{2}(d-d\mu)C\right\}$$

or

$$T=400\left\{90\frac{2\mu-1}{1-\mu}.d.p-6(1-\mu)d\right\} \quad (21)$$

similarly

$$B=\frac{c}{d-x}\left\{30\frac{Cdp}{2}\cdot\frac{(d-4)^2}{d-4}+\tfrac{1}{2}c(d-x)^2\left(\frac{d}{6}+\frac{x}{3}\right)C\right\}$$

or putting for x the value $d\mu$.

$$B=c\left\{30.\frac{C.d.p}{2}\cdot\frac{(d-4)^2}{4(d-d\mu)}.+\tfrac{1}{2}c(d-d\mu)\left(\frac{d}{6}+\frac{d\mu}{3}\right)C\right\}$$

or

$$B=c\left\{15.C.p\frac{(d-4)^2}{4(1-\mu)}+\tfrac{1}{2}c(1-\mu)\left(\frac{1}{6}+\frac{\mu}{3}\right)d^2C\right\}$$

or

$$B=400\left\{45p\frac{(d-4)^2}{(1-\mu)}+6c(1-\mu)\left(\frac{1}{6}+\frac{\mu}{3}\right)d^2\right\} \quad (22)$$

Equation (21) contains the first power of d, while equation (22) contains the second power of d; both therefore are easily solved as for d.

Giving different values of μ ($\mu<1$) we find one value of d from equation (21), and another from equation (20); we plot the values of μ on squared paper as abscissæ, and the values of d as ordinates; the intersection of the two curves will give the proper values of d and μ; then the value of x is found from the equation—

$$\frac{x}{d}=\mu.$$

The sectional area for each of the top and bottom reinforcements is found from the equation—

$$p=\frac{2a}{Cd}$$

The stresses per square unit are found from the equations (14) and (14a), where c=400 lps per square unit of the concrete, *i.e.*—

$$f_c=15\times400.\frac{d-(x+t_1)}{d-x}=6000\frac{d-(x+2)}{d-x} \quad \ldots(23)$$

and

$$f_t=15\times400.\frac{x-t_2}{d-x}=6000\frac{x-2}{d-x} \quad \ldots(24)$$

2nd Method.— We assume *a* a value for d, C; then—

$$y=\frac{d-4}{2} \text{ when } t=2\text{in.}$$

and we consider the same equations (21) and (22) as for p and μ.

Giving different . . . . values to μ($\mu<1$), we determine, as before, two values of p determine, as before, two values of p from the two equations, and plotting them on squared paper as abscissæ we get two curves. the intersection of which will give us the proper values of p and μ_c.

Then from equations—

$$p=\frac{2a}{Cd} \text{ and } x=d\mu$$

we determine the sectional area *a* of the reinforcement, and the distance x of the neutral axis from the bottom surface.

The values f_1 and f_2 are determined from the same equations as before, *i.e.*

$$fc=6000\frac{d-(x+2)}{d-x} \quad \ldots(23)$$

and

$$ft=6000\frac{x-2}{d-x} \quad \ldots(24)$$

The values we find in either method must satisfy the expression—

$$\frac{B}{T}\gtrless\frac{40ay+\frac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\frac{1}{2}(d-x)C}$$

Suppose now we want *to check a member* of given dimensions and symmetrical reinforcement, knowing the values of B and T.

By combination of equations (19) and (20) we get—

$$\frac{T}{\left[79d-80\mu.d+4\right]\frac{6p}{1-\mu}-6d^2(1-\mu)} = \frac{B}{6d^2(1-\mu)\left(\frac{1}{6}+\frac{\mu}{3}\right)+\frac{3p(d-4)^2}{(1-\mu)}} \quad \ldots(25)$$

Since μ is contained at its third power, we proceed to solve this equation by giving to μ several values ($\mu<1$) and plotting those as abscissæ on squared paper; we determine the values of *each member* of the equation (25), and plot them as ordinates to the correspondent values of μ. The intersection of the two curves thus obtained will give us the proper value of μ.

Then

$$x=d\mu$$

Having found the value of x, we try if equation (11), *i.e.*—

$$\frac{B}{T}\gtrless\frac{40ay+\frac{1}{2}(d-x)\left(\frac{d}{6}+\frac{x}{3}\right)C}{40a-\frac{1}{2}(d-x)C} \quad (11)$$

is satisfied, in which case we determine the values of f_1 and f_2 using equations (1) and (3), *i.e.*—

$$T=f_1a_1+f_2a_2-\tfrac{1}{2}c(d-x)C \quad \ldots(1)$$

and

$$f_1=f_2-c\frac{d-(t_1+t_2)}{d-x} \quad \ldots(3)$$

where

$$c=\frac{T(d-x)}{(79d-80x+2t)a-\frac{1}{2}(d-x)^2C}$$

from equation (6).

The value of f_2 must not exceed the assumed safe working stress of the metal per unit square; similarly c that of the concrete.

If the above-found value of x does not satisfy equation (11), we consider the second case using equations (21) and (22).

By combination of these equations we get—

$$\frac{T}{90\frac{2\mu-1}{1-\mu}.d.p-6(1-\mu)d} = \frac{B}{45p\frac{(d-4)^2}{(1-\mu)}+6c(1-\mu)\left(\frac{1}{6}+\frac{\mu}{3}\right)d^2} \quad (26)$$

As this equation contains the cube of μ we solve it as for μ, according to the method explained before, by plotting on a squared paper.

Then

$$x=d.\mu$$

and having found x, we determine the value of c from equation (17).

$$c=\frac{T(d-x)}{15a(2x-d)-\frac{1}{2}(d-x)^2C}$$

and then the values of f_t and f_c from equations (14) and (14a).

$$fc=15.c.\frac{d-(x+t_1)}{d-x}$$

and

$$f_t=15.c.\frac{x-t_2}{d-x}$$

In cases where we assume other values of n, c, and r, our equations must be altered accordingly.

The above explanation of using the formulæ was made for symmetrical reinforcement. When the bending moment is caused by a dead load, and is not small in comparison with the direct stress, we may apply a non-symmetrical reinforcement in order to take full advantage of the compressive resistance of the concrete and thus save metal. In this case the mode of procedure is similar to the above, and the general formulæ given may be used.

THE INTERNATIONAL COMMISSION ON REINFORCED CONCRETE.

The International Commission on Reinforced Concrete met at Bâle last week under the chairmanship of Professor Schule, of the Zurich Technical College. The primary objects of the Commission will be to (a) prepare a summary of tests completed in different countries; (b) prepare a summary of the facts definitely established by these tests; (c) prepare a summary of the chief causes of difference of opinion on questions relating to reinforced concrete; and (d) prepare a set of standards for future tests. It is hoped to complete the work under point (a) in time for a report to be presented at the next meeting, which is to be held at Copenhagen in September, 1909, on the occasion of the Congress of the Association of Testing Materials. A sub-committee was appointed to make preliminary studies regarding standardising the algebraical notations and standardising the methods of testing, and the sub-committee comprises:—Messrs. Melan (chairman), Mesnager, Rutgers, Sachs, and Schule.

The interest in reinforced concrete having increased in Great Britain since the constitution of the International Commission, it was proposed by Mr. Edwin O. Sachs that the British representation be increased by a representative of the Concrete Institute and a representative of one of the public authorities concerned, and arrangements are being made accordingly.

It is understood that the representation of the United States will also shortly be increased.

The death took place on the 25th ult. at Wrexham, of Mr. Gwilt Cathrall, a large builder and contractor. Mr. Cathrall, who was 80 years old, was a prominent Freemason, and had been a member of the Wrexham Town Council.

FORMS FOR REINFORCED CONCRETE.—IV.

Arch Centers.

(Concluded from p. 525, No. 698.)

With reinforced concrete for structures in arch form large spans have usually to be dealt with. Arch construction is most often adopted for bridges, and the forms for such work are heavy, entail considerable labour, and are often very expensive items. In general design and construction forms for arch-bridges are substantially the same as centers for masonry or brickwork arches, and the main supports are designed according to the same principles and in the same way as for them. In some types of reinforced concrete bridges heavy sections of steel, either in the form of joists bent to curve, or framed lattice girders are adopted, and these have sufficient resistance to sustain a part of the load, so that the centering can be partly suspended therefrom, and partly built up independently from below to support the superincumbent weight of the material and other weights placed upon it in course of construction. The use of heavy steel reinforcements framed together is not so customary as it was a few years ago, and, in the majority of cases, reinforced concrete arch-bridges are constructed with steel in small sections, and the centering has to sustain the whole of the load.

One of the first obvious points of importance is that in framing up the centers allowance should be made for their settlement, also for the deflection of the arch after the removal of the centering, and for securing a permanent camber. Mr. Edwd. Thatcher, Am.Soc.C.E., who has had very great experience in the construction of reinforced concrete arch-bridges, states that the centers should be framed for a rise of the arch greater than the rise marked on the drawings by an amount equal to 1/80oth. of the span.

Another obvious requirement is that in striking the centering this should be done very gradually by means of folding wedges, so that they drop only a small way. In this manner it can be ascertained whether the work is sound, and that no error has arisen that may render the bridge dangerous. The centering, of course, has to be arranged to lower clear of any projection upon the abutment piers.

The lagging round the centering to sustain the soffit of the arch ring should be dressed to a uniform thickness, so that when laid it presents a smooth surface. This is perhaps the most economical method of securing a proper finish to the work; to execute the work roughly, and attempt to plaster it afterwards would be folly, for, in the case of work of any magnitude, it is almost impossible to do this, at any rate, with economy. In certain cases, however, the lagging has not been made of carefully dressed timber, and the smooth surface has been given by plastering over the center, or depositing wet clay thereon. Such attempts are, in our opinion, unadvisable, and very seldom result in economy. Mortar covered with thick paper, or with cloth, has also been used; even with dressed lagging it is a known practice to employ oil paper, or a cloth covering, for the purpose of preventing adhesion between the concrete and lagging, which might disturb the ready striking of the centers. This is preferable to the use of soap or oil smeared upon the lagging, such as is often adopted for floors. The work is so much larger that such means are not, as a rule, so satisfactory as oil paper. Where arches are ribbed the soffit mould requires more elaborate work than is the case with masonry arches.

For striking centers folding wedges are not always sufficient. Sand boxes should also be used in work of large size; they will allow of a gradual lowering of the arch if they are protected from becoming wetted with dirty, clayey water, or water containing lime or cement. The boxes should be thoroughly watertight and sealed against the entrance of any extraneous matter. The sand in the box, too, it may be noted, will become compressed, and, therefore, an allowance requires to be made for this, otherwise serious trouble may arise; indeed, in certain circumstances, sand boxes, for this reason, should not be favoured.

Fig 45 shows the centering for a bridge over a creek, and Fig. 46 the centering for a very similar bridge of exactly the same span, namely, 80ft. In the former, the piles were driven into the hard pan and sawn off about 2ft. below the arch soffit; transverse caps were laid with folding wedges on each pile head, and carried the ribs of the centering, which were placed near together, braced apart with transverse bracing, the ribs being covered with transverse lagging. In both these arches the reinforcement consisted of lattice framed girders. In the second bridge the posts carried timber bases, which rested on concrete footings. Wedges over each post provided means for striking the centering.

Fig. 47 shows the centering for another Melan bridge, which, it will be seen has eight ribs, spaced about 7ft. apart, and braced together with diagonal battens, each rib resting on seven piles, and each carrying a sand box. The upper members of the ribs were cut in the middle of each panel, and here rested on cross tim-

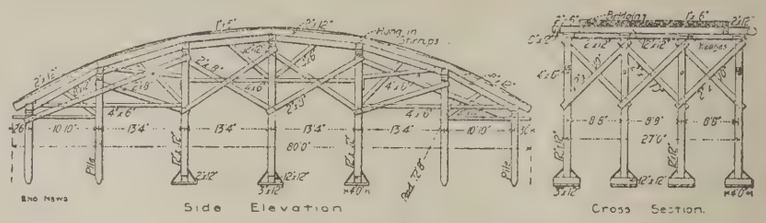


FIG. 46. CENTER FOR BRIDGE OVER A CREEK.

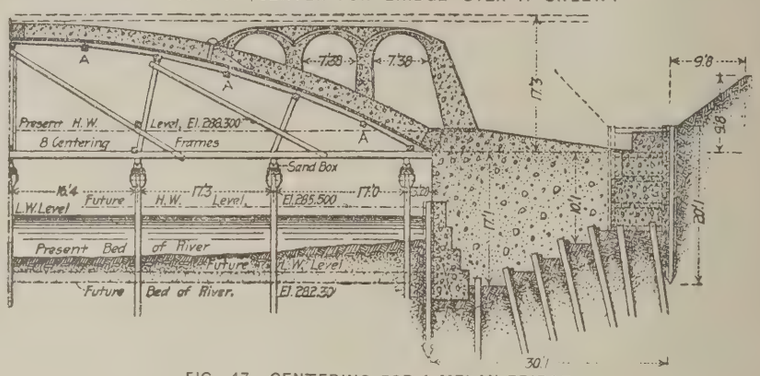
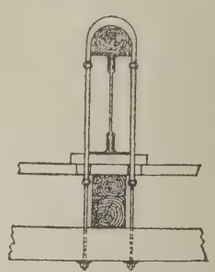


FIG. 47. CENTERING FOR A MELAN BRIDGE.



47A. DETAIL OF HANGER IN FIG. 47.

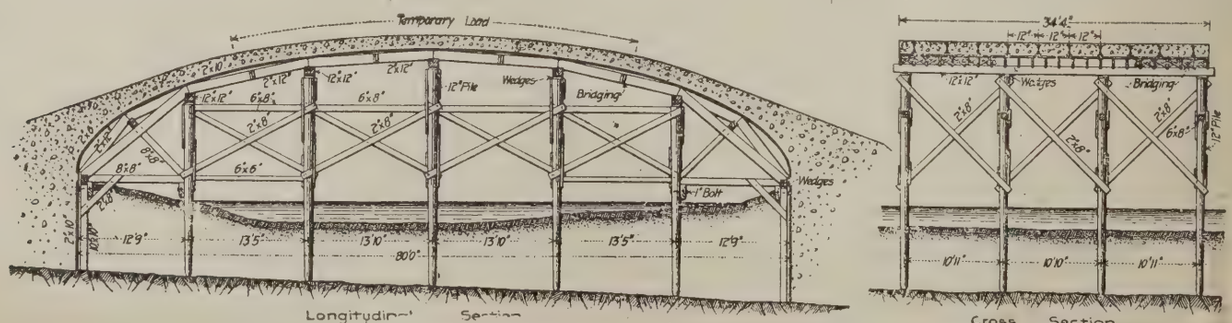


FIG. 45. CENTERING FOR BRIDGE OVER A CREEK.

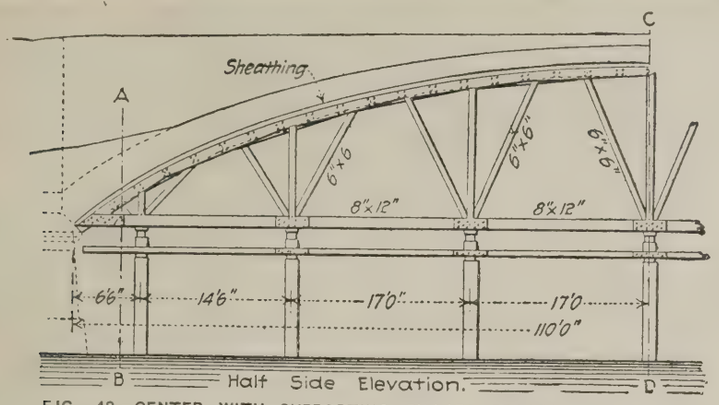


FIG. 48.—CENTER WITH SUPPORTING PILLARS BRACED TOGETHER.

bers "AA" hung from the steel reinforcing ribs by means of hangers, as shown in Fig. 47A. By these means about half the weight during construction was carried by the steel ribs and half by the centering.

Fig. 48 shows another interesting centering, for a bridge in which the supporting pillars are shorter and braced together. Details are clearly shown in the diagram.

(To be continued.)

INTERCEPTING TRAPS IN HOUSE DRAINS.

L.G.B. Enquiry.

The President of the Local Government Board has appointed a Departmental Committee to inquire and report with regard to the use of intercepting traps in house drains, and this committee will shortly be prepared to receive evidence on the subject from medical officers of health, engineers, architects, and others having special knowledge of it.

With a view to assisting the committee to select witnesses for this purpose, a circular has been addressed to the town clerks of the principal towns of England and Wales, asking in each case whether the officers of the town council would be prepared to give evidence should the committee so desire. A précis of the evidence they would propose to tender should be forwarded not later than November 21st, to Mr. E. Hardwick Terry, secretary to the committee.

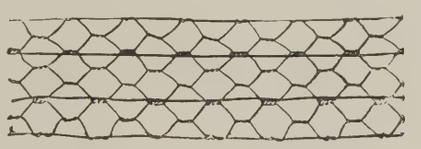
It is added that the committee are of opinion, at present, that their terms of reference will involve consideration of the need or otherwise of the intercepting trap; of any disadvantages of the trap; of the effect on the community of emanations from sewers or drains; to some extent also of the ventilation of sewers and drains; and of the bearing of existing conditions on the question.

The Committee consists of Mr. Ludovic William Darra Mair, M.D.; Mr. Allan Arthur Grenville Malet, M.Inst.C.E.; and Mr. Harry John Pearson, A.R.I.B.A.; Dr. Mair being chairman, and Mr. Edward Hardwick Terry secretary.

Mr. Edmond Coignet, engineer, of 20, Rue de Londres, Paris, and of Edmond Coignet, Ltd., 20, Victoria Street, London, S.W., has been awarded the "Grand Prix" in Class 28, French Section, Machinery Hall, at the Franco-British Exhibition, for his exhibit in connection with the Coignet system of armoured concrete.

MONOLITHIC BRICKWORK.

This is the title of a catalogue which has been issued by Messrs. Richard Johnson, Clapham and Morris, Ltd., of 24 and 26, Lever Street, Manchester. Mr. W. H. Brown, M.S.A., recently invented a strip of woven wire reinforcement for placing in the joints of brickwork, and his patents have been acquired by the above firm, systems of construction to which they are applicable being shown in this catalogue. Mr. Brown carried out a number of tests upon walls reinforced with his woven wire strip



"H.B." BRICKWORK REINFORCEMENT.

meshwork, called "H.B." reinforcement, which were instructive, and showed clearly the advantages which are to be derived from the reinforcing of brickwork, the principle of which has been known for many years, but have not had an extensive application. Mr. Brown claims to have found that hoop-iron, the ordinary form of reinforcement for brickwork, is not always advantageous, because it is deficient as regards adhesion to the mortar, and slips or pulls through, unless special means are taken to give a mechanical bond. It will be seen from the view of the "H.B." reinforcement which we reproduce herewith, that not only do the wires run in one direction, so acting in tension throughout, but they interlock with the mortar, giving a thoroughly secure mechanical bond, while, at the same time, a pull in tension tends to close up the meshes, thus resulting in the compression of the interlocked mortar which that material is best capable of sustaining, not possessing great tensile strength.

"H.B. reinforcement" is made in two widths, 2in. and 2½in., and is composed of wire tested to 32 tons per sq. in. The use of a reinforcement in the joints of brickwork increases the strength immensely, and walls of almost any height can be constructed of a minimum thickness between piers and other upright supports, the thickness being determined solely in respect of resistance to weather, heat, and cold. For instance, a wall can be built brick-on-edge, self-sustaining like a beam, and with great lateral resistance beween piers up to almost any height. Of course, the by-laws in many districts require the thickness of the walls to be increased proportionately to their height, but with reinforced brickwork construction there is no necessity for this.

The system of construction invented by Mr. Brown has received considerable application, although it has only recently been placed upon the market, and is likely to be very extensively used in the future. The catalogue is extremely well produced, with a number of photographs and details of the construction of brick-on-edge, half-brick, and cavity walls, while another application of the principle is shown in respect to the clothing of reinforced concrete and steel frame structures. Although reinforced concrete external walls to buildings have been built often enough with advantage and economy, yet, as a rule, it is cheaper to use brickwork when the walls have to serve virtually as a partition between the pillars merely to keep the weather out. The same thing applies to steel frame buildings, where, again, the brickwork is carried at each floor independently upon the beams and the columns. The difficulty is to unite the brick intermediate walls with the steel or reinforced stanchions or posts; some key is required, and Mr. Brown has devised an application of his "H.B. reinforcement" which is distinctly advantageous in this respect. Short pieces of the meshwork are embedded in the concrete surrounding the steel (to protect it against corrosion), and these pieces are lapped into the joints with the other longitudinal strips running the whole length as the brick-wall rises, thus the whole is tied together, and adequate stability obtained. The economy effected is not only very great, but such a system of construction, where hollow walls are used, is, in our opinion, superior to the ordinary solid brick-wall construction. The same method of leaving strips of the meshwork projecting from the concrete is applied in bonding facing bricks to a concrete wall, such as in a swimming pond or for basement walls.

It will be gathered that the catalogue under notice is of more than common interest and importance.

The Junior Institution of Engineers held its annual general meeting at the Royal United Service Institution, Whitehall, on October 19th, the chairman, Mr. Frank R. Durham, Assoc.M.Inst.C.E., presiding. Salient features of the council's report relating to the year 1907-8, which was presented and adopted, included reference to the increase in the membership roll, bringing the total to 1,042; the election of Mr. James Swinburne, F.R.S., as president in succession to the late M. Gustave Canet, and the election as vice-presidents of Sir William Huggins, K.C.B., O.M.; Sir Archibald Geikie, K.C.B.; Sir Robert A. Hadfield; and Professor J. J. Thomson, F.R.S. Nine meetings for the reading and discussion of papers and thirty-eight visits to engineering works, etc., had taken place, with an average attendance respectively of 116 and 74. Mr. Durham had been awarded the Institution medal for his paper on "The Design of a Sewer," and a bronze medal (the Junior members' award) went to Mr. Gilbert Whalley for his paper on "Notes on the Testing of Gas Engines." Special reference is made to the foundation of the Durham Bursary, due to the kindness of Mrs. F. R. Durham. The award for the year 1908-9 went to Mr. L. M. Jockel, of Edinburgh, his thesis being on the subject of "Electricity in Mining."

CALLING FOR ESTIMATES.

Architects and engineers in calling for tenders from steelwork and reinforced concrete specialists often cause a great deal of annoyance and unnecessary labour by the undue stringency of their requirements; they ask for too great an amount of detail. They should remember that the specialist firms are, by the customary contracting system, called upon to design in competition with each other, so that for each job there are many designs prepared. We see no means by which this duplication of work can well be avoided, but the contractors can estimate from pencil drawings without such elaboration as is necessary in the preparation of drawings for submission to an ordinary client. There is no reason, in the majority of cases, why an architect or an engineer should require drawings to be submitted at all; and even when he does these need only to be sketchy. As soon as the tender had been provisionally accepted, complete drawings could be called for, and the ultimate acceptance withheld until these were approved as satisfactory. To require more is to waste labour, and by increasing the establishment expenses of the various firms make work dearer for the clients. The amount of time and labour that has been lost on one job must be made up on another. Architects and engineers, in dealing with reinforced concrete and steel-work, seem often to be oblivious to the amount of work that is entailed. We have known of schemes hanging fire for months—perhaps years—suddenly rushed by the clients, and when tenders are requested proper time cannot be afforded for estimating. It should be remembered that the specialist, like the architect or engineer, requires time to carry out his work well. Very often jobs are unduly rushed, and the engineering staffs of specialist firms work at high pressure, which is ultimately a detriment to the efficiency of the construction, and to general economy. There ought to be more system, too, in the way in which tenders are called for. Little or no attention is given to requiring the designs and tenders to be submitted upon a fair and equal basis, and the result is that firms are encouraged to take risks and scamp materials and labour so as to under-cut each other. It would be desirable to consult an independent specialist before giving work out to tender, to draw up the lines upon which the designs are to be prepared; limiting stresses, etc., and providing for a guarantee of efficiency. Confirmation of these requirements should be stipulated, except where the job is of sufficient size to warrant the independent specialist or consulting engineer overhauling the designs when submitted, and checking the calculations. Architects and engineers who go in for haphazard methods in calling for designs and tenders, little know the grave risks that are often run. It is only right and proper that they should throw their work open to a firm who shows itself able and willing to undertake the work: and designers view the problems very differently, so that competition is as advantageous in this field as it is in any other. But if architects insist upon a proper drafting of conditions, and the appointment of a qualified assessor in their own architectural competitions, they should adopt the same procedure in reference to the competition among their specialist contractors. We have not yet arrived at the stage where Consulting Engineers prepare designs for work in reinforced concrete, and, indeed, it is doubtful whether we ever shall have the work carried out in this way. Steelwork is not so designed, as a rule, and even in other branches of engineering, such as bridge work, shipbuilding, and electrical engineering, firms submit designs and tenders for works of great magnitude. The reason is that we all recognise the advantages of competition, and we are prepared to pay the price of the duplication of work which is thereby entailed, for it has become recognised that competition results in economy and efficiency, which off-sets the duplication of labour; but there is neither necessity for nor advantage to be derived from over-elaboration in the preliminaries of reinforced concrete and steelwork, and we have indicated how some waste of labour can be eliminated.

"REINFORCED BRICKWORK."

A useful little pamphlet, written by Mr. Frederick Rings, M.S.A., architect, has been issued by the Fireproof Partition and Spandrel Wall Company, of Bank Chambers, Tooley Street, London Bridge. It would take us back very many years to find the first application of reinforced brickwork. Hoop-iron bond has been a principle of ordinary building construction familiar to everyone in the building trade and architectural profession for a century or more, and many years ago experiments were conducted to show the great strength which was obtained by placing hoop-iron between the joints of brickwork. These tests showed that a wall so reinforced could sustain very great loads as a beam. The principle of reinforced concrete construction was not, however, at that time, generally known, and the advantages of reinforcing brickwork obtained no reflected glory therefrom. We suppose it, therefore, seemed such an ordinary matter to the building trade that its importance was ignored, and the principle was in part forgotten. Certain works were carried out, it is true, but the time was not ready for its thorough development.

A good many years passed before the subject was taken up again, and then it remained for Germany to become the first to scientifically and thoroughly investigate the subject. Patents were obtained in Germany, England, and other countries for the system worked by the above-mentioned company, which was very extensively used in Germany for the construction of houses, barracks, garden walls, and almost every kind of construction. In this country the system has been much used also, as a glance at the illustrations included in this pamphlet will prove, though much of the work that has been carried out is not illustrated. In a previous issue we gave an illustration of a house at Letchworth that was constructed by this company upon their system, which consists in placing hoop-iron vertically and horizontally to form a square meshwork, the spaces of which measure 18 ins. by 18 ins., or two bricks high and two bricks wide. The hoop-iron is attached to brick piers, wooden uprights, stanchions, or any other form of vertical support, roof loads, floor loads, etc., being carried by such piers or stanchions, while the brick walls between are self-supporting. The brick wall between each horizontal course of hoop-iron is carried to the neighbouring piers, and thus the loads are concentrated upon these latter, so that it is only necessary to construct foundations at points, *i.e.*, under these piers or stanchions; in this way economy is obtained.

"Spandrel walls" have very great strength, as is shown by a test recorded in this pamphlet, in which a load of 13 tons was placed on a half-brick wall directly over a doorway opening. Thus floor and ceiling joists, etc., can be readily carried upon the wall if desired. The brickwork in this system is constructed with cement mortar, and the bricks are usually placed on edge, namely $2\frac{3}{4}$ins. thick, for dwelling premises, etc. Hollow walls are usually adopted, and the single wall is used more for partitions and boundary walls. The cement mortar protects the hoop-iron against corrosion. The hoop-iron framing has much the same effect as a lattice girder. The vertical reinforcements not only serve the purpose of rendering the wall virtually a lattice girder, but they also strengthen it when unsupported at the top, as in a boundary wall, where the pressure of wind or materials, etc., require it to act as a cantilever, for they would otherwise cause it to snap off and be pushed over. Additional strength can be given, if necessary, by constructing buttresses at points — the horizontal reinforcement then renders the wall between the piers a beam against both lateral and vertical loading, and its strengthening quality is brought more into play than in a wall of unbroken length. For the construction of boundary walls, as well as the construction of dwellings, frame buildings, etc., the reinforced brickwork on this system is very economical, by reason of the saving in the foundations, these latter only being required at points. To construct a strong brick wall on this system requires no special craftsmanship; for instance, many barracks have been erected in Germany by the soldiers themselves when free from drill. Once the hoop-iron is placed in position, the soldiers can easily fill in the bricks in the squares, and no skilled bricklayers are required. It will be seen that another economy is obtained in this direction, as no care is required in the laying of bricks, and no levelling up and plumbing are needed, this being automatically done by working between the hoop-iron guides, and the work is carried on with greater speed than ordinary brickwork construction. Thus the system affords great advantages in the way of economy, while it is theoretically a more efficient form of construction than ordinary brickwork. Unfortunately many of our by-laws stand in the way at present of the full application of such methods of construction, for walls are required to be increased in thickness proportionate to their height. However, the system has made great headway against such difficulties, and with the better education of the local authorities and the urban district surveyors, matters are improving. Such a construction has its obvious advantages in country districts for the erection of light structures; bricks can be obtained in the locality, hoop-iron can easily be obtained and brought on the job, and the structure erected with unskilled labour, under the supervision of a competent foreman. For the construction of temporary buildings, this system of reinforced brickwork is much superior to corrugated iron, for it is very cheap, and forms a permanent structure; but if a local authority will not permit it to be considered as such, a licence can generally be obtained for it as a temporary building, and no fear need be held that in the future its demolition will be ordered.



TWO FORMS OF TYPICAL INDENTED BAR BENDS WHICH CAN BE USED IN CONJUNCTION WITH STEEL JOISTS.

REINFORCED CONCRETE FLOORS.

The Patent Indented Steel Bar Company, Ltd., of Queen Anne's Chambers, Westminster, issue a very useful serial publication, entitled, "The Indented Bar Bulletin," which illustrates and describes the more important works in reinforced concrete construction executed on the "Indented Bar" system. Bulletin No. 4 deals with the subject of floor construction, and not only includes a number of diagrams and typical methods of constructing reinforced concrete floors, but gives several photographs of floors reinforced with "Indented Bars" in course of construction, and views of large buildings that have been recently constructed containing floors on this system. We reproduce therefrom a view of the construction of the basement floor of the new Selfridge Stores in Oxford Street, London, W., with two diagrams showing the manner in which the rods are cranked before placing in position over the steel beams. It will be obvious from these details with what ease the "Indented Bar" system can be carried out. This building occupies a site of 39,500 sq. feet, and is eight storeys in height, and when completed will form one of the largest stores in London. The contractors are the Waring and White (1906) Co., Ltd. The architect is Mr. Frank Atkinson, F.R.I.B.A. By the methods described the rods are easily handled and accurately placed in position, errors in workmanship being safeguarded against as much as possible by such means.

The "Indented Bar" is rolled from very high carbon steel, which has a high elastic limit, and, if the view is taken, as is argued, that, as a rule, in constructional work the elastic limit is the point upon which the factor of safety should be based, and not upon the ultimate strength, such high elastic limit steel has material advantages. In addition, the indentations in this particular bar give a thoroughly good mechanical bond to prevent the slipping of the bars, and if cracking takes place on the underside of a beam by reason of excessive loading, as required by theory and practice, this cracking is distributed over a number of small hair (almost invisible) cracks, extending regularly throughout the length, so safeguarding the rods from corrosion that might ensue from the development of large cracks produced by the concrete failing at irregular intervals. The details of the theory of structural design that the Indented Bar Company put forward are contained in their large catalogue, and should be studied, as the theories of the advocates for various systems should be carefully followed by students of the subject.

Among the recent contracts for which Indented bars have been used are schools at Ramsgate; Admiralty extensions, Devonport; Post Office, Glasgow; Military Store, Colchester; Telephone Exchange, Aberdeen, etc., etc.

THE KAHN CATALOGUE.

The catalogues published by the Trussed Concrete Steel Company, Ltd., of Caxton House, Westminster, have always been noteworthy because of their admirable get-up. A second edition of their large catalogue has just been issued, and is a great improvement upon the first edition. Though the catalogues have comprised much that is ordinarily contained in the trade catalogue, those of this company have been notable more for the fact that they emphasise a point in connection with reinforced concrete construction that a few years ago had been either ignored, or the importance of which had been very much underrated by other firms specialising in this form of construction. Mr. Julius Kahn, who is the inventor of the special type of reinforcement known as the Kahn Bar, the application of which constitutes the Kahn system of reinforced concrete construction, was the chief pioneer in the United States in respect of the importance of the adequate connection of shear members (or diagonal tension reinforcements) to the main longitudinal tensile reinforcements. Before he brought out the Kahn Bar, other firms had discovered the importance of shear members, but the members were, as a rule, loose, and not intimately connected with the main tension reinforcements; consequently, in beams subjected to a great amount of shear, they were not always efficient, because they slid along the bar. Apart from theoretical reasons, there are commercial advantages attached to the use of the Kahn Bar, as it is of practical convenience in construction, because of the fact that the shear members are part and parcel of the bar, and cannot easily become displaced, labour being saved thereby, and a greater efficiency of construction obtained. The catalogues of



SELFRIDGE STORES, OXFORD STREET, LONDON, W. CONSTRUCTION OF BASEMENT FLOOR ON THE INDENTED BAR SYSTEM.

this company, therefore, have made interesting and instructive reading, because of the arguments they put forward in favour of the rigidly attached shear members. The emphasis that has been laid upon the reinforcement of beams against shear (or diagonal tension, as it should be called) stresses, has directed the attention of designers to many aspects of the subject, which they would not otherwise have so clearly distinguished; in fact, this catalogue serves as a very good vehicle of instruction for anyone who is not very familiar with the subject of reinforced concrete, and desires to gain some idea of the general principles of the subject.

A considerable advance in knowledge has taken place in the last two years among the architectural and engineering professions with regard to reinforced concrete, and the catalogues of this company have kept pace with the movement. The present edition of the main catalogue is a great advance upon the first edition in regard to information upon the science of the subject. All the information as regards the standard sections of the Kahn Bars that is provided will be found of considerable service to designers, while there is a chapter on the theory of reinforced concrete design, with formulæ, that is interesting, and may be found of service by designers who are thoroughly familiar with the subject, and know how to use such data as catalogues supply with care and discrimination. For the ordinary architect and engineer, however, the subject is a little too tricky to be safely dealt with, and they will continue to place the matter of designing in the hands of specialists.

One very good feature of the catalogue is a specification for reinforced concrete work, and some notes on the subject of erection. Photographs, plans, and details of the construction of various buildings erected in this country upon the Kahn system included are most interesting, and give students a clear idea of the methods of practically executing reinforced concrete work.

The catalogues issued by the reinforced concrete industry generally afford, severally and generally, a most valuable collection of illustrations showing methods of executing various works, and overcoming difficult conditions, and this latest catalogue is no exception in this respect, for it provides an excellent commentary upon the most up-to-date methods of building and engineering construction under very many widely different conditions. All those specially interested in the subject should take care to add a copy of this catalogue to their library.

Trade and Craft.

The Edwardian chimney-pot, having met with high approval at Windsor Castle, is now being fixed at the King's residence at Sandringham. Several hundreds of these chimney-pots have also been used on the artizans' dwellings designed by Messrs. Joseph and Smithem for the Sutton Trust.

Messrs. Johnson and Phillips, Ltd., Charlton, S.O., Kent, and 14, Union Court, London, E.C., have just issued a new price-list of Paterson's bitumen damp-proof sheeting and damp-course, which, besides being serviceable in ordinary buildings, is also strongly recommended for bridge work, reservoirs, subways, underground conveniences, etc. The firm state that they carry a large stock of this material at their works at Charlton, S.O., Kent, and that they will be glad to send a copy of the price-list to anyone applying for it.

Messrs. E. H. Shorland and Brother, warming and ventilating engineers, Drake Street Works, Stretford, Manchester, have issued a new supplementary catalogue showing the latest designs of their warm-air ventilating patent Manchester grates, double-fronted patent Manchester stoves with open fires, patent exhaust roof ventilators, inlet ventilating panels, etc. A three-colour illustration represents the design of their double-fronted open fireplace patent Manchester stoves, as supplied to the Royal Victoria Infirmary, Newcastle-upon-Tyne, the British Hospital, Constantinople, etc. Various new patterns of their patent Manchester grates with low-fire projecting backs, and without front bars, as specially designed for hospitals and schools, are also shown. In addition, there are illustrations of new designs of patent exhaust roof ventilators, as well as of the Shorland's patent hygienic inlet ventilating panel, which has been recently introduced.

At the Franco-British Exhibition, the "Monocrete" system of building construction has been awarded a silver and a bronze medal by the International jury, the former in the special class of civil engineering, and the latter in the class for workmen's dwellings. In each case these were the only awards given to this class of building construction. It has been mentioned in a former issue that negotiations have been entered into with the French Government for the supply of "Monocrete" machines for army and colonisation purposes, and that orders have been received from the British Government for special "Colonial" outfits. It is now further announced that this system is being adopted on the Lagos Railway extensions in Western Africa. Arrangements have also been concluded for the supply for all the Monocrete machines to the Commonwealth of Australia for a period of five years, and there is a like arrangement for India, while extensive contracts have been entered into for most of the European countries, as well as at home. We are further informed that the Monocrete waterproofing compound, for use with all kinds of concrete work, is also meeting with a large measure of success. The Monocrete Construction Co., of Marle Hill, Cheltenham, will furnish full particulars.

Federation News.

The Conference of Secretaries.

The paper by Mr. A. G. White, National Federation Secretary, on "Federation Benefits," has been held over till next week, when a report of the recent Conference will be given.

* * *

BARROW MASTER BUILDERS' ASSOCIATION.—Mr. J. Baker, Secretary of this Association, has written to the local press, denying that Mr. R. T. Dockeray had, at a meeting of the Association, proposed that all employers in the Association should close their establishments for three months. Mr. Baker denies that such a thing was ever suggested either before or since his appointment as secretary. This disclaimer seems to have been provoked by some election oratory in the Salthouse Ward.

Bankruptcies.

BARNES, ARTHUR, CHAS. JNO., architect, late 9, Oakland Road, Clifton, and Guildhall Chambers, 26, Broad Street, Bristol, and The Firs, Winterbourne. First meeting, O.R.'s, Bristol, Nov. 4, at 11.45. P.E., Guildhall, Bristol, Nov. 13, at 12. Adj., Oct. 21.

BLANK, JOSEPH, builder, Nottingham Road, late Carr Street, Ilkeston. First meeting, O.R.'s, Derby, Oct. 31. P.E., C.C., Derby, Nov. 10, at 11.

CARTER, THOS. HY., and GEO. FRANK CARTER, painters and decorators, 89, High Street, Hartlepool, and 19, Bartlett Street, Darlington, respectively (trading as Carter Bros., at 89, High Street, Hartlepool). R.O., Oct. 20. Adj., same day.

CUMMING, ESAU HY. SMERDON, builder (described in R.O. as E. H. S. Cumming), 19, Merival Road, Harrow. Adj., Oct. 23.

DEER, CHAS. HARRY, builder, 81, Great Dover Street, Borough, S.E. R.O., Oct. 23. First meeting, Bankruptcy Court, Nov. 6, at 11. P.E., same place, Nov. 25, at 12. Adj., Oct. 23.

EARLAND, WM. HY., builder, 10, Heath Road, Harrow. First meeting, 14, Bedford Row, W.C., Nov. 2. P.E., C.C., St. Albans, Nov. 17, at 10.30. Adj., Oct. 17.

ESAIAS, ESAIAS, TYCADLE, PYLE, and EDWD. THOS. ESAIAS, builders and contractors, 72, High Street, Kenfig Hill (late trading as Esaias Bros., Tycadle, Pyle). R.O., Oct. 19. Adj., same day.

GEE, ALF., plumber, Victoria Buildings, Station Road, Carlton. R.O., Oct. 21. First meeting, O.Rs.', Nottingham, Nov. 4, at 11. P.E., C.C., same, Nov. 13, at 10.30. Adj., Oct. 21.

HERBERT, HY. WM., lodging at 41, Coronation Road, and JNO. BASS, 289, Swan Lane, builders (trading as Herbert and Bass at Ellen Street), all Coventry. Adj., Oct. 15.

HOBBS, WM., builder, 358, Streatham High Road, Railway Arches, South Side, Streatham Station, and 100, Gleneagle Road, Streatham. R.O., Oct. 22. First meeting, 132, York Road, S.E., Nov. 4, at 11.30. P.E., C.C., Wandsworth, Nov. 12, at 12.

MARSH, ALF., builder (described in R.O. as A. Marsh), late 162, Dalston Lane, and Portsdown Avenue, Golders Green. Adj., Oct. 19.

NEEDLER, ARTHUR, late builder, Sutton Ings, Holderness Road, Sutton, late Middleburg Street, Hull. First meeting, O.R.'s, Hull, Oct. 31. P.E., C.C., same, Nov. 16, at 2.

ROLFE, WM., builder, 189, Hazelbank Road, Catford. Adj., Oct. 20.

ROLLASON, GEO. FREDK., builder (trading as J. J. Rollason and Son), 176, Milcote Road, Bearwood, and Three Shires, Oak Road, Smethwick. R.O., Oct. 23. Adj., same day

SUTCLIFFE, EDWD., and JNO. SUTCLIFFE, builders and contractors (trading as Sutcliffe Bros.), Willow Terrace, Sowerby Bridge. R.O., Oct. 23. First meeting, C.C., Halifax, Nov. 6, at 10.45. P.E., same place, Nov. 27, at 2. Adj., Oct. 23.

THOMS, JAS., builder and contractor (trading as J. Thoms and Son, Brunton Road, Lancaster Adj., Oct. 21.

WHITFIELD, HARRY, bricklayer, late builder, 4, Granville Terrace, Wheatley Hill, near Thornley, late Wheatley Hill, and Haswell. R.O., Oct. 19. Adj., same day.

Coming Events.

Wednesday, November 4.

INSTITUTE OF SANITARY ENGINEERS.—Sessional Meeting. Mr. J. Lawrance on "Modern House Drainage," 8 p.m.

ROYAL SANITARY INSTITUTE.—Mr. J. E. Worth, on "Sewerage," 7 p.m.

NORTHERN POLYTECHNIC ARCHITECTURAL AND BUILDING STUDENTS' ASSOCIATION.—Dr. W. H. Mills, on "Crystallisation in Connection with Building Materials," 8 p.m.

GLASGOW INSTITUTE OF ARCHITECTS.—Mr. James R. Adamson, on "Culture for Architects."

Thursday, November 5.

THE CHEMICAL SOCIETY.—Ordinary Scientific Meeting, 8.30 p.m.

Tuesday, November 10.

INSTITUTION OF CIVIL ENGINEERS.—Mr. D. A. Matheson, M.Inst.C.E., on "Glasgow Central Station Extension," 8 p.m.

Monday, November 16.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. J. Alfred Gotch, F.R.I.B.A., F.S.A., on "The Elizabethan House as Illustrated by Contemporary Architectural Drawings," 8 p.m.

Monday, December 7.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. F. W. Troup, F.R.I.B.A., on "Ornamental Lead Work."

New Companies.

ARTHUR GRIFFITHS, LTD., capital £500, to acquire the business of a builder, contractor, joiner and cabinet maker, carried on at Warrington, by Arthur Griffiths. Registered September 23.

WALTER WALLIS, LTD., capital £12,000, to acquire the business of a builder and contractor, carried on by W. Wallis, at 209, High Road, Balham, S.W., and at Littlehampton, as Walter Wallis. Registered office, 209, High Road, Balham, S.W. Registered October 5.

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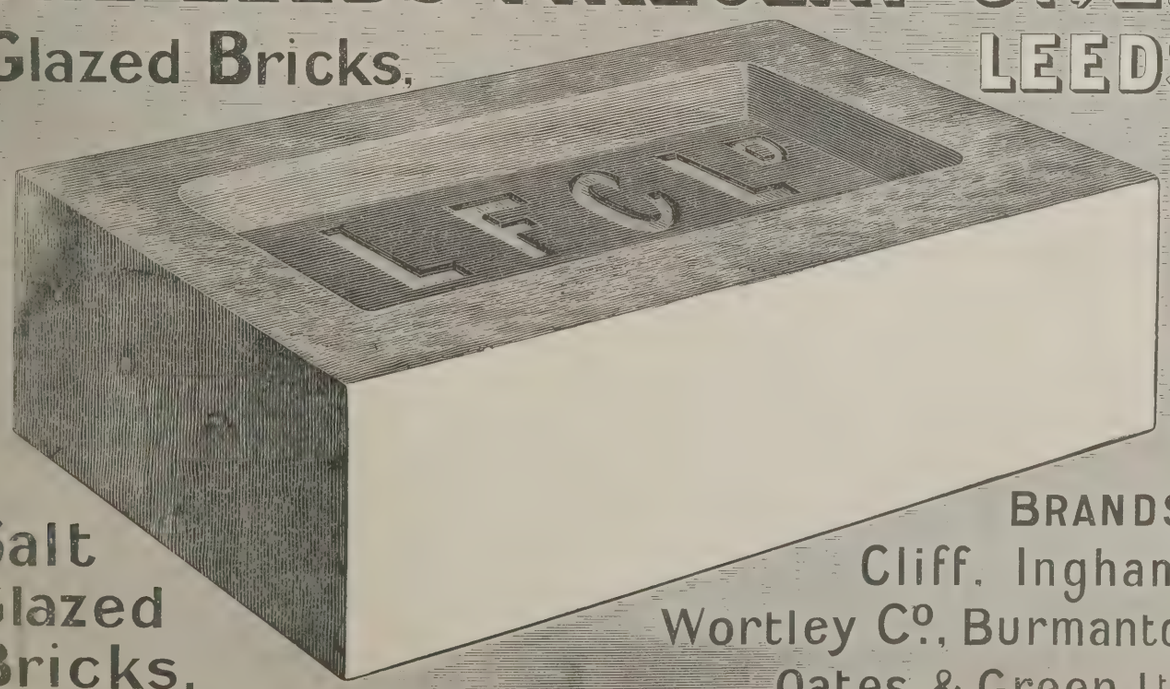
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Offices: ADVERTISEMENT AND EDITORIAL—Caxton House, Westminster. COUNTING HOUSE AND PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

	s.	d.
At all newsagents and bookstalls - -	8	8
By post in the United Kingdom - -	10	10
By post to Canada - - - - - - -	13	0
By post elsewhere abroad - - - - -	17	4

The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.

Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.

Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for Serial Advertisements, Special position etc., sent upon application

Situations Wanted, Situations Vacant.

4 lines (about 28 words), one insertion - 1s. 6d.
Each additional line - - - - - 6d.
Three insertions* - - - - - 3s. 0d.

*This includes 6 weeks under Employment Register'

Miscellaneous, Drawings and Tracings, Educational, Competitions Open, Partnerships etc. per 6d. line.

The above must be prepaid.

Property and Land Sales, Legal Notices, etc., 9d. per line

Advertisements for the above can be received up till 5 o'clock on Monday Evening at

CAXTON HOUSE, WESTMINSTER.

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bristol.—For alterations and additions to 13, Clare Street, for the General Accident Fire and Life Assurance Corporation, Ltd. Mr. W. H. Watkins, A.R.I.B.A., architect, 15, Clare Street, Bristol:—

Cowlin and Sons	...£1,680
Stephens, Bastow, Ltd.	1,594
Neale Bros.	1,577
R. F. Ridd and Sons	1,509
C. A. Hayes and Sons	1,359
T. Lovell and Sons*	1,319

* Accepted.

Cardiff.—For erection of a fireproof warehouse in Bridge Street, for Mr. J. Maitland Watkins. Messrs. Bruton and Foster, architects, 119, Queen Street, Cardiff. Quantities by architects:—

J. Allan, Ltd.	...£1,796
G. Hallett	1,790
S. Shepton and Son	1,710
Gough Bros.	1,670
D. Davies and Sons	1,600
E. Turner and Sons	1,598
C. Beames	1,594
F. Bond	1,560
W. Thomas and Co.*	1,389

All of Cardiff.

*Accepted

Felling (Durham).—Accepted for erection of a workman's club. Mr. H. Miller, architect, Felling. Quantities by Mr. G. Bell, Market Street, Newcastle:—J. Wilkinson, Wallis Street, Felling, £2,150.

Methlick (Scotland).—Accepted for the various works of the Beaton Public Hall Buildings, Methlick, for the Trustees. Mr. James Cobban, Haddo House, architect. Masons, Paterson and Marshall, Udny; carpenters, Edwards and Rae, Dyce; slater, W. S. Ewen, Millbox; plasterers, J. Banmochie and Son, Aberdeen; plumbers, J. Laing and Son, Inverurie; painters, G. Donald and Son, Aberdeen; heating, J. Lane and Sons, Inverurie; total, £2,000

Hendre, etc. (Wales).—Accepted for erection of new schools and additions for the Glamorgan Education Committee. Dr. D. Pugh-Jones, F.S.I., county architect, Cardiff. Quantities by County Architect.

New School at Hendre, Caerphilly.

J. Lewis, Caerphilly	...£2,950 0 0
New School, Abertridwr.	
J. Williams, Abertridwr	5,900 0 0
Additions, Radyr School.	
Maags and Co., Cardiff	589 4 0
Additions, St. George's School.	
Maggs and Co., Cardiff	210 0 0
Additions, Rhydygwern School.	
Williams and Co., Machen	195 0 0
Heating, Barry Intermediate School.	
J. C. Projer and Son, Cardiff	330 0 0
Heating, Hengoed Council School.	
Beaven and Sons, Gloucester	198 0 0
Heating, Abertridwr New School.	
W. Freer, Leicester	260 0 0
New Higher Elementary School at Ogmore Vale.	
F. W. Lougher and Co., Pontycymmr	8,274 13 6
Boundary Wall and Entrances, Aberdare Infant School.	
S. Shail, Llandaff	765 9 0

London, E.—For erection of residence, Cumberland Road, Canning Town, E., for the Women's Settlement. Mr. H. Clapham Lander, A.R.I.B.A., architect, Effingham House, Arundel Street, Strand. Quantities by C. A. Jacques, 12, Bedford Row, W.C.:—

N. Listone	...£4,388
Lewis Construction Co.	4,224
W. Akers	3,968
W. J. Maddison	3,665
Mattock and Parsons,* 165, Gray's Inn Road, W.C.	3,638

*Accepted.

Wrexham.—For consctruction of sewers in Rhos, extension of 15in. and 18in. outfall sewer, settling tanks, filters, house, retaining wall, laying-out site and works pertaining thereto, for the Wrexham Rural District Council. Mr. J. Price Evans, engineer:—

Edward Lester, Plymouth	...£14,388 2 1
Tysilio, Jones and Son, Johnstown	12,157 18 0
W. Humphreys, Cefn	12,024 18 3
Firth and Co., Leicester ...	11,662 2 8
J. T. Jones, Cefn	11,087 18 5
H. A. Jones	10,840 3 10
S. J. Davies, Rhos	10,714 *0 0
Davies, Bros.	10,423 5 8
Robert Williams, Brymbo ...	10,057 2 4
Isaac Jenkins, Johnstown ...	9,467 1 1
T. Ll. Davies,* Rhos	9,071 0 3

*Accepted.

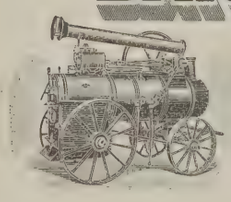
(*Tenders continued on page viii.*)

TELEGRAPHIC ADDRESS: "BARROWS ENGINEERS, BANBURY"

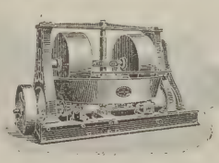
CODES IN USE.—A.I. A.B.C. 5TH EDITION. PRIVATE.

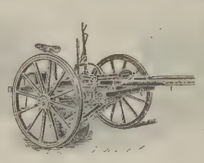
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TELEPHONE No. 586 Hop 9492 Central

TELEPHONE No. 171 CROYDON.

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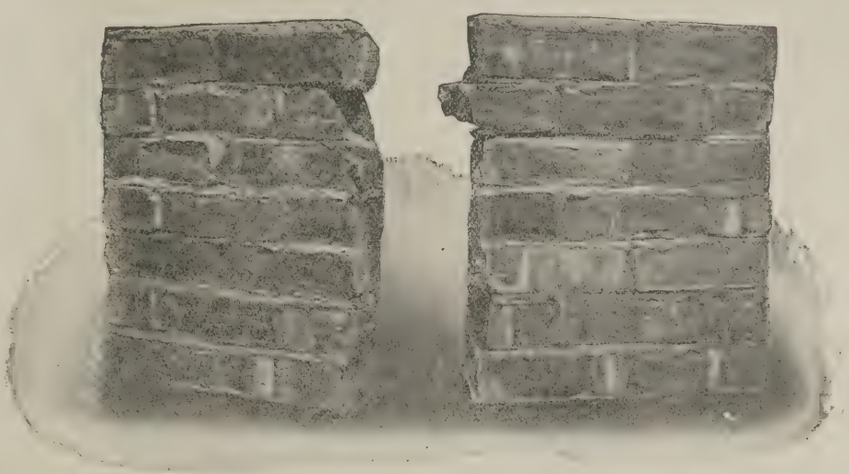
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Wire Reinforcement for Brickwork.

A REVOLUTION IN BUILDING CONSTRUCTION.

Over 1,000,000 yards have been used within the last few months.



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Write for Descriptive Catalogue.

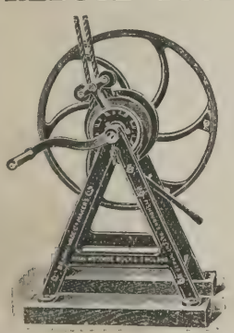
A piece of Brick Wall, 3 ft. long, 2 ft. wide, 4½ inches thick, built in 3 to 1 cement mortar, re-inforced at every joint with wire mesh. Allowed to stand 10 days, then laid on its side, supported at each end on a pier, with a bearing of 1½ inches. Failed under a load of 4,144 lbs. The bricks failed before the mortar joints.

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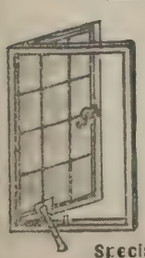
PATENT HOIST.



This is the most Efficient Hoist on the market for hoisting barrows of bricks, concrete, &c., without Gearing.

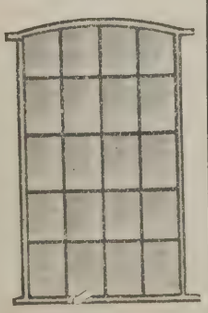
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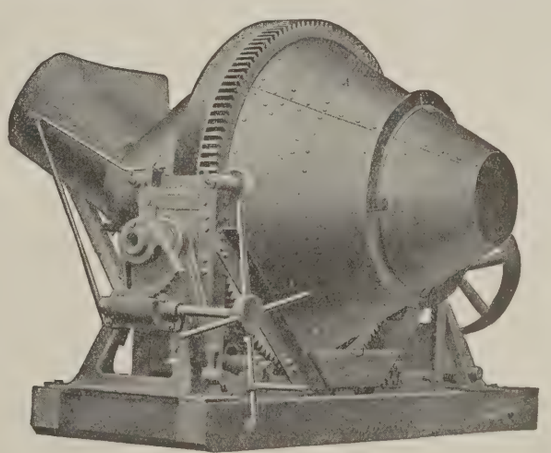


Fig. 982.

Smith Patent Mixer.

The best Mixer for CONCRETE or any Material.

The most efficient and quickest working batch Mixer on the Market. . . . . .

Excellent reports from Users. . . . .

NEARLY 3,000 NOW IN USE.

Sole Makers for the United Kingdom and Colonies:

STOTHERT & PITT, Ltd., BATH.

(*Tenders continued from page vi.*)

Summertown (Oxford).—For the first portion of Summertown Church. Mr. A. Mardon Mowbray, architect, 117, St. Aldate's Street, Oxford :—

Goddard and Sons, Farnham, Surrey	£12,360 0 0
Drowley and Co., Woking	11,503 0 0
Bosher, Sons and Co., Cholsey, Berks	10,707 18 0
Bowman and Sons, Stamford	10,582 0 0
Perry and Co., Bow, London	10,230 0 0
J Barnsley and Sons, Birmingham	10,148 0 0
Webster and Cannon, Aylesbury	10,146 0 0
F. Bissley, Maidenhead	10,047 0 0
A. Groves and Sons, Milton-under-Wychwood, Oxen	9,975 0 0
J. Chessum and Sons, London, E.C.	9,850 9 5
W. Pattinson and Sons, Ltd., London, S.W	9,831 0 0
J. Cracknell, Peterborough	9,764 14 2
Stephens, Bastow and Co., Ltd., Bristol	9,732 11 4
W. Moss and Sons, Ltd., Ltd., Loughborough	9,698 7 2
T. H Kingerlee and Sons, Oxford	9,643 10 0
J. Parnell and Son, Rugby	9,631 11 0
W. J. Bloxham, Banbury	9,622 0 0
H. Flint, High Wycombe	9,454 0 0
S. Hutchins and Son, Oxford	9,445 0 0
H. Hunt and Sons, High Wycombe	9,260 0 0
Franklin Bros., Deddington Oxford	9,021 0 0
G Henson and Son, Wellingborough	8,910 0 0
Wooldridge and Simpson,* Oxford	7,865 16 8

*Accepted.

Orpington (Kent).—For erection of six shops in the High Street, for Mr. G. St. Pierre Harris, architect and surveyor, 8, Laurence Pountney Hill, E.C., and Orpington :—

W. R. Taylor	£3,300
R. Large	2,700
Friday and Ling	2,688
W. Blay, Ltd.	2,650
Somerford	2,637
Gunning and Sons	2,520
T. Knight	2,219
W. Owen*	2,100

*Accepted.

Westbury (Wilts).—For the erection of four pairs of cottages at Dilton Marsh, Westbury, Wilts., for the Westbury and Whorwellsdown Rural District Council. Mr. Gerald Stanley, architect, Market House, Trowbridge :—

A. L. Poulton, Warminster	£1,797 17 3
E. Preece, Filton, Bristol	1,664 0 0
G. Moore, Trowbridge	1,618 0 0
P. Isley, Trowbridge	1,546
Holdoway and Cockle	1,462 7 6
Parsons	1,380 0 0
E. Linsey, Trowbridge	1,297 0 0
E. Linzey,* Trowbridge	1,297 0 0

*Accepted.

Rothesay (Scotland).—For Contract No. 1. Work B.—The widening of Albert Place, involving the construction of a new harbour wall and the filling with dry material between the old and the new walls, and other street works connected therewith, for the Harbour Trustees. Mr. J. B. Brodie, engineer, 141, West George Street, Glasgow :—

E. R. Lester	£2,568 2 0
D. Murray	2,525 9 8
A. Stark and Sons	2,415 4 0
W. Kennedy, Ltd.	2,362 12 2
J. Young, Ltd.	2,325 10 3
G. Lawson	2,220 0 0
J. Goldie and Sons	2,149 3 10
W. G. Flett	2,000 0 0
A. Jackson	1,840 4 4
Kinnear, Moodie and Co.	1,781 1 2
G. Halliday, Ltd.,* Rothesay	1,744 18 3
R. C. Brebner and Co.	1,527 9 0

*Accepted.

London, S.W.—For the construction of the embankment wall and certain work incidental thereto in connection with the new county hall, for the London County Council :—

Topham Jones and Railton, Ltd., Great George Street, S.W.	75,528 13 6
S. Pearson and Son, Ltd., Victoria-Street, S.W.‡	70,856 14 0
John Mowlem and Co., Ltd., Grosvenor Wharf, S.W.	68,799 13 0
Walter Scott and Middleton, Ltd., Victoria Street, S.W.	66,082 18 1
The Westminster Construction Co., Ltd., Westminster, S.W.	65,509 11 9
John Cochrane and Sons, Victoria Street, S.W.	64,486 4 0
Price and Reeves,* Waterloo Place, S.W.	62,662 9 7
Price and Reeves, Waterloo Place, S.W. (alternative tender)	59,480 0 10

Chief engineer's estimate, £68,524.
*Recommended for acceptance.
‡Amount corrected in letter of subsequent date.

Maldon.—For the erection of a Congregational Church at Latchingdon, near Maldon, Essex, for the Trustees. Mr. J. Russell Rogers, P.A.S.I., architect, Maldon :—

	No. 2
A. Ward and Sons	£675 0 0 2/6 per yd. extra
Baker and Sons	575 0 0 £19 0 0 ,,
J. Smith and Son	573 0 0 22 0 0 ,,
A. Baxter	559 13 0
W. Stammers	557 10 0 18 10 0 ,,
Jno. Rayner*	496 10 0 8 10 0 ,,

*Accepted.

Burton-upon-Trent.—For erection of Police Courts, Police Station, and Superintendent's House, for the Corporation. Mr. Henry Beck, architect, Burton-upon-Trent. Quantities by Mr. George Kenwrick, Birmingham :—

Sharpe, Barton-under-Needwood	£17,900
Moffatt, Birmingham	17,790
Wilcox, Wolverhampton	16,965
Bishop, Birmingham	15,980
Parnell, Rugby	15,770
Fenwick, Birmingham	15,695
Walker and Slater, Derby	15,560
Hope, Berkeswell	15,400
J. Smith and Sons, Birmingham	15,389
Sapcote, Birmingham	15,127
Hodges, Burton-upon-Trent	14,990
Johnson, Birmingham	14,844
Dallow, Birmingham	14,825
Elvins, Birmingham	14,770
Barnsley, Birmingham	14,650
Lovatt, Wolverhampton	14,532
Pattinson and Sons, Westminster	14,323
R. Kershaw,* Burton-upon-Trent	13,990

*Accepted.

Canning Town, E.—For the erection of a residence, Cumberland Road, Canning Town, E., for the Women's Settlement. H. Clapham Lander, Esq., A.R.I.B.A., architect, Effingham House, Arundel Street, Strand. Quantities by C. A. Jaques, Esq., 12, Bedford Row, W.C. :—

N. Lidstone	£4,388
Lewis Construction Co.	4,224
Wm. Akers	3,968
W. J. Maddison	3,665
Mattock and Parsons,* 165, Gray's Inn Road,, W.C.	3,638

*Accepted.

Smethwick (Staffs).—Accepted for erection of a technical school for the Town Council :—G. Webb and Son, £14,535.

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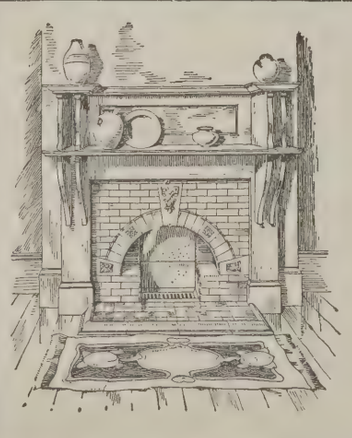
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Nov. 5. BARCALDINE, LEDAIG.—Repairs to the United Free Church manse, Barcaldine, Ledaig. Plans and specification to be seen at the offices of G. Woulfe Brenan, C.E., Oban, who will receive tenders up to Nov. 5.

Nov. 5. DELABOLE (Cornwall).—Erection of a villa residence at Delabole, Cornwall. Persons desirous of tendering may see the drawings and specification on application at 21, Sea View Terrace, Plymouth, where tenders are to be delivered before Nov. 5.

Nov. 5. GRANGE-OVER-SANDS.—Erection of workrooms in Kents Bank Road, Grange-over-Sands, for R. and H. Law. Plans may be seen and quantities obtained from Settle and Brundrit, A.R.I.B.A., Olverston and Barrow, architects. Sealed tenders, endorsed "Workrooms, Grange," to be delivered to the offices of the architects by noon on Nov. 5.

Nov. 5. DERBY.—Erection of a carriage and wagon-lifting shop at Derby, for the Midland Railway Company. Plans and specifications may be seen, quantities and particulars obtained on application at the engineer's office, Derby Station. Sealed tenders to be forwarded by post to the secretary of the way and works committee, Midland Railway, Derby, by 9 a.m. on Nov. 5.

Nov. 6. SOLOHEAD (Ireland).—Erection of a brick chimney at the creamery at Solohead, convenient to Limerick Junction station, co. Tipperary, for the committee of Solohead Co-operative Agricultural and Dairy Society, Ltd., according to plan and specification prepared by T. F. Ryan, C.E., Hotel, Limerick Junction. Plan and specification are deposited at the office of the society, and may be seen up to Nov. 5. Sealed tenders to be sent by Nov. 6, to W. Flynn, secretary.

Nov. 7. LOUGHBOROUGH.—Erection of a new technical institute at Loughborough, for the Leicestershire C.C. education committee. Conditions of contract, etc., may be obtained from the architects, Barrowcliff and Alcock, town hall chambers, Loughborough, on payment of £2 2s.

Nov. 7. BANGOR.—Erection of new hostels at the Normal College. Persons desirous of tendering are invited to apply for bills of quantities to Evan R. Davies, secretary, Normal College, Bangor, enclosing a cheque of £5 5s. Applications to be made by Nov. 7.

Nov. 7. THORNBURY.—Erection of class and cloakrooms, for the governors of the Thornbury grammar school. Plans and specifications may be seen at the office of Francis J. Williams, Chapel Street, Thornbury, R.S.O., between 10 and 5 daily, Saturday 10 and 1. Sealed tenders to be delivered to the clerks to the governors, Crossman and Co., solicitors, Thornbury, by 9 a.m. on Nov. 7.

Nov. 7. KEA (Cornwall).—Erection of a pair of cottages at Trevean, in the parish of Kea, for the Right Honourable Viscount Falmouth. Persons desirous of tendering can inspect plans, conditions and specifications, at the Farm House at Old Churchtown, Kea, in the occupation of W. L. and J. P. Hearle. Tenders should be sent by Nov. 7 to George Gow, Tregothnan office, Truro.

Nov. 7. GLASGOW.—Removal and renewal of parapet walls, pavement and railings surrounding St. George's Church, 163¾, Buchanan Street, for the Corporation. Drawings may be seen and forms of tender obtained on application to the city engineer at his office, 64, Cochrane Street. Sealed offers marked outside "Offer for Parapet Walls, etc., St. George's Church," must be lodged by Nov. 7, with A. W. Myles, town clerk, City Chambers, Glasgow.

Nov. 7. SOWERBY BRIDGE (Yorks.).—Extensive alterations of shops at West Vale for the Sowerby Bridge Industrial Society, Ltd. Plans and specifications may be seen, and bills of quantities obtained at the offices of Medley, Hall, and Son, architects and surveyors, 1, Harrison Road, Halifax, from Oct. 31 to Nov. 7, on which last-named day sealed tenders, endorsed "Tender for Alterations to Shops," to be delivered at the offices of the Society or to the architects. Fair wages clause.

Nov. 7. NEWTON HEATH (Manchester).—Strengthening, etc., Church Street Bridge, over the Rochdale Canal, Newton Heath, for the Corporation. Drawing may be seen, and specification, bill of quantities and form of tender obtained, on application at the city surveyor's office, town hall, Manchester, on payment to the city treasurer of two guineas. All cheques or postal orders to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in official envelope, addressed to the chairman of the Improvement, etc., committee, must be delivered at the city surveyor's office by 10 a.m. on Nov. 7.

Nov. 9. ELGIN.—Mason, carpenter, plumber, and painter work in rebuilding Elgin Coach Works. Plans, specifications, and conditions of contract to be seen with R. B. Pratt, architect, County Bank House, Elgin, who will receive offers up to Nov. 9.

Nov. 9. LLANGADOCK (Wales).—Execution of structural alterations, painting, and papering, etc., and erection of a gardener's cottage, at Abermarlais Park, Llangadock. Specifications and plans can be seen at the office of D. T. M. Jones, solicitor, Llandovery, during office hours. Tenders to be sent by Nov. 9.

Nov. 9. MERTHYR TYDFIL.—Erection of 38 houses at Danyderi, Merthyr Vale, and 68 houses at Penywern, Dowlais, for the corporation. Separate tenders, endorsed "Danyderi Houses," and "Penywern Houses," respectively, must be delivered to T. Aneuryn Rees, town clerk, town hall, Merthyr Tydfil, by noon on Nov. 9. Plans and specifications can be seen at the office of the borough surveyor, town hall, Merthyr Tydfil.

Nov. 9. CHESTER.—Construction of additional and the alteration of existing municipal offices, town hall, Chester, for the Corporation. Plans and specifications can be seen at the office of W. T. Lockwood, F.R.I.B.A., 88, Foregate Street, Chester, and quantities obtained on deposit of £1. Tenders are to be sent by Nov. 9, enclosed in sealed envelopes, addressed "The Town Clerk, Town Hall, Chester," endorsed on the outside "Office Accommodation," to J. H. Dickson, town clerk, town hall, Chester.

Nov. 9. INISHOWEN (Ireland).—Erection of 7 single labourers' cottages and 36 cottages in blocks of two, and fencing the 43 plots, for the Inishowen R.D.C. A contractor may tender to erect all cottages and fence all plots, or for such proportion as can be satisfactorily completed in the specified time. The works are to be completed within 6 months after they have been laid out by one of the council's engineers under a penalty for delay. Plans, specifications, and tender forms can be obtained from the clerk to the R.D.C., on payment of 5s., and tenders are to be lodged in his office by noon on Nov. 9. Tenders must contain the names and addresses of two solvent persons willing to join in a bond of an amount of £250 for each cottage, including fencing. Full particulars can be had from Robert Moore, clerk.

Nov. 11. BALROTHERY (Ireland).—Erection of 45 labourers' cottages throughout the union, for the R.D.C. A provision has been introduced into the specification permitting the use of hollow concrete blocks, instead of stone. Lists containing descriptive particulars of each cottage, also forms of tender, can be had on application to James Stack, clerk of the council, boardroom, workhouse, Lusk, Co. Dublin. Plans and specifications may be inspected at the workhouse, or at the office of the architect, Anthony Scott, C.E., 49, Upper Sackville Street, Dublin. Tenders will be considered at the council's meeting on Nov. 11.

Nov. 11. KINSALE (Ireland).—Erection of 42 single cottages, for the R.D.C. A contractor may tender to erect all the cottages, or for such number as may be completed satisfactorily in the specified time. The works are to be completed within six months after they have been laid out by the council's engineer, under a penalty for delay of £5 per week for each cottage. A deposit of £2 per cottage must be lodged with each tender. Conditions of contract and any other particulars with tender forms, can be had on application to John Murphy, clerk of council, council office, Kinsale, with whom tenders should be lodged by 11 a.m. on Nov. 11.

Nov. 12. GUISELEY.—Execution of various works in the parish church extension, in accordance with plans prepared by Nicholson and Corlette, of 2, New Square, Lincoln's Inn, W.C. Applications for quantities must be made by Nov. 12, to Harold Chippindale, architect and surveyor, Guiseley, near Leeds, when quantities will be forwarded in due course. Applications must be accompanied by a deposit of one guinea.

Nov. 12. BRIDGEND.—Alterations to Llangan Rectory, near Bridgend, for the Reverend Owen Jones, Rector. Plans can be seen, and bills of quantities obtained, at the office of the architect. Tenders are to be delivered by Nov. 12, to G. E. Halliday, F.R.I.B.A., 19, Castle Street, Cardiff.

Nov. 12. DUBLIN.—Alterations and additions to recreation hall, etc., at the Royal Hibernian Military School, Phœnix Park, for the board of public works. Tenders will be received up to 10 a.m. on Nov. 12, by H. Williams, secretary, office of public works, Dublin, where plans and specification can also be seen. Forms of tender and bills of quantities will be supplied on deposit of £1. Separate envelopes containing tender and the bill of quantities must be endorsed "Tender for Works at the Royal Hibernian Military School."

Nov. 14. PONTYPRIDD.—Erection of a residence, with outbuildings, etc., in the Lan Wood, Pontypridd, for S. G. Hill. Plans and specifications can be seen and bills of quantities obtained at Pontypridd and Tonypandy offices, and at 12, Edward Terrace, Cardiff, on deposit of £1 1s. Tenders to be sent by Nov. 14 endorsed "Tender for Lan Wood House," to W. Morgan Lewis and T. Naunton Morgan, architects and surveyors, Pontypridd.

Nov. 14. BRACEBRIDGE (near Lincoln). — Additions to the Bracebridge Girls' School, near Lincoln, for Kesteven C.C. Bills of quantities and forms of tender may be obtained at the office of the county surveyor, 53, High Street, Grantham, upon deposit of £1. Specifications and plans may be seen at the office of H. H. Dunn, Silver Street, Lincoln, or at the county surveyor's office, Grantham. Sealed tenders, endorsed "Tender for Bracebridge School," to be delivered by Nov. 14, to Hudson Donaldson, secretary, county education office, 64, London Road, Grantham.

Nov. 16. WHITELEY WOODS, SHEFFIELD.—Erection of new lodge and conveniences at Whiteley Woods, for the City Council. Plans may be seen, bills of quantities and forms of tender obtained, on application to the city architect, town hall, Sheffield. Sealed and endorsed tenders (enclosed in envelope provided) to be delivered by Nov. 16, to R. M. Prescott, town clerk, town hall, Sheffield. Fair wages clause.

Nov. 19. BROMLEY-BY-BOW.—Erection of a bathroom at the workhouse, St. Leonard's Street, Bromley-by-Bow, E., for the guardians of Stepney Union. Specifications and forms of tender, etc., can be obtained on application to the clerk, and tenders must be delivered by 4 p.m. on Nov. 19, to T. G. Stacey, clerk, guardians' offices, Barnes Street, Stepney, London, E. Plans can be inspected any day (except Thursday) between 10 a.m. and 5 p.m.

Nov. 20. BELFAST.—Erection and completion of new male schools, Seaforde Street, Belfast. Plans and specification can be inspected at the offices of J. J. M'Donnell, architect, 27, Chichester Street, and bills of quantities obtained from Acheson Ferguson, Scottish Provident Buildings, on deposit of one guinea. Sealed tenders, endorsed "Seaforde Street Schools," are to be delivered to Very Rev. H. Laverty, P.P., D.D., St. Matthew's Presbytery, by 5 p.m. on Nov. 20.

No date. WREXHAM.—Erection of a church house in Regent Street, Wrexham. Quantities, conditions of contract and date of receiving tenders may be obtained from Prothero, Phillott, and Barnard, architects, 13, Promenade, Cheltenham, on deposit of 10s.

No date. NANTWICH. — Erection of new schools in Hospital Street, Nantwich, for the Wesleyan Methodist school trustees. Bills of quantities and form of tender may be obtained from R. Matthews, architect, Parr's Bank Chambers, Nantwich, on payment of £1 1s.

No date. BATLEY.—Erection of two houses off Norfolk Street, Batley. Persons desirous of tendering for the various works are requested to send their names and addresses to John H. Brearley, architect, Commercial Street, Batley, when bills of quantities will be forwarded.

No date. OXFORD.—Complete fitting up of show yard for one or three years, for the Oxfordshire Agricultural Society. Specification, together with schedule and form of tender, can be obtained on application to H. Sammons, secretary, 68, St. Giles, Oxford. Applicants should state what experience they have had in this class of work.

ENGINEERING.

Nov. 6. LISMORE.—Repairing the well shaft on the workhouse premises, for the Board of Guardians. Tenders should be submitted by Nov. 6 to Alex. Heskin, clerk of union.

Nov. 6. PENYGRAIG AND BLAENCLYDACH.—Laying about 1,300 yds. of 6 and 3 in. gas mains at Penygraig and Blaenclydach, for the Rhondda U.D.C. Plans and specification may be seen and form of tender supplied upon application to Octavius Thomas, engineer and manager, gas and water offices, Pentre, Rhondda, upon depositing one guinea. Tenders to be addressed to the chairman of the gas and water committee, endorsed "Tender for Laying Gas Mains, Contract No. 46," and delivered by 10 a.m. on Nov. 6, to Walter P. Nicholas, clerk to the council, public offices, Pentre, Rhondda. Fair wages clause.

Nov. 9. BRISTOL.—Installation of heating apparatus in the place of worship now being erected at the Stapleton workhouse, in accordance with a statement which is deposited for inspection at the office of the clerk. Tenders, on the prescribed form, which can be obtained of the clerk, must be delivered by noon on Nov. 9, to J. J. Simpson, clerk to the guardians, St. Peter's Hospital, Bristol.

Nov. 9. EMSWORTH AND SWAYTHLING.—Installation of low pressure hot water apparatus at the new council schools, Emsworth and Swaythling, for the Southampton C.C. Persons desirous of tendering may see plans and specifications, and obtain all other information at the office of W. J. Taylor, county surveyor, The Castle, Winchester, between 9 a.m. and 5 p.m. (Saturdays, 9 a.m. and 1 p.m.). Separate tenders, endorsed "Heating Apparatus, Hemsworth Council School," and Heating Apparatus, Swaythling Council School," respectively, are to be delivered by 10 a.m. on Nov. 9, to H. Barber, clerk of the county council, The Castle, Winchester.

Nov. 11. KINSALE (Ireland). — Execution of sundry works, including the construction of tanks and reservoir, supplying and laying pipes, etc., in connection with a scheme of waterworks for the village of Ballinspittle, for the R.D.C., in accordance with plans and specifications which may be seen at the council office, Kinsale workhouse, and at the office of R. Evans, C.E., 53, South Mall, Cork. The person whose tender is accepted must enter into a bond, with two approved sureties, for double the sum mentioned in the tender, to be prepared at the contractor's expense by the council's solicitor. With each tender a deposit of £5 shall be lodged with the clerk. Sealed tenders, giving the name, address, and occupation of each of the sureties, are to be lodged by 11 a.m. on Nov. 11, with John Murphy, clerk of council, council office, Kinsale Workhouse. The works are to be completed within five months from the acceptance of tender.

Nov. 12. ELLOUGHTON AND BROUGH (York).—Construction of spring collecting works, collecting chambers, covered storage reservoir, 6,420 yds. of 5 in., 4 in., 3 in. and 2 in. cast-iron water mains, with valves, washouts, fire hydrants, consumers' services, and other works in connection therewith, at Elloughton and Brough, in the county of York, for the Elloughton and Brough Water Co., Ltd. Drawings, specification, etc., may be seen with Fairbank and Son, M.Inst.C.E., engineers to the company, Lendal Chambers, York, from 10 a.m. to 5 p.m., except Saturdays. Copies of specification, quantities and form of tender may be obtained on deposit of £3 3s. Sealed tenders, endorsed "Tenders for Elloughton and Brough Waterworks, Contract A," to be sent to E. Hind, solicitor, Goole, before 10 a.m. on Nov. 12.

Nov. 13. LLYN FAWR (Glam.).—Construction of a reservoir at Llyn Fawr Lake, in the parish of Ystradyfodwg, Glamorgan, with works in connection therewith, including a temporary tramroad connecting the works with the Great Western Railway at Hirwain, for the Rhondda U.D.C. Drawings may be inspected and copies of the specification, schedule of prices and forms of tender obtained upon application to J. E. Hughes, M.Inst. C.E., at his office at Tynewydd, Treherbert, upon a deposit of £5. An assistant engineer will accompany attending contractors to the site of the works on Oct. 27, starting from the engineer's office at Tynewydd, Treherbert, at 11 a.m. Sealed tenders, enclosed in envelopes provided, and addressed to the chairman of the council, endorsed "Tender for Reservoir," must be delivered by 10 a.m. on Nov. 13, to W. P. Nicholas, clerk, council offices, Pentre, Glam. Fair wages clause.

Nov. 14. ECCLES.—Installation of electric wiring and fittings for the lighting of buildings at the town's yard, for the Cleansing and Scavenging Committee of the Corporation, in accordance with a specification prepared by the borough electrical engineer. Copy of specification and form of tender can be obtained from the town clerk. Sealed tenders to be delivered in an official envelope by noon on Nov. 14, to Edwin Parkes, town clerk, town hall, Eccles. Fair wages clause.

Nov. 21. WEST RUNTON (Norfolk).—Construction of a 9in. diam. iron outfall pipe, 600ft. long, on the foreshore, also erection of two small purification tanks and filters, and the laying of 2,750 yds. of 9in. and 7in. glazed pipes, with necessary manholes, etc., at West Runton, Norfolk, for the Erpingham R.D.C. Plan and specifications can be inspected and copies of the quantities obtained at the office of the engineer, A. F. Scott, F.S.I. Tenders to be delivered endorsed "Tender for West Runton Drainage," by 10 a.m. on Nov. 21, to the chairman, works committee, c/o A. F. Scott, 24, Castle Meadow, Norwich.

Nov. 23. DUBLIN.—Reconstruction of live steel girder bridges, for the directors of the Great Northern Railway Company (Ireland). Parties wishing to tender may see the drawings, etc., at the office of W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or copies of same at the district engineers' office, Belfast.

Nov. 23. BRISTOL.—Reconstruction and maintenance for twelve months after completion, of the plate girder bridge carrying the Bath road over the river Avon, including the removal of the portions to be renewed, for the docks committee of the council. Specification, schedule, form of tender, and form of contract, and copies of the contract drawings can be obtained from W. W. Squire, engineer, engineer's office, Cumberland Road, Bristol, on production of a receipt showing that a deposit of £5 has been paid to the secretary. Tenders must be enclosed in a sealed envelope, endorsed "Tender for Reconstruction of Bath Bridge," addressed to the secretary of the docks committee, docks office, 19, Queen Square, Bristol, and must be delivered before 10 a.m. on Nov. 23.

Dec. 31. LINCOLN.—Supplying two complete sets of steam pumping machinery at the proposed Elkesley pumping station, for the Corporation, some 2¼ miles from Checkerhouse station (Notts.), G.C. Railway. Specifications, etc., may be obtained at the office of the engineer, Neil McK. Barron, waterworks engineer, Lincoln, upon payment of £5 5s.

No date. SKEWEN.—Heating chapel and hall, for the officers of the Tabernacle Congregational Church, Skewen. Further particulars and permission to view the buildings may be obtained of the secretary. 16, Stanley Road, Skewen.

IRON AND STEEL.

Nov. 9. LONDON (for Madras).—Supplying steel caissons of irregular shape, 38ft. 6in. high, weighing about 80 tons each, for the Madras Port Trust. Specification, with drawings and form of tender, can be obtained from Rendel and Robertson, 8, Great George Street, Westminster, S.W., on payment of half a guinea, which will not be returned. Tenders must be delivered at the same address before noon on Nov. 9.

Nov. 9. BEDLINGTON.—Supply and delivery of 48 street lamps, about 16in., with incandescent gas burners complete, and also for 50 C.I. lamp pillars, for the U.D.C. Further particulars may be had on application to the surveyor, J. E. Johnston, Bedlington. Sealed tenders, marked on the outside "Tender for Gas Lamps, etc.," to be sent by noon on Nov. 9, to Charles D. Forster, clerk of the district council, clerk's office, 24, Grainger Street West, Newcastle-on-Tyne.

Nov. 10. LONDON (for India). — Supplying fencing material, for the South Indian Railway Company: (1) Galvanized wire, about 286 tons; (2) straining pillars, fencing bars, wedges, struts, bolts, and straining screws, about 714 tons. Specifications and forms of tender may be obtained at the company's offices. Tenders, addressed to the chairman and directors of the South Indian Railway Company, Limited, marked "Tender for Galvanized Wire," or as the case may be, must be left by noon on Nov. 10, with V. E. De Broe, M.I.C.E., secretary, company's offices, 91, York Street, Westminster. A charge, which will not be returned, will be made of 20s. for each copy of specification No. 1 and 2. Copies of the drawings may be obtained of Robert White, 3, Victoria Street, Westminster, S.W., on payment of 5s. per sheet.

Nov. 10. LEITH.—Supplying following materials delivered free at Leith or Granton, for extension of the tramways, of about 3 miles, double track, for the Corporation: Rails, points and crossings, tie-bars, poles, bonds, overhead fittings. Drawings, general conditions, specifications, schedules of measurements, and form of tender may be obtained from the burgh surveyor, council chambers, Leith, on deposit of £1 1s. Sealed offers are to be delivered by Nov. 10, to T. B. Laing, town clerk, town clerk's office, Leith.

Nov. 12. WELLINGTON (Salop). — Supplying (1) about 103 tons of 4 in., 3 in., and 2 in. cast iron pipes, together with all special castings required, and (2) laying and jointing about 4 miles of 4 in., 3 in., and 2 in. cast iron pipes, together with standposts, valves and hydrants, meters, construction of meter chamber, and other works in accordance with the drawings and specification prepared by the engineers, for the R.D.C. Drawing and specifications may be seen, and bills of quantities and forms of tender obtained at the offices of the engineers, 63, Temple Row, Birmingham, after Oct. 29, on deposit of three guineas in each case. Sealed tenders, in envelopes supplied and endorsed "Lawley Bank Water Supply, Contracts No. 1 and No. 2," respectively, to be delivered by 10 a.m. on Nov. 12, to John Jones, clerk to the Wellington R.D.C., Edgbaston House, Wellington, Salop.

Nov. 13. NEW BRIGHTON. — Supplying and fixing ornamental wrought iron railings and gates at the New Brighton promenade, for the improvements committee of Wallasey U.D.C., in accordance with drawings and specification prepared by W. H. Travers, engineer and surveyor to the council, public offices, Egremont, Cheshire, from whom form of tender and further information, together with blue print and specification, may be obtained upon payment of £1. Tenders, enclosed in sealed envelopes, endorsed "Promenade Railings," to be delivered by Nov. 13, to H. W. Cook, clerk and solicitor, public offices, Egremont, Cheshire.

Nov. 14. WARRINGTON.—Supplying sundry steel pipes and specials, for the water committee. Full particulars may be had from James Deas, water engineer, municipal offices, Warrington.

Nov. 16. WALLASEY.—Supply and delivery of 550 lineal yds. of railings 5ft. 6in. high; 750 lineal yds. of railings 3ft. 9in. high; also 150 lineal yds. of wrought iron railings 4ft. 6in. high, and fixing to stone coping, together with gates as specified, for the parks committee of the U.D.C. The railings to be in accordance with drawings and specification prepared by W. H. Travers, engineer and surveyor, public offices, Egremont, Cheshire, from whom tender form and further information, together with blue print and specification, may be obtained upon payment of £1. Tenders, enclosed in sealed envelopes, endorsed "Tender for Park Railings," to be forwarded by Nov. 16, to H. W. Cook, clerk and solicitor, public offices, Egremont, Cheshire.

Nov. 19. SWANSEA.—Supplying (1) about 15,500 ft. of solid drawn steel tubing, 8 in. dia., with forged oval steel flanges, and W.-I. bolts, together with bends, branches and irregular pipes, and (2) about 1,200 tons of C.-I. pipes, 8 in. diameter, with oval flanges, and W.-I. bolts, together with bends, branches, and irregular pipes, for the Swansea Harbour Trustees. Forms of and instructions for tender, contract, specification and conditions and drawings can be obtained on and after Nov. 5, on application to the clerk, on payment of five guineas. Tenders, sealed and marked "Tenders for Pipes," should be delivered by 10 a.m. on Nov. 19, to Talfourd Strick, clerk, Harbour Offices, Swansea.

PAINTING.

Nov. 5. MANCHESTER.—Painting at Rippingham Road, Marie Louise Gardens, and Didsbury recreation grounds, for the parks committee of the corporation. Specifications may be obtained at the office of the city architect, town hall. Sealed tenders, enclosed in the official envelope, to be delivered at the above office by 9 a.m. on Nov. 5.

Nov. 5. MANCHESTER.—Painting the railings at Clayton Hall recreation ground, for the parks committee of the corporation. Specification may be obtained at the office of the city architect, town hall. Sealed tenders, enclosed in the official envelope, to be delivered at the above office by 9 a.m. on Nov. 5.

Nov. 5. ENFIELD.—Painting about 900 street lamps throughout the district, for the U.D.C. Specification can be seen, and all information obtained, on application to Richard Collins, the council's surveyor, at the public offices, any day except Saturday, between 9 a.m. and 5 p.m. The contractor will be required to employ local workmen only. Tenders, on forms supplied, to be sent by noon on Nov. 5, to T. W. Scott, clerk to the council, public offices, Enfield, endorsed "Tender for Painting Lamp Posts." Fair wages clause.

Nov. 13. BATLEY.—Painting, colour-washing, etc., at Field Lane, Healey, Park Road, and Warwick Road schools, for the Batley Education Committee. Specifications, which must be returned, together with tender, by Nov. 13, may be obtained from G. R. H. Danby, secretary and director, education offices, Batley.

Nov. 17. LEYTON.—Cleansing, painting, and repairs to two schools to be executed during the Christmas vacation, for the U.D.C. Specification, conditions, and form of tender may be obtained on application, by Nov. 17, to William Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, E.C. (the committee's architect), accompanied by a deposit of £1 (cheques will not be accepted). Sealed tenders, in envelopes supplied with the form, must be delivered at the meeting of the council at 7 p.m., on Nov. 24. Fair wages clause.

PLUMBING & SANITARY

Nov. 3. SUNDERLAND.—Erection of underground conveniences and shelter at Sea Lane, Roker, for the corporation. Drawings and specifications may be seen, and form of tender obtained, at the borough engineer's office, town hall. Sealed tenders, addressed "To the Chairman of the Health Committee," and endorsed "Tender for Underground Conveniences, etc., at Sea Lane, Roker," must be delivered before noon on Nov. 9, to Fras. M. Bowey, town clerk, town hall, Sunderland.

Nov. 10. WREXHAM. — Alterations at the public urinal in Henblas Street, for the Corporation. Plans and specification may be seen, and form of tender obtained, at the borough surveyor's office, Willow Road. Tenders, endorsed "Henblas Street Urinal," to be delivered by Nov. 10, to Lawson Taylor, town clerk, Guildhall, Wrexham.

Nov. 11. SOMERTON.—Construction of new roads, sewers, drains and footways on the Somerton Garden Suburb Estate, for T. E. Watson, J.P. Plans and specification may be seen at the office of the architects and surveyors. Copies of the bills of quantities may be obtained upon deposit of £2 2s. Sealed tenders are to be delivered by noon on Nov. 11 to Newland, Davis and Hunt, architects and surveyors, Newport.

Nov. 11. BIRMINGHAM.—Works of retaining walls and road and sewer construction in Highgate Road, for the corporation. Drawings and specification may be seen and quantities and forms of tender obtained at the office of the engineer, on deposit of £2. Tenders, sealed and endorsed "Highgate Road," and addressed to the chairman of the public works committee, will be received not later than Nov. 11, by Henry E. Stilgoe, M.Inst.C.E., city engineer and surveyor, the council house, Birmingnam. Fair wages clause.

Nov. 11. BIRKENHEAD. — Construction of about 450 lineal yds. of stoneware pipe sewer, together with all necessary manholes, etc., in a proposed new road between Old Chester Road and Bebington Road, for the Corporation. Plan, sections and specification may be seen and form of tender with bills of quantities obtained at the office of Charles Brownridge, M.I.C.E., borough engineer, and surveyor, town hall, Birkenhead, upon deposit of 10s. Tenders, sealed and endorsed "Tender for New Road Sewer," to be sent to James Fearnley, town clerk, town hall, Birkenhead, by 5 p.m. on Nov. 11. Fair wages clause.

Nov. 13. BIRMINGHAM.—Taking up old drainage and constructing new drainage at the Birmingham workhouse, for the guardians. The person accepted must sign an agreement absolving the guardians from liability under the "Workmen's Compensation Act, 1906," "Employers' Liability Act, 1890," and "Fatal Accidents Act, 1846." Persons wishing to tender can inspect the plans and particulars, and obtain all information from W. H. Ward, architect, Paradise Street, Birmingham, between 10.30 a.m. and 4 p.m. Persons tendering must deposit £2 2s. for quantities. Tenders must be delivered by 10 a.m. on Nov. 13, to Charles Fletcher, clerk to the guardians, parish office, Edmund Street. Fair wages clause.

Nov. 16. BRUMBY and FRODINGHAM.—Construction of about 2,300 lin. yds. of 8in., 2,300 lin. yds. of 9in., 300 lin. yds. of 12in., and 1,600 lin. yds. of 15in. diam. stoneware pipe sewers; about 1 lin. yds. of 8in., 12 lin. yds. of 9in., and 167 lin. yds. of 15in. diam. cast iron pipe sewers; compressor house, sedimentation tanks to hold 62,500 gallons, 3 sprinkler beds, distributing chamber and affluent drains, etc., in the parishes of Brumby and Frodingham, for the U.D.C. Plans and sections may be seen and specifications and bills of particulars, together with forms of tender, obtained on application to Strachan and Weekes, civil engineers, 9, Victoria Street, Westminster, London, on deposit of £3 3s., by cheque. Sealed tenders, endorsed "Tenders for Sewerage Works," are to be delivered by 1 p.m. on Nov. 16 to George S. Sowter, clerk, Brigg.

ROADS AND CARTAGE.

Nov. 5. HEATON NORRIS (Lancashire). — Forming the carriageways of 1, Green Lane, Lancs., Grange Avenue, for the U.D.C., within the district, with tar macadam, together with contingent works. Plans of the works may be inspected and copies of specifications, together with forms of tender, obtained upon application to Walter Banks, A.M.Inst.C.E., surveyor to the council, at his office any day, except Saturdays and Mondays, between 11 a.m. and 1 p.m., on payment of £1 1s. in each case. Sealed tenders, on the forms supplied, endorsed "Tender for Green Lane," and "Tender for Grange Avenue," as the case may be, to be delivered by noon on Nov. 5, to F. W. Brooke, clerk to the council, council offices, Heaton Moor, Lancashire.

Nov. 6. LUTON.—Paving and other works of private improvement in Brantwood Road and Wimborne Road, for the town council, in accordance with plans, sections, and specifications prepared by the borough engineer, and to be seen at his office, town hall, Luton. Separate tenders for each street, endorsed "Private Improvement Works," must reach Bruce Penny, town clerk, town hall, Luton, by 4 p.m. on Nov. 6.

Nov. 7. STOCKPORT.—Manual and team labour and materials required in excavating, sewering, forming, paving, curbing, and flagging of Broadstone Hall Road, for the highways and sewers committee of the corporation. Plans, sections, specifications, and conditions may be seen, and forms of tender obtained, on application to the surveyor. Tenders, sealed and endorsed "Tender for P.S.I Works, Broadstone Hall Road," to be delivered by noon on Nov. 7, to John Atkinson, A.M.Inst.C.E., borough surveyor, borough surveyor's office, town hall, Stockport. Fair wages clause.

Nov. 7. SOUTHWOLD. — Making up certain roads on the West End Estate, at Southwold, for the Corporation, in accordance with plans and specification, which can be inspected at the office of the borough surveyor, town hall. The person whose tender is accepted will be required to enter into a contract and bond for due performance, copies of which can be seen at the office of the clerk. Tenders, endorsed "West End Estate Roads," are to be delivered by 4 p.m. on Nov. 7, to Ernest R. Cooper, town clerk, town clerk's office, Southwold.

Nov. 9. WALTHAM ABBEY.—Execution of paving, kerbing, surface drainage, etc., in Honey Lane, Waltham Abbey, for the U.D.C. Plans and specifications may be seen at the office of W. T. Streather, A.M.I.C.E., surveyor, town hall, Waltham Abbey, by appointment. Sealed tenders, in envelopes endorsed "Paving Works," are to be in the hands of F. C. E. Jessopp, clerk to the council, Waltham Abbey, by noon on November 9.

Nov. 9. PONTYPRIDD.—Carrying out the following street works, for the U.D.C.:—Contract No. 1, portion of Basset Street, Coedpenmaen; contract No. 2, Cross Street leading from Coedpenmaen Road to Thurstan Road; contract No. 3, lane leading from Leyshon Street to Llantrisant Road; and contract No. 4.—Approach roads to New Berw Bridge. Plans and specifications may be seen and forms of tender obtained on application at the office of P. R. A. Willoughby, A.M.I.C.E., engineer and surveyor, upon receipt by the clerk of one guinea in respect of each contract. Tenders, on the prescribed form, sealed and endorsed "Street Works, Contract No. " (as the case may be), must be delivered by Nov. 9 to J. Colenso Jones, clerk to the council, Municipal Buildings, Pontypridd.

Nov. 9. STREATHAM.—Making-up and paving that part of Mitcham Lane, Streatham, lying between Moyser Road and the borough boundary, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Paving Mitcham Lane," must be delivered at the council house, East Hill, Wandsworth, S.W., and may be placed in the box provided for the purpose by 4 p.m. on Nov. 9. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

Nov. 9. WANDSWORTH.—Works of repair upon that part of the carriage-road called Princes Road, Southfield, lying between West Hill and Augustus Road, for the corporation. Specification and drawings may be seen, and forms of tender obtained, at the borough engineer and surveyor's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separately sealed envelopes, and endorsed "Tender for Repairing Princes Road," must be delivered at the council house, East Hill, Wandsworth, S.W., and may be placed in the box provided for the purpose by 4 p.m. on Nov. 9. If required, the contractor must provide two sureties for the due execution of the contract. Fair wages clause.

Nov. 11. BIRMINGHAM.—Execution of private street works in Newland Road (off Green Lane), Small Heath, including macadam carriage-way, concrete paving, kerbing, channelling, gullies, and lighting, etc., for the corporation. Drawings and specification may be seen, and quantities and form of tender obtained, at the offices of the engineer on deposit of £2. Tenders, sealed and endorsed "Tender for Private Street Works," and addressed to the chairman of the public works committee, will be received not later than Nov. 11, by Henry E. Stillgoe, M.Inst.C.E., city engineer and surveyor, the council house, Birmingham. Fair wages clause.

Nov. 16. MANCHESTER.—Supplying 25,000 to 50,000 tons of rough broken granite, to serve as filtering media, for the rivers committee of the corporation. Price to be given per ton, in cargoes of 250 to 350 tons, delivered alongside the Davyhulme Wharf, on the Manchester Ship Canal. Tenders should be addressed to the chairman of the rivers committee, town hall, Manchester, marked "Tender for Rough Granite," and should be delivered by 10 a.m. on Nov. 16. A sample of the material may be sent under separate cover, and addressed to the secretary of the rivers department, town hall, Manchester.

Nov. 17. SALFORD.—Sewering, paving, and flagging streets, for the highway and paving committee of the corporation. Plans and specification may be seen and forms of tender with quantities obtained at the borough engineer's office, town hall, Salford. Tenders, endorsed "Street Paving," must be delivered by 10 a.m. on Nov. 17, to L. C. Evans, town clerk, town hall, Salford.

Nov. 17. WEST HAM.—Making-up the following streets, for the corporation:—Haig Road (part of), Kingsland Road (part of), Olive Road (part of), Patrick Road (part of), Coronation Road (part of), Humberstone Road, New City Road (part of), Boundary Road (part of), Angus Road, Oban Road, Croydon Road (part of), Plans may be seen, and specification, form of tender, and further particulars obtained at the office of Mr. John G. Morley, borough engineer, town hall, West Ham, E., upon payment of £1. Tenders must be delivered in the envelope supplied, by registered post, not later than 4 p.m. on Nov. 17, to Fred. E. Hilleary, town clerk, town hall, West Ham, E. The contractor will be required to enter into a bond with one surety, for the due performance of the Contract. Fair wages clause.

MISCELLANEOUS.

Nov. 4. HERNE BAY.—Hire of a steam roller and scarifier for the ensuing year, for the U.D.C. Specifications can be seen and forms of tender obtained from F. W. J. Palmer, C.E., surveyor to the council, town hall. Sealed tenders, endorsed "Steam Rolling," to be delivered by noon on Nov. 4, to Joseph Jubb, clerk to the council, town hall, Herne Bay.

Nov. 5. HOMERTON.—Constructing skylights, dormers, in roof of hall, flooring, painting, etc. Specification can be obtained on application to Clapton Park Club, 60, Brooksby's Walk, Homerton, from ten a.m. to one. Tenders must be delivered by Nov. 5.

Nov. 6. EASTWOOD.—Constructing part of the new cemetery at Eastwood, including all relative works, for the Parish Council. Drawings may be seen at the office of Wharrie and College, C.E., 109, Bath Street, Glasgow, from whom copies of the specification, schedule of quantities, and form of tender may be obtained on payment of £1 1s. Tenders, on the form supplied, marked "Tender for New Cemetery," to be delivered by 3 p.m., on November 6, to D. Barrowman, clerk, Parish Council Chambers, 20, Harriet Street, Pollokshaws.

Nov. 9. RYTON.—Removal of house refuse and the cleansing of earth closets, privies, and ashpits within the district, for the U.D.C. Forms of tender and all particulars may be obtained on application to John P. Dalton, surveyor, council offices, Ryton.

Nov. 9. WESTMINSTER (for Madras).—Supplying 12,000 barrels (2,000 tons) of English Portland cement, for the Corporation. Full particulars and conditions, together with the printed forms of tender and contract, can be obtained from the agents of the Corporation, on payment of five shillings per set, which will not be returned. Tenders, on the forms supplied by the agents, and enclosed in sealed envelopes superscribed "Tender for English Portland Cement for the Corporation of Madras," will be received up to noon on Nov. 9, by James Mansergh and Sons, agents to the Corporation, 5, Victoria Street, Westminster, S.W., and must be accompanied by a deposit of £5.

Nov. 14. NEWPORT (I. of W.).—Tarring and sanding the playgrounds at the Newport Secondary school and the Godshill council school, for the Isle of Wight county education committee. Particulars may be obtained from F. G. Flux, secretary, county education offices, Newport, I.W., to whom tenders must be sent by Nov. 14, marked "Newport," or "Godshill," as the case may be.

THE

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ARCHITECT and Surveyor's Assistant (24); 8 years' London exp.; working drawings, specifications, superintendence, prizeman and medallist, testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4669

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CARPENTER'S work, carcassing, stairs, shopfitting, etc., wanted. Piecework, labour only; houses, etc., taken right out. Any quantity, and distance no object.—G. Bown, 3, Albert Villas, Old Church Hill, Chingford. 4658

CARPENTER and joiner wants job; all-round hand, used to jobbing shop. Eight years' references last job. Wages moderate.—Cooke, 10, Cumberland Road, Walthamstow. 4652

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GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

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HIGH-CLASS decorator, manager, seeks re-engagement; estimator for all classes of best work; abroad if necessary; excellent testimonials; moderate salary.—Apply Forbes, 7, Eldon Street, York. 4677

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TO Builders.—Situation as improver wanted by young man just out of his time; technical student; neat draughtsman; assist with quantities, supervision, etc.; abstainer. — Box 4662, Builders' Journal Office.

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November 11, 1908. Volume 28, No. 718.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The Board of Arbitration.

The formation of the new Permanent Board of Arbitration, and the publication of three lists, or panels, of gentlemen, selected by the Board of Trade as members of the new board, has led to some disquiet among building trade employers, as, for the moment, they are not represented. It will, however, be within the recollection of readers that the publication of these lists was accompanied by the statement that they were incomplete, and this is, presumably, still the case. The three panels are the chairman's panel, consisting of judicial and well-known public men; the employers' panel, comprising representatives of employers in all branches of trade; and the employers' panel, formed of representatives of workmen in the various trades. The object of the Board of Trade is to select from the panel of employers one or two gentlemen connected with the particular trade in which a dispute has arisen; to select from the employees' panel an equal number of representatives of workmen in the particular trade involved; and from the remaining panel a chairman of integrity and unbiassed opinion. The number of members in a Court of Arbitration is not to exceed five, and, if possible, is to be limited to three—a chairman, one employer, and one workmen's representative; and the choice of the members is reserved to the Board of Trade. These arrangements seem, on first reading, to be exceedingly sound, and likely to afford, as is desired, courts well acquainted with the questions in dispute. We are not sure, however, that the limitation to three or five members will work satisfactorily. If the dispute is widespread, or particularly acute, the two trade representatives, in a court of three, are liable to become ex parte advocates, leaving the chairman in the unfortunate position of either having to split the difference between them or give a casting vote. "Splitting the difference" is at present one of the curses of arbitration, and, though an easy way out of a deadlock, is a rank injustice, and productive of future evil, since it encourages aggresive and exaggerated demands. Five members give a greater margin of safety, but we think seven or nine would have been even better. In a court of three, the employer, or employees' representative, who agrees to a verdict against his fellows, will be in an unenviable position when he rejoins them. To have three or four representatives of each trade in the employers' and the employees' panels would possibly make them unwieldy, and this may be the reason for limiting the courts to a maximum of five members. The important point for building trade employers just now is to see that they are properly represented on the employers' panel. We have applied to and are now awaiting information on this point from the Board of Trade. But it would be advisable for the building trade employers to have ready the names of their nominees.

Physico-chemical Aesthetics.

In an interesting paper read by Mr. Felix Clay before the Architectural Association on November 6th, a courageous attempt was made to trace to its source the sense of taste in art. In such an investigation, the reference to evolutionary principles was inevitable, the lecturer being, for the occasion, not at all concerned with the superstructure, but keenly interested in the foundations and the earthwork. He tried to ascertain what is at the bottom of our likes and dislikes in colour, form, and proportion, and finds that these sensations "are the present forms of originally necessary reactions formed by physico-chemical reflexes, which drew the organism [a primitive organism of a rudimentary type] towards the wholesome or suitable, or away from the dangerous or unsuitable." As the organism developed, experience was accumulated, faculty was expanded, and aesthetic feeling was intensified and refined, until now it is a thing compounded partly of inherited predisposition surviving from one's "primordial protoplasmic atomic ancestors," as Pooh-Bah would say, partly of what is drawn from one's own experiences and environment. Taste in art, therefore, is, as to its origin, a matter of sub-conscious natural selection and survival; but, within certain limits, the possessor may not only train and control the aesthetic sense—use and improve such faculty as he has inherited—but may further acquire "what seems to be an absolutely unconscious feeling for things which have previously been conceived and recognised." Taste becomes instinctive. Whether or not an architect is likely to become a better artist from pondering these things is a question that need not be here discussed; but, at any rate, Mr. Clay's essay in physico-chemical aesthetics makes an irresistible appeal to the speculative mind; and minds that do not answer in some degree to that description are but of barren promise in budding architects. We have in type an abstract of Mr. Clay's paper, which we are obliged to hold over from want of space. We are the more sorry for the unavoidable delay, since we are given to understand that Mr. Clay's thesis has evoked, from at least one architect, a rather strong protest, which should delight the author of the paper, who, we feel sure, will be quick to recognise that in such a case antagonism is better than apathy.

Glasgow and Federation.

Glancing through the Building Trades Federation reports that appear monthly in this journal, and of which the third batch is contained in the present issue, we have been particularly struck by two features—the thoroughness with which master builders throughout the kingdom have been organised, and the unaccountable aloofness of Glasgow. We understand that the Glasgow employers are organised; but what seems strange is their apparent reluctance to join hands with the Scottish Federation. We must confess to some curiosity as to the reasons for this disaffection. Glasgow is acknowledged to be the chief centre of the building trade in Scotland, and it is therefore perfectly clear that so long as Glasgow stands out, the Federation in that country must remain lamentably incomplete. We believe that every effort has been made—particularly by Mr. Cameron, the able and energetic secretary of the Scottish Federation—to induce Glasgow to join, but hitherto without success, and we trust that ere long Glasgow will recognise the impolicy of isolation. If the interests of the building trade in Scotland are to be properly safeguarded, Federation must be made complete by the linking up of Glasgow with Edinburgh, Aberdeen, and Dundee. By maintaining an ill-advised independence, Glasgow is playing into the hands of the enemy. Glasgow men have the highest possible reputation for astuteness, and it is therefore superfluous to point out to them the perfectly obvious advantages of unbroken federation and complete unity of organisation. Their accession would, we are convinced, be of all-round benefit to the interests of building trades employers throughout Scotland. We are informed that a new scheme of federation for Scotland is now under consideration, and we should be very glad to find Glasgow taking an active part in it.

Very Civil Engineering.

A strong reform committee of the Institution of Civil Engineers is pressing for a practical application of several propositions that

were put forward in the presidential address by Mr. J. C. Inglis. That gentleman pointed out, in effect, that the activities of members might with advantage be extended beyond mere support of the Institution as a scientific organisation. Interpreting his guarded phrases into plain English, it may be said that the aim is to give the Institute more of the character of a protective union. There is to be more "discipline," and more "control of the practice of civil engineering." What form the "discipline" is to take is not yet clear; it is probably a matter for future deliberation; but there is not much room for doubt as to the intention of the next paragraph cited from the above-mentioned address: "I do not contend that membership of this Institution is the only criterion of engineering competence; but if the India Office and other great departments of the State are alive to the desirability of public money applied by these well-organised departments to engineering purposes being administered by definitely qualified engineers, I hope it will not be considered as going too far to suggest that in this year 1908 it ought to be laid down as a principle that all public money derived from rates and taxes should be, so far as it is applied in engineering construction, expended under the direction or control of definitely qualified engineers, as is already the case in many countries." The Institution, having taken care to secure the proper training of its new members, is now realising that professional status has its rights as well as its duties, and, having enforced the duties, it seems justly disposed to assert the rights. The reform committee, we gather, propose to add to the Institution's test for technical and scientific knowledge a standard of practical attainments; and they also, still following Mr. Inglis, advocate "provision for original search on engineering subjects," and for the elucidation or settlement of engineering principles. The title, "reform committee," often connotes wildly extravagant and subversive ideas; but in this instance, the reform will command the sympathetic interest of cognate institutions.



OLD ALMSHOUSES, QUAI VERT, BRUGES. FROM A WATER COLOUR SKETCH BY EDWARD HASTIE.

In some parts of Bruges there are to be found, in the last stages of decreptitude, yet withal quaint and picturesque, small groups of cottages or almshouses still inhabited by the aged poor. "Godshuisen" they are called, and they take us back to the days of the passing of Bruges. With the silting up of the waterways came the fall of the city and the dispersal of its commerce. Unemployment was rife and distress so prevalent that these almshouses appeared in large numbers and were quickly filled with the impoverished workers. They are still maintained in some measure by the Church and their inmates are an appreciable proportion of the population of the city. Each group has its own tiny chapel and some even aspire to architectural expression. Over the doorway of this example is a carved stone cartouche shewing a pelican feeding her young with the blood from her own breast.

R.I.B.A.

At the statutory examination held on the 15th and 16th October eleven candidates were examined for Certificates of Competency to act as District Surveyor in London, and one candidate to act as Building Surveyor under local authorities, the following passed, and have been granted by the Council Certificates of Competency to act in the respective capacities:—

As District Surveyors.

Frederick William Charles Barker, Stoke Newington, N.
Alfred Ernest Biggs, Ilford.
Henry Thomas Bromley, Lee, S.E.
Richard Thomas Grove, Wimbledon Park, S.W.
George Arthur Turner, Stoke Newington, N.
William Ernest Watson, Chancery Lane, W.C.

As Building Surveyor.

George Arnall, London, S.W.

Presidential Address.

(*Continued from page* 345, *No.* 717).

Of our noble museums and national collections we may be justly proud; yet an able writer tells us that these are having a baneful influence on modern art. There has been a resurrection of old forms and a tendency to copy, instead of seeking inspiration, and this checks creative power. This critic argues that Greek sculpture should not be considered away from its natural environment, nor Italian paintings away from the churches (often badly lighted) for which they were painted.

We have left many things undone, but we are treating our art treasures with respect. The accumulation of choice things at South Kensington we hope soon to see spreading through the noble Palace that Sir Aston Webb has, with so much wisdom and care, schemed for them; while at the British Museum spacious additions are now rising from the skilled hands of Mr. John Burnet. This work is begun in no mean spirit, for the imposing new facade will have a dignified approach (unusual in our buildings) by the clearance and rescheming of the adjoining property; this through the combined efforts of the ducal landowner and the County Council.

Turning from ancient things to new, we may be called upon to make a departure in design to meet modern construction in steel and concrete. The Romans were concrete builders, but they were not afraid of bulk, and their works, still with us, satisfy the eye with their proportion and substance. But the use of concrete has become a science; there is a Concrete Institution, and able men have made the finest calculations as to the work that may be done in concrete and ferro-concrete, with infinitesimal quantities.

We live in an age of hurry; groundrents are heavy, and a great commercial building must be erected in one year instead of three; thus steel-framed *construction* will be taking the place of *building*. We may now see such a steel structure in Oxford Street, a dry-goods store. Its foundations go down to the Twopenny Tube, and its roof is near the sky. This iron framework is now being enclosed with a gigantic order of columns which bring it within the laws of the Building Act and give it the aspect of a Temple.

The County Council have decided that next year we shall have a revised Act countenancing the thinness of walls that are not sufficient for their load in the new material.

Many of our colleagues are already building in the new method, erecting steel frames and filling in the spaces, the excuse being the saving of time. The buildings I have in my mind have been finished with architectural propriety, and the skeleton within is hidden and forgotten. But if this mode of construction becomes general, a style must be evolved adapted to it. It is not reasonable to make a show of stone walls, giving to the piers a comfortable width, when we know that the stone has no work to do. With our great adaptability, the eye and the mind may get accustomed to ferro-concrete posts and may credit them with their real strength. But shall we be satisfied without an apparent thickness and a breadth of wall-space for light and shadow? I am not anxious to anticipate so violent a change, and I trust it will not come about till my work is done.

The London County Council Technical Schools are to teach "architecture" in connection with their School of Building: and this will do good unless those gaining this elementary knowledge think they must thereby become architects, as, unfortunately, the bulk of South Kensington students feel they must become painters of easel pictures—a thing that was never intended when the schools were founded for training the taste of the artificer.

The growing interest in the crafts is quite a feature of our time, and it is interesting to find men with the higher education becoming workers in metal, gesso, and designers of stuffs and various decorative material.

In Scotland a Royal Commission was some time since appointed with the object of preserving ancient and historic monuments; and we are glad to say that a similar Royal Commission is now to interest itself in such memorials in England.

The Prime Minister has asked us to name an architect to serve on this Commission, and our able friend Leonard Stokes is to help in this cause. The intention is to schedule buildings and objects of historic or archæological interest, and to protect these from ruthless treatment or neglect.

The National Trust, on which we have a representative in Mr. W. A. Forsyth, is doing useful work on somewhat similar lines.

Following the decision of architects in Congress, we British architects have joined those of other nations in the demand that "architecture" be named with painting and sculpture in the scheme for international copyright. What value such right will ever have is difficult to say. Copyright at home would be worth more to us, but it would be hard to enforce. The gables of Scotland Yard have a broken pediment with an obelisk finial. It is so pleasing and piquant a feature that the form has been borrowed for various other gables that we see. It would never occur to the distinguished architect to demand a royalty from those who have employed this pediment; they would probably claim to have found their inspiration in the original Dutch gable. The ubiquitous copyist, though a nuisance, is a sincere flatterer.

I hope I am rightly informed in saying that the design of Mr. Knott, the fortunate competitor for the County Hall, has been revised, and is practically approved by the Council, with every chance of being carried out. We congratulate Mr. Knott heartily; he is to be one of our great architects, for opportunities make men. One is pained to think of the good men and true artists who have started with the qualifications for fine work, but on whom Fortune has never turned her face.

A matter that has been much discussed in this room for years past is the need for a comprehensive scheme for the changes that are always making in our great cities. We desire that the work of rebuilding, which never ceases, should be a part of one well-devised scheme anticipating the ever-increasing needs of a growing population. We might then have some day direct routes from east to west and north to south, fine approaches to our public buildings, and ready access to our parks and open spaces. New suburbs developed should be the result of forethought, instead of growing, as now, beneath the wand of the jerrybuilder. The Local Government Board is now framing a Bill to meet this great need, and our Royal Institute has addressed a letter to the President of the Board requesting that we may have "specific permission" to make representations and recommendations at inquiries held by the Board, before the approval of schemes for town-planning. We are all interested in the humanitarian side of this subject, but, as architects, we only ask to offer advice from the æsthetic or architectural point of view; endeavouring that new streets shall give fine vistas, being considered in relation to the public buildings or churches which they may pass in their route or to which they lead. The placing of public monuments and the laying-out of parks and their approaches are all matters about which judgment from the artistic side is essential.

We have already formed a small committee of men best qualified to help in this important matter, and they are putting in a definite form the principles that should rule, as well as their views and suggestions. Our Allied Societies will be invited to work with us; we shall thus be prepared to advise when our assistance is wanted.

Our Royal Institute is of venerable age, having enjoyed a Royal Charter for 75 years. The revised Charter for which we are applying is now before the Privy Council, and we hope it will be granted before the end of the year. Its main object is to secure that those practising architecture shall have gone through a proper training, having passed examinations as to their knowledge of building construction and studied the principles of design; but no examination will guarantee that a man is an artist in his calling.

Our by-laws we hope to improve, and especially in quickening the rotation of members on our Council. By shortening the period of service we shall enlist a larger number in our work, at the same time introducing young blood. I observe that those who are not with us in our deliberations are marvellously critical about our conclusions. I would have these sharing our duties. I believe in youth, and had there been a contest for the post of President I think my vote would have been for a vigorous young man.

The education of our future architects is, perhaps, the most important of our duties. The Board of Architectural Education was lately formed by men who were earnest on this subject, and it has done much towards bringing the various schools into touch, and to some extent to a common system of teaching.

But with these increased facilities for learning we may feel anxiety as to the future of the many promising youths who are gaining facility in architectural drawing. In earlier days, when the only method was to pay a premium of several hundred guineas and to be articled for four years, the choice of the calling was taken seriously, and there was some limit to the number of recruits. We are now daily declining applications from those who seek a place in an office and work for their hands to do. Our annual competitions for prizes show how many there are who can make a good set of drawings. The quantity is all-sufficient, and our effort must be to raise the *quality*, and especially to give a helping hand to the prizemen of most promise.

While new men are coming on and new names are added to our roll, we have to regret colleagues that have fallen out of the ranks. Among these are G. F. Bodley, E. W. Mountford, and John Stevenson, as well as Hugh Stannus, whose kindly presence had been so constant in our gatherings here. These all have been taken in the midst of their good work, for architects do not retire. Few of them can afford the luxury of idleness, and it would be found a poor exchange for the constant interest of our occupation.

Sir Aston Webb, in proposing a vote of thanks to the president, said that it was more than twenty years ago since he first met Mr. Ernest George, the occasion being an audience with regard to Mr. George's potential presidency. At the time, the speaker held the position of hon. secretary. He remembered he was shown into the presence, and Mr. George expressed his regret at his inability to comply. At length he assented, but wrote shortly afterwards withdrawing his promise, after which he again yielded. Mr. Ernest George had always done his utmost for the cause of architecture. With reference to the Town Planning Bill, Sir Aston described it as a sort of dual bill, as it included both housing and town planning. At the present time the Institute had no chance whatever of expressing an opinion upon it. The whole matter could be reduced to one point. Town planning was left in the hands of the Local Government Board, and decisions devolved upon its inspectors. He thought that the Institute should be recognised, and should be allowed the opportunities of stating its opinions. He trusted that the President of the Local Government Board would see to this. Turning to the ever-burning question of education, Sir Aston deplored the prevailing tendency to play for one's own hand, rather than to co-operate in a general scheme. Masters were naturally anxious to bring to a state of perfection their own particular school, and here, he thought, the governing body should step in. The Architectural Association had given encouragement to young men by offering a scholarship of £100. He thought it would be a great help if Universities could be provided with at least one scholarship from the Institute. The aspiring provincial could then come and study in London. The Institute was saving money, and could well afford it. He believed in encouraging and assisting architectural students to visit Rome and the Continent, and he hoped that some scheme with this object in view might be evolved. The Government might help the winner by finding him employment in a depart-

ment, or by placing him in charge of a building.

Mr. Reginald Blomfield, in seconding the vote of thanks, submitted the opinion that an architect should be in entire sympathy with his work. None could feel satisfied with the architecture of to-day. Possibly the next generation would reach the promised land. The public had to be educated, and this was a very difficult task. Ideals were certainly not as high as they should be. He had a high opinion of architects, but was not convinced of their capacity for pulling together.

The President briefly responded.

Notes and News.

The University College Calendar (University of London) for the session 1908-9, which has just been issued, is, from our point of view, chiefly noteworthy for the information afforded as to the curricula of the college in the fine arts, in engineering (mechanical, electrical, civil, and municipal), in hygiene, and more especially in the School of Architecture, of which Professor F. M. Simpson, F.R.I.B.A., is at the head, his assistant being Mr. Leslie Wilkinson, A.R.I.B.A. For the evening classes in architecture, the special visitors are Mr. Leonard Stokes, F.R.I.B.A., and Mr. Ernest Newton, F.R.I.B.A., while the instructor in the design classes is Mr. Cyril Power, A.R.I.B.A. The Calendar contains a set of plans showing the use to which the extension of the buildings is being put.

* * *

The historic house on Hampstead Heath, known variously as North End Place, Wildwoods, and North End House, is, it is stated, shortly to be put up for auction. The estate is mentioned in Domesday Book as Wildwood Corner. William Pitt, Earl of Chatham, retired to this house when stricken with the mysterious malady that necessitated his withdrawal from public life, and the room in which he secluded himself has still the same fireplace, hatchway, and cupboards as when he occupied it.

* * *

The alterations and improvements at Sandringham, which King Edward inspected recently, considerably enhance the dignity of the mansion. A new main entrance has been built, round which the new drive from the famous Norwich gates sweeps, and the old entrance is to be altered so as to lead direct to the gardens. Inside the house a redecoration has been carried out on an extensive scale, particularly in the Queen's private suite; and it was to see how this work had been carried out, and to ensure that everything should be in order, that His Majesty paid his flying visit to his old East Anglian home. Green and white are the prevailing shades that have been employed in these rooms. The new drive—the old one that was destroyed by the gales of last winter—is rapidly approaching completion. It is stated that the intention His Majesty had some time ago of building another storey to Sandringham has been abandoned since it is understood that York Cottage will shortly be available for its original purpose—to provide a bachelors' wing for the house when large parties are being entertained.

* * *

The King's birthday honours list, issued last Monday, contains nothing of interest from our special point of view, except the bestowal of a well-deserved knighthood on Mr. George J. Frampton, R.A., who has executed much architectural sculpture.

* * *

The proposal to connect Hull and Nottingham by means of a tunnel under the Humber is said to have been abandoned by the Hull promoters, in the absence of adequate support from Nottingham.

THE CONCRETE INSTITUTE.

At a meeting of the Council of the Concrete Institute, Sir Henry Tanner, I.S.O., in the chair, it was decided that the first two general meetings of the Institute would be held at the Royal United Service Institution, Whitehall, on Thursday, November 19th, and Thursday, December 17th. At the first-named meeting a paper will be read by Mr. Marsh, M.Inst.C.E. (Assistant Engineer, Metropolitan Water Board), on "The composition and uses of Plain and Reinforced Concrete." At the second meeting a paper will be read by Mr. Wm. Dunn, F.R.I.B.A., on "The Examination of Designs for Reinforced Concrete Work."

It has been decided that when the membership of the Institute reaches 500, the present subscription of one guinea per annum shall be raised to two guineas per annum for members. The membership already exceeds 300.

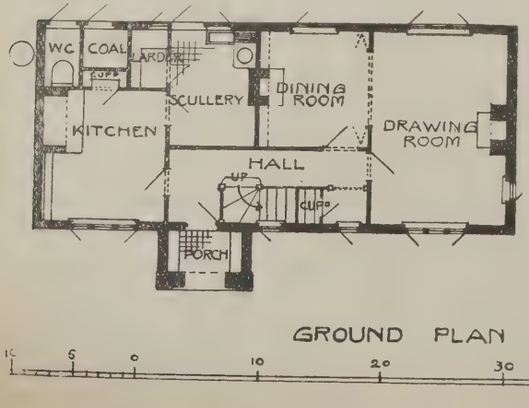
Standing Committees have been appointed for:—(1) Science; (2) Parliamentary matters; (3) Testing; (4) Mass Concrete; (5) Reinforced Concrete Practice.

The temporary offices of the Institute are at No. 1, Waterloo Place, London, S.W., and all communications should be addressed to the hon. secretary, Mr. A. E. Collins, M.Inst.C.E.

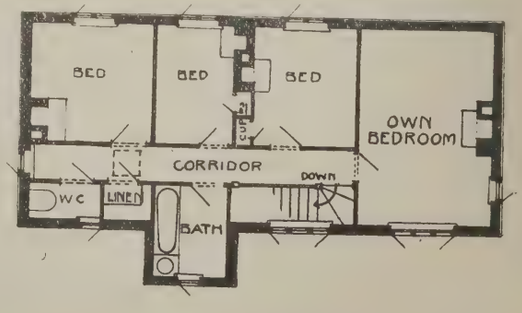


COTTAGE AT CHELSFIELD, ORPINGTON, KENT. H. LAING, ARCHITECT.

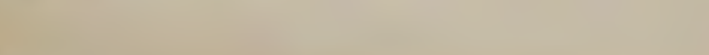
This cottage, occupying a commanding site, and with views on the West towards Farnborough Hill, Knockholt, and Dunton Green, has been lately completed at a cost of under £400. The living rooms are divided by folding doors to allow of more space on occasion, and an attempt has been made to add interest to the somewhat severe interior by the sparing use of copper enrichments on the staircase newels, and Early English glass in the landing windows. The builders were Messrs. Wm. Owen & Sons, Farnborough Hill, Kent, and the Architect, Mr. H. Laing, 3, Bury Court, St. Mary Axe, E.C.

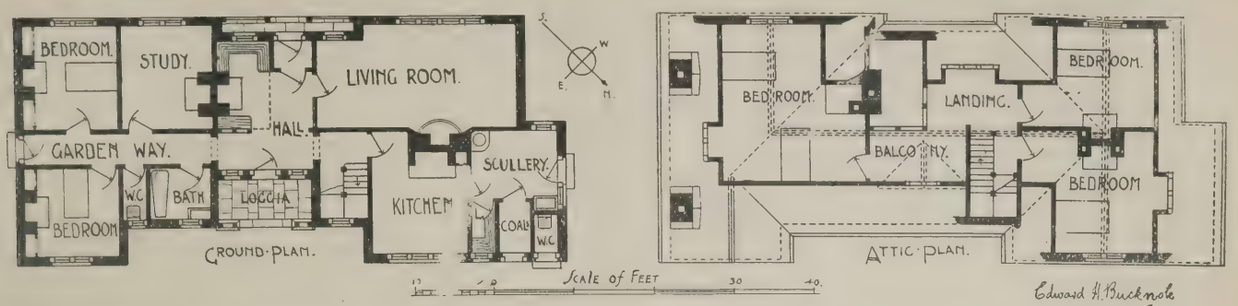


GROUND PLAN



BEDROOM PLAN





Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Nov. 14	WHITEHAVEN. NEW PUBLIC ELEMENTARY SCHOOL, Irish Street, for 700 children. Limited to Cumberland architects. Plan of site and conditions from W. D. P. Field, Secretary, Education Committee, Town Hall, Whitehaven. No statement as to premiums or deposit.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street, Strand, London.
Dec. 14	§BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W.T. Postlethwaite, Council Offices, Swinton, Manchester.

* *These competitions have been unfavourably reported upon by Correspondents.*

§ *The Council of the R.I.B.A. advises Members not to compete.*

International Architectural Competitions.

We reported in our issue of September 9th the twelve resolutions relating to International Architectural Competitions which were brought forward and approved of generally at the International Congress held at Vienna last May. At a subsequent meeting of the International Permanent Committee, the British representatives (Mr. Leonard Stokes and Mr. John W. Simpson) proposed that, in order to render the resolutions really effective, the various nations adherent to the Congress be afforded an opportunity of considering and confirming them. The proposal commended itself to the committee, and on the motion of Mr. Simpson, a resolution was passed that a copy of the resolutions be sent to each section of the Permanent Committee with a request (1) to consider them in detail, and return them to the Secretary-General (M. Poupinel, Paris), with any observations thereon; (2) to appoint one member of their section to meet the other delegates at Paris with full powers to discuss the resolutions and settle a final and definite report which should be held to express the views of every nation represented on the Permanent Committee. As it was particularly important that the delegate appointed to attend the meeting at Paris should be fully informed as to the views of British architects on the subject, copies of the resolutions were sent from the Institute to the Competitions Committee, and to the various Allied Societies, with a covering letter inviting suggestions and observations on the resolutions to be sent to the Secretary of the Institute not later than the 30th September. The replies of the various bodies were duly received and collated by the R.I.B.A. Competitions Committee, who added their own observations and sent the whole in the form of a report to the British section of the Permanent Committee. At a recent meeting of this section the report was adopted and Mr. John W. Simpson was selected, and has consented, to act as delegate to represent the views of British architects at the meeting of the International Commission to take place at Paris on the 19th November.



DESIGN FOR A BUNGALOW. E. H. BUCKNOLE, ARCHITECT.

This bungalow is so planned that the kitchen and offices are kept well in the background, though, at the same time, being not far from the front door. The ground floor bedrooms also are quite away from entrance hall. Hand-made, sand-faced roofing tiles, brick and roughcast and oak half-timbering, are the proposed materials of construction, whilst the large chimney-stacks form a distinctive feature.

Blackpool Library Competition.

We have received the following letter from an Irish architect:—

SIR,—The belated action of the R.I.B.A. in reference to above will presumably have the unpleasant effect for those who obey the ban of causing their entrance fees to be retained by the promoters. There seems quite a possibility of public bodies, and even individuals, being able to make quite a good income in this way, so long as the Institute Competitions Committee delays action until after the competitors have paid their deposits, and are well on with the schemes. Surely it is due to the members of the Institute and allied bodies, that all doubtful competitions should be dealt with with the utmost promptitude.

AN M.R.I.A.I.

ADDITION TO THE G.P.O., DUBLIN.

There are few visitors to Dublin who are not acquainted with the General Post Office, extending along Sackville Street from Henry Street to Prince's Street. Sackville Street has the great width of 150ft., and is one of the finest thoroughfares in any city of the world. The authorities lately acquired some old property in Prince's Street, and on this site the proposed works are to be carried out, the present front building not being interfered with. The extension consists of a new block 56ft. in length, faced with Ballyknocken granite, having a heavy cornice and balustrading to correspond with the style of the existing buildings. The new building, which is four storeys high, will have a depth of 120ft. The basement at rear will be used for workshops; the two large rooms on ground floor for a sorting office and postmen's room, and the other floors for various offices. The floors are to be carried on steel stanchions, and roof will be of reinforced concrete (expanded steel being used as a reinforcement), covered with Limmer asphalt. The architect for the work is Mr. Robert Cochrane, I.S.O., LL.D., F.S.A., Board of Works, and the quantities have been prepared by Messrs. Patterson and Kempster. The estimated cost will be close on £20,000, and a large number of Dublin builders, as well as some from Cork, Belfast, and England, lodged their tenders with the Secretary, Board of Works, Dublin, on the 2nd inst

Contractors' Notes.

The case of Smithies v. the National Association of Operative Plasterers came before the Court of Appeal last week. It will be remembered that the plaintiff, a master plasterer, of Birmingham, claimed damages and an injunction against the defendant union, its trustees, and Mr. Duckett (the Birmingham branch secretary), for combining to call men employed by the plaintiff out on strike, causing them to break their contracts, and procuring them not to make fresh contracts. Plaintiff also claimed damages for breach of contract against two workmen named Ecclesby and Forrester, who were under long contracts of service with him. The latter claim succeeded, £25 damages being assessed against each of the defendants, but the Lord Chief Justice held that the plaintiff had no remedy against the trade union, its trustees, or Mr. Duckett, and it was from this part of the judgment that the plaintiff now appealed. A preliminary point as to the retrospective effect of the Trade Disputes Act, 1906, was disposed of, and the appeal proceeded with. Mr. Montague Lush, K.C., and Mr. H. A. McCardie appeared for the plaintiff; Mr. J. A. Simon, K.C., and Mr. Clement Edwards for the defendant association and its trustees; Mr. Montague Shearman, K.C., and Mr. Ernest Wild for the defendant Duckett. At the conclusion of the arguments, their Lordships reserved judgment. We propose to publish a summary of the arguments and the judgment when the latter has been delivered.

* * *

A correspondent of the "Birmingham Daily Mail" has drawn attention to the large amount of Swedish joinery now being imported. Mr. A. W. Turner, President of the Socialist Fair Trade Party, replies rather sharply that: "So long as the building trades boomed, carpenters, and builders seemed to take the receipt of manufactured joinery from abroad as a matter of course, expecting that 9½d. an hour could be paid for fixing the imported joinery. That was all right during the boom, but cannot be all right for ever. The next stage will be the fixing of the joinery by youths and women at 4d. to 5d. an hour, and how can the Carpenters' Trade Society prevent that new departure? The Liberal Unionists have spent a lot of money merely enrolling middle-class non-artificer Liberals into Unionism of the type that supports Tariff Reform, but have lost sight of the fact that Radicals and Socialists still support what they term Free Trade, namely, free imports. When somebody spends, say, £100,000 in converting Socialists to Fair Trade, the necessary new tariff laws will be passed. The time and money now devoted to lectures and various methods of propaganda by the Liberal Unionists, being spent on the wrong section of the electorate, is simply wasted."

* * *

Grimsby Master Builders' Association.—At the last meeting of this Association, the following resolution was unanimously agreed upon:—"That this Association regret the delay in constructing a direct road from Grimsby to Immingham, and they hope the Town Council will do their utmost to expedite in every way a road being made as early as possible."

In the London Lord Mayor's Court, during last month, before Mr. Assistant Judge Jackson and a jury, Foster and Dicksee, Ltd., contractors, were sued by William Sellers, a general labourer, for damages for personal injuries.—For the plaintiff it was stated that in April of the present year he was out of work and went to the City looking for employment. He heard that the defendants were building premises in Lower Thames Street, and went there. At that time the workmen were at dinner, and he waited till they resumed. When the men returned to work, the plaintiff, together with a number of others who were out of work, also went in with them. They all went up a temporary staging towards the foreman's office, it being alleged by the plaintiff and his witnesses that this was the usual practice followed when men were seeking to be engaged. While a number of the men were on the staging, it suddenly collapsed, and the plaintiff, with many others, was precipitated into an excavation some 10ft. or 15ft. below. Both his legs were broken, and he was seriously and permanently injured. In all, about eleven men were injured by the collapse of the staging, and it was admitted that other actions were pending the result of the present case.—The defendants' counsel submitted that he had no case to answer, as his clients were not under any duty to the plaintiff. Negligence could only be a cause of action when the person alleged to be negligent had a duty to the person injured. The plaintiff and others were trespassers, and the staging collapsed through too many men being upon it. The staging was quite strong enough for the purpose for which it was erected. With one, or possibly two exceptions, all the men who were injured were men seeking employment.—In summing up, the judge left two questions to the jury to decide—(1) Was there any invitation or licence expressed or implied to the plaintiff to go on to the premises? and (2) were the defendants guilty of negligence?—The jury, after a lengthy consideration, failed to agree on either question submitted to them, and were discharged.

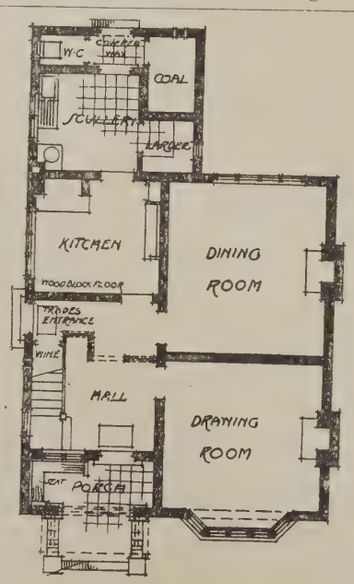
The annual meeting of the Sheffield Building Trades Exchange was held on Tuesday evening, November 3rd, the president, Mr. A. J. Forsdike, in the chair. The annual report and balance sheet disclosed a most satisfactory state of affairs, 63 members having been admitted during the year, the membership at date being 278. The financial statement showed that the club had just completed its most successful year. Every department showed advance, and all arrears of previous years had been wiped out, and a balance left to credit of profit and loss account, despite the fact that some £28 of extraneous expenditure, which might have been debited against subsequent years, had been written off out of current revenue. The takings were more than £100 in excess of previous financial year, and the subscriptions collected, which, like all other items, constituted a record, were £37 4s. up.

Mr. A. J. Forsdike was re-elected president, and Messrs. T. Roper and G. E. Powell were re-elected vice-presidents for the ensuing year, while Mr. J. D. Cook was re-elected treasurer for the sixth time in succession.

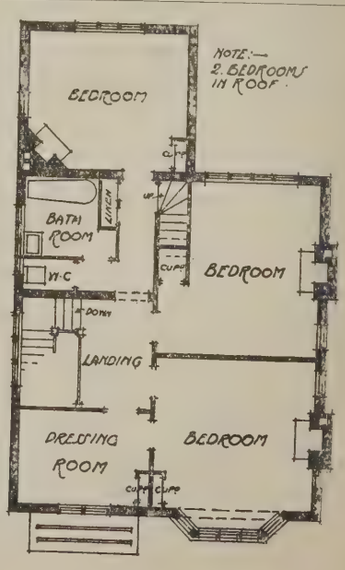
Our Plate.

The new bridge over the River Wear at Sunderland is the subject of a separate note elsewhere.

The exterior of the house in Nelson Road, New Malden, is carried out in white rough-cast, and the roofs are covered with red sand-faced tiles. The external painting is of an apple-green colour, with the exception of the porch, which is of Oregon pine, stained with dark-brown Solignum. Internally, a feature is made of the hall, which is lighted by a stained-glass window by George Wragge, Ltd., and is panelled to match the panelling of the staircase. The woodwork of the dining-room is of walnut; the other rooms have deal painted white. All details have been studied with due respect to simplicity and economy. The builder for this work was Mr. H. F. White, Kingston Road, New Malden. The architect was Mr. Harold Kemp, of 29, Malden Road, New Malden.

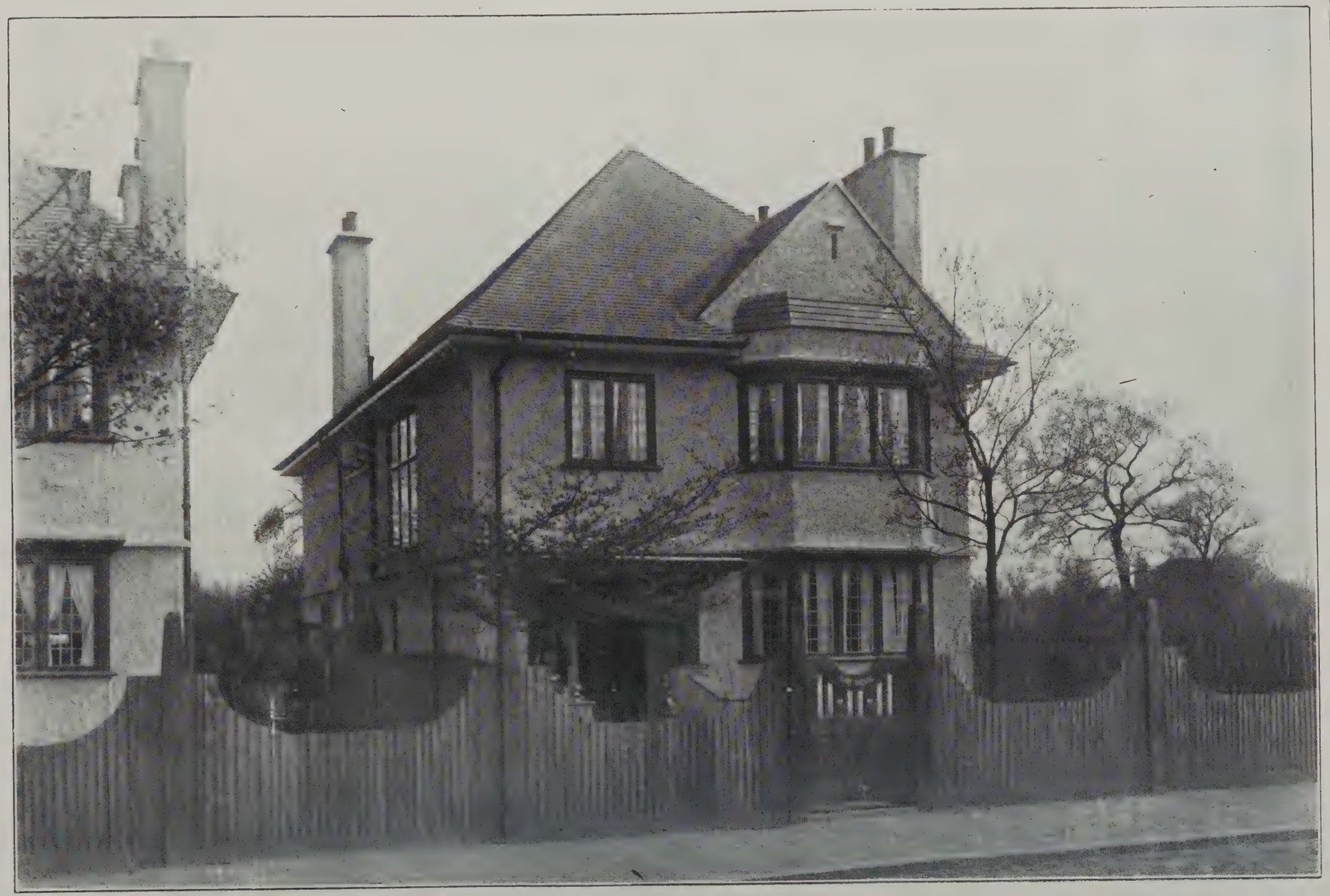


GROUND FLOOR PLAN



FIRST FLOOR PLAN

SMALL HOUSE. NEW MALDEN, SURREY. HAROLD KEMP, ARCHITECT.



SMALL HOUSE, NEW MALDEN, SURREY. HAROLD KEMP, ARCHITECT.



NEW BRIDGE OVER THE RIVER WEAR, SUNDERLAND. CHARLES HARRISON, CHIEF ENGINEER TO THE NORTH EASTERN RAILWAY CO.

Correspondence.

Swinging Radiators.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In the description of the new Manchester Royal Infirmary in your issue of October 28th, the following passage occurs:—"The originality of the swinging hot water radiator and the question of the constant wear and tear on the bearings owing to the weight of metal and water, are matters that are being watched with great interest by heating firms and architects." The meaning of this paragraph is plainly that the use of swing coils for hot water work is new and original, the inventors being presumably the architects of the hospital. The first swing hot water coils that were ever used were made in 1893 by Messrs. Slater and Co., and were put in under my direction at the Middlesex Hospital, where they have been working ever since. Since that time many swing coils have been used not only in England but in America, and the original design of Messrs. Slater has been freely pirated. A notable example of the use of swing coils is at the Derbyshire Royal Infirmary, where they are used, not for hot water, but for steam. Architects and heating firms have, therefore, had ample opportunity of studying the "question of wear and tear." KEITH D. YOUNG.

Cleaning down old Stone Buildings.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—As a Clerk of Works and stonemason by trade, I think I can answer the enquiry in last week's issue under the above heading. Whether you clean down the face of stonework by the old-fashioned method of scraping or by the sand blast or steam brush processes, the cleaned face offers less resistance to atmospheric conditions; consequently it shortens the life of the stone—it is like taking a Turkish bath: the pores of the skin are opened, and if brought into contact with sudden changes of temperature, the results are serious. With regard to a protective coat or solution for coating the stone after cleaning, I have tried most of those now on the market, but although a few protect the face of stone for a time, the treatment requires to be repeated fairly often.

Penge, S.E. R. CAMPION.

The L.C.C. and the District Surveyors.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am sorry that a paper so well conducted as THE BUILDERS' JOURNAL should have published a leader based on the cheap wit of unprofessional journals, as to the London County Council taking proceedings against itself. The action is by the District Surveyors' Association (Incorporated) against the Council, as a test case to ascertain whether the Council's schools are exempt from the provisions of the London Building Act, 1894.

HENRY LOVEGROVE, President,
District Surveyors' Association
(Incorporated).

The Architectural Profession To-day.

SIR,—I should like to say a word or two in reply to "Regular Reader" on the above, which appeared in your issue of Oct. 21st. He says that out-of-work architects and assistants ought to bind themselves together and approach our councillors with a view to their inserting in our by-laws "That *all* plans submitted to the council be prepared by architects. Now, Sir, this may seem logical enough to some on first sight, but let us look at it and see how it is going to react on some members of the building trade in general. Take a case of a man living in his own house. He thinks he can improve his premises by doing a little alteration in the shape of a new W.C. or wash-house. He is able to put his ideas on paper, and in such a manner as to conform with the building by-laws. Then I say how can "Regular Reader," or any other who is fair-minded, think it just to coerce a bricklayer, joiner, or plumber into engaging an architect for a paltry bit of an alteration? No doubt something in the direction indicated could be arranged, as, for instance, a clause to the effect that no plans be accepted for consideration by town councils where the cost of such buildings or alterations exceeds, say, one or two hundred pounds, unless prepared by bonafide architects. This would be much fairer, to my mind, towards the working class than that submitted by your correspondent. Again, he states that makers of building materials might possibly be approached in the interest of the profession. All well and good if this can be arranged, but again I must join issue with him. Makers of building materials, like the makers of anything else, do not care whom they sell to nor yet how much, so long as they get their money. I trust we may hear something further on architects' clauses in council by-laws from some others of your readers who are members of the building trade.

A BUILDER.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.
Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Manchester New Royal Infirmary.

MANCHESTER.—INFIRMARY writes: "I read with much interest your article on the above in THE BUILDERS' JOURNAL, and observed that there was no mention of a surveyor. I hardly think that in the case of a large contract like this, there would be no quantities taken out. Can you inform me in your correspondence columns as to whether the architects took the whole job through completely, or if an independent surveyor took the quantities. If the latter be the case, can you tell me who the surveyor was?"

Some of the personalia in connection with the Manchester Royal Infirmary were omitted, owing to exigencies of space. Mr. William Windsor, of Manchester, was the quantity surveyor; Messrs. Miller, Wilson, and Pegg, Manchester, were advisory engineers to the architects for electrical work; and Mr. Ed. G. Hiller, Manchester advisory engineer for the boilers and steam pipes. Mr. Alfred Turner was chief clerk of the works, and he was assisted by Messrs. F. Wilde and R. Patterson.

Telephone Wires Crossing Property.

DULWICH.—E. T. C. writes: "I have recently been appointed surveyor to an estate consisting mainly of house and shop property in a provincial town. The National Telephone Co. has carried over head wires across several parts of the property without having obtained wayleaves. The local manager strongly objects to applying for way-leaves, and contends that they are only needed for fixings. This is surely incorrect, and if acquiesced in would lead to easements, which, in view of the development of aerial navigation, etc., ought not to be allowed. I do not wish to threaten without being able to support words by action, if driven to do so. Can I safely give the Company notice to remove the wires within a reasonable time, or obtain a proper way-leave, and if they do not do so, cut the wires (or throw a wire over them), and so upset the service without doing any damage?"

The Telephone Company possess no statutory powers enabling them to enter upon any person's property without first obtaining permission, and you may deal with them as trespassers in a very summary way—if you so choose—by removing or cutting their wires or stays, etc. (taking care not to damage their property unnecessarily). I have, however, always found the Company you name are quite willing to enter into fair wayleave agreements where necessary, and I advise you to communicate with them before taking the extreme step of removing their connections. The amount of wayleave they should pay for each fixing depends upon its importance, one shilling per annum being the minimum rental and five shillings a fair sum for town work; in important cases it must, of course, be a great deal more. It is not usual to ask for wayleave for the fixings necessary for the use of a telephone in the particular building to which the attachment is made. You should take care that the wayleave agreement gives you power to terminate it on reasonable (say six months') notice, and that there is no indemnity clause placing liability upon you for damage caused by the poles or fixings, whether accidental or otherwise.

F.S.I.

Questions on Paints and Painting.

LEIGH-ON-SEA.—L. M. writes: "Is there any simple way of ascertaining whether white lead, linseed oil, and turpentine are pure? What is the best way to test ready-mixed paint? Some woodwork painted a bright red some time ago has now been finished with white enamel. For some inexplicable reason, the red is eating its way through the enamel. Please state cause and remedy."

White lead can be examined for purity by anyone who can use a blow-pipe. Place a small piece of the lead, the size of a pea, in a little cavity made in a piece of charcoal, and direct the blue part of the flame upon it. In a few minutes the sample will, if pure, be reduced to metallic lead, while no amount of blowing will have this effect if it is adulterated. There are several other tests which require some knowledge of chemistry, and the querist may be referred to an excellent book on the subject, entitled "Simple Tests for Painters' Materials," by A. C. Wright, M.A., B.Sc., published by Scott, Greenwood, and Son, 8, Broadway, Ludgate Hill, E.C. White lead when pure is put up in packages, marked "Genuine White Lead," and when such a mark exists and the package is unbroken, it almost invariably means that the contents really are pure. Adulterated white leads are marked either "Reduced White Lead," or "No. 1," or "No. 2," white lead. If you are unable to see the packages, and are still suspicious, demand to see the invoices, and note whether "Genuine" is used, or take a sample to a pharmaceutical chemist, and he will, for a

very small fee, be able to determine the question of purity for you, because lead can be analysed by any chemist, whether he has any special knowledge of paints or not. The testing of linseed oil and turpentine for purity requires considerable technical knowledge. Both are exceedingly difficult articles to deal with, especially the latter, which is now largely adulterated. Mr. Wright's book, above mentioned, gives the principal tests. The case of red penetrating through a superimposed coat of white enamel has frequently been met with during recent years, since the new reds or vermilionettes have been placed on the market. These reds are made from anilines, although there are one or two which are guaranteed not to "bleed"—the technical term for this defect. The red paint should have been removed before the white enamel was applied, and probably the cheapest method now would be to remove both. Two coats of shellac varnish, *i.e.*, the best grade of "knotting," given to the existing work, with a coat of enamel over, may prevent further trouble, but some grades of red will bleed through these. Messrs. Goodlass, Wall, and Co., Ltd., of Seel Street, Liverpool, have a special preparation or varnish, which is claimed to prevent bleeding, and this might be tried.

J.

Books on Romanesque Architecture.

ALDERSHOT.—"ROMANESQUE" writes: "Kindly name a good book on Romanesque architecture."

The term Romanesque is often rather loosely applied, but there appears to be no existing book obtainable which treats the whole subject relatively in its various phases, though Ferguson's "History of Architecture" gives the outlines. If English Romanesque is wanted, "Gothic Architecture in England," by Francis Bond, M.A., published by B. T. Batsford, 31s. 6d. nett, deals well with this; and the same author's "Classification of Romanesque Architecture," published in the R.I.B.A. Journal for November 21st, 1898, is also useful. Other books are Ruprich-Robert's "L'Architecture Normande aux XIe. et XIIe. siècles en Normandie et en Angleterre"; F. de Dartein's "L'Architecture Lombard"; and, if the classification be stretched to include Byzantine, Choisy's "L'Art de bâtir chez les Byzantines."

G.

Geometry for R.I.B.A. Students.

LEEDS.—D. B. writes: "Please give particulars of books dealing with 'Descriptive Geometry' or 'Projection of Solids,' suitable to work from, for the Intermediate R.I.B.A. examinations."

The books to be mentioned first in dealing with this subject must necessarily be those given in the List recently published by the Joint Committee of the Board of Examiners (R.I.B.A.) and the Board of Architectural Education. These books are as follows:—Binns, W. S., "Geometrical Drawing." 1864; Davidson, E. A., "Practical Perspective," 1886; McGoodwin, H., "Architectural Shades and Shadows," 1904; Spanton, J. H., "Science and Art Drawing," 1895. But it must be pointed out that it is by no means essential to procure, or even refer to more than one book if the enquirer has no further object in view than to pass the Intermediate examination, and for this purpose any of the ordinary inexpensive text-books, if properly studied, will be found sufficient. In the examination in question, the scope of this subject is, practically speaking, only such as is necessary for any architectural draughtsman in his daily routine, the questions being almost confined to (*a*) the simplest projections and sections of the simple curved and polygonal solid bodies and their interpenetrations; (*b*) the correct projection on plan of roofs with sides of varying pitch, together with the drawing of such sections as a quantity surveyor would need in obtaining the correct lengths of all the timbers, including those forming a curb or trimming around openings of various shapes; (c) the geometrical setting out of curved structures, *e.g.*, geometrical stairs and round-headed openings intersecting with straight or curved splays, curved handrails, etc.; (*d*) isometrical projection of simple solid bodies and structures; (*e*) the setting out of the curves formed by sections of the cone, and the practical application of the ellipse, together with occasional questions on mensuration of simple surfaces, such, again, as would be needed by any quantity surveyor. No questions have recently been set involving a knowledge of the methods of casting shadows, but sciagraphy is, of course, a necessary branch of study for the finished architectural draughtsman (McGoodwin's book on this subject costs 15s. net). The book I have found most useful in dealing with the subject of geometry and projection of solids is Angel's "Practical Plane Geometry and Projection" (7s. 6d. nett), as the plates are large and clearly drawn and figured. Such small and inexpensive text-books as Gill's "Imperial Geometry," in two volumes (1s. 4d. each), will serve the purpose where more expensive books are unattainable. The enquirer might refer to the number of this journal for August 8th, 1906, for a series of worked examples to the questions set at the preceding examination.

B. B.

Proposed New Works.

Aberdeen.—The Plans Committee of Aberdeen Town Council, at a recent meeting passed plans of the following buildings:—Dwelling-house on the west side of Burns Road, for Mr. John Buchan, builder; alterations and additions in connection with stable on the west side of Diamond Street, for Mr. Henry Ross, per Messrs. Watt and Davidson, architects; oil tank in yard on the north side of St. Peter Street, for the Pumpherston Oil Co., Ltd., per Mr. William Walker; two dwelling-houses on the south side of University Road, for Mr. George Garden, per Mr. John Milne, architect; six dwelling-houses on the west side of Sunnyside Road, for Mr. Joseph Shirras, builder; addition to fish-curing premises on the north side of Poynernook Road, for Mr. John Bordie, per Mr. James Park, builder; additions to premises No. 96, Huntly Street, for Messrs. W. and A. Hay, cabinetmakers.

Bournemouth. — At a recent meeting of the Buildings Committee, the plans recommended for approval comprised those for the erection of about seventy houses, besides a large number of additions and alterations.

Broadstone, Dorset.—The church is to be enlarged, and funds are being collected for that object, the cost being estimated at about £700. Sketch plans have been prepared by Mr. Walter J. Fletcher.

Chorley.—The Town Council has authorised a sub-committee to enquire and report as to a suitable site for the erection of public baths.

Christchurch, Hants.—The Guardians have formulated their reply to the criticisms of the L.G. Board on their proposed new infirmary. The Guardians adhere to their proposals as being sound and therefore economical.

Cockerham, Lancs.—It is proposed to restore the ancient parish church of Cockerham. A new roof is urgently required. The tower is mediæval, but the rest of the church was rebuilt, in Georgian style, in 1814, when Mr. Parkinson, the architect, made an interesting discovery. He found on the tower wall, above the existing ceiling, the ridge of the roof of the earlier church, much steeper than the present one, with an arched opening or window in the old gable, now blocked by the tower wall—indicating that the earlier church was in existence before the tower was built.

Dorset.—Two schemes of church extension in Dorset, in addition to the erection of the new church of St. Martin at Weymouth, are being started. One is to complete the church of St. Paul Westham, a suburb of Weymouth, at a cost of £3,000, and the other is to erect a church, with parsonage, to serve the Canford Cliff and Sandbanks district, for which an acre of land on the Choddesley estate has been offered by the Rev. Hugh Pearson.

East Grinstead, Sussex.—The County Education Committee is proposing to build a new elementary school here.

Hornsey.—The borough have approved plans for the following:—Six dwelling-houses in Berkeley Road, Crouch End, by Mr. F. Cottrell; amended plans for two dwelling-houses in Fortismere Avenue, Muswell Hill, by Mr. W. J. Collins; plans for three dwelling-houses in Stanhope Gardens, Highgate, by Mr. F. Collins; plans for alterations in and additions to No. 162, Stroud Green Road, by Messrs. Richardson and Gill; plans for fourteen dwelling-houses in Connaught Gardens, Muswell Hill, by Messrs. Eyles, Lewis, and Co., of 85, Gresham Street; amended plans for seventeen dwelling-houses in Southwood Lawn Road, Highgate, by Mr. A. G. Shearing, of No. 12, Fortess Road, Kentish Town; plans for alterations in and additions to "Hollydene" Cholmeley Park Highgate; plans for addition to "Sarnesfield" Bishopswood Road, Highgate, by Messrs. Southcott and Co., Highgate; plans for alterations in and additions to No. 8, North Hill, Highgate, by Mr. G. Green; plans for eight dwelling-houses in Oak Avenue, Hornsey, submitted by Mr. C. W. Boswell, 6, Redston Road; plans for six dwelling-houses in Hornsey Lane Gardens, by Mr. J. C. Hill, 14, Archway Road; plans for the laying out of the Northwood Estate, Hornsey Lane, Highgate, by Mr. J. C. Hill; and plans for dwelling-house in Creighton Avenue, Muswell Hill, by Mr. C. Tucker, of Page's Lane.

Littlehampton.—A shelter is to be erected on the Green. The Duke of Norfolk has given the site for it, and a right of road to it.

London.—An important scheme of restoration and repair, it is stated, is under the consideration of the Dean and Chapter of St. Paul's Cathedral, London. The committee of architects, whose report resulted in the great main sewer which was to have been constructed under the cathedral being diverted, have submitted a number of recommendations, the carrying out of which will cost at least £16,000. Suggestions are made for increasing the stability of the fabric at a number of points, and considerable repairs are proposed. Improvements in the heating arrangements are also recommended. The Dean and Chapter are in favour of carrying out the scheme of the committee, and they are now in communication with the Ecclesiastical Commissioners with the object of obtaining a grant towards the expenditure.

Manchester.—The Y.M.C.A building in Peter Street is to be demolished, to make way for a new structure.

Newquay.—An appeal is being made for £10,000 for the Newquay New Church building fund, towards which £3,400 has been paid or promised.

Nottingham.—The Education Committee have decided to erect a new school in Haydon Road, Sherwood, for 1,620 children; the schools to be erected in two blocks. They are also purchasing 1,200 square yards of land, at a cost, including roadmaking, of £700, for the enlargement of Berridge Road school; and the house and grounds adjoining the Clarendon Street school, for the future enlargement of those buildings. The house will at present be used as a centre for the medical examination of children.

Southall.—A site has been secured for the construction of a new church, to be called St. John's, at Southall, and the building operations will be begun shortly.

Sunderland.—At a meeting of the Building Committee held in the Town Hall on November 2nd, there were sixteen plans to consider, and among those approved were:—House, St. Alban's Street and St. Leonard's Street, H. E. Robinson, for T. Golding; two houses, St. Leonard's Street, H. E. Robinson, for R. Oliver; warehouse, Halsgrove Street, W. and T. R. Milburn, for Steel and Co.; and house, Sandringham Terrace, Monkwearmouth, John Batty. There was also a plan for the branch library in Church Street North, Monkwearmouth, the consideration of which was adjourned.

Swansea. — The Swansea General Purposes Committee have had submitted to them draft plans of the proposed new art gallery which Mr. Glynn Vivian is presenting to the town, and Mr. Moxham, the architect, has been instructed to indicate how the structure of the buildings will compare relatively with the existing buildings in the vicinity. The estate agent has submitted plans for laying out the Town Hill estate of the Corporation, allocated to the garden city scheme. The cost of roads, footpaths, and main sewer will work out at 35s. per house. The rent will be at the rate of £18 per acre, and it is proposed to erect 18 houses per acre.

West Ealing. — Plans have been passed for the completion of the Church of St. James, by the addition of a chancel.

Yarmouth.—The Guardians are about to proceed with a scheme of alterations at the workhouse at a cost of about £6,000.

York. — The Local Government Board have sanctioned the borrowing of £12,205 for building here a new secondary school for girls. The education committee have allocated £500 as the cost of levelling and preparing the site, for which the distress committee will provide the labour.

CONTRACTORS' SECTION

(MONTHLY.)

FRENCH SCAFFOLDING.

Some Impressions, and a Comparison with British Methods.—*(Continued).*

By A. G. H. Thatcher.

Figues 11, 12, and 13 give illustrations of most of the points mentioned; the first two are of buildings in Rouen, and the latter were taken in Paris. Fig. 11, as an exhibition of scaffolding, would be viewed with suspicion by most English workmen. Fig. 12 is of a far better type, but, nevertheless, falls far short of perfection from our point of view. Note may be taken from this photograph that the customary tub is not in use as a base to the standards, but reliance is placed upon a mortar bed.

Fig. 13 is a good illustration of the manner in which possession is taken of the pavement, and no provision made for the foot passengers. The photograph was taken in the centre of Paris, in by no means a quiet neighbourhood. Gantries and guarded footways, as provided with us, are evidently not deemed a necessity. Another instance of light scaffolding was erected on the east front of the Luxembourg Palace. Although the whole scaffolding was about 60ft. in height, the same lightness of construction was noticeable as in the smaller erections. This cannot be due to the absence of weighty material, for heavy blocks of stone were raised in the tower here.

So far as the safety of the workmen is concerned, due regard is paid to the ordinary rules of caution. A guard rail is very generally seen fixed, and this, together with a single board on edge, is relied upon to safeguard most platforms. Where the public traffic is to be considered, additional edge boards are fixed, even to the height of six or seven feet, completely casing the platform in. The fan guard does not find a ready acceptance, but occasionally one may be seen over entrances.

Braces are only fixed in such places where the scaffolding is in exposed situations. Tie pieces to keep the framework from falling away from the building are regularly fixed, but in a somewhat haphazard fashion.

With the dependent type of scaffolding, the inward end of the putlogs, where they happen to fall against a window opening, are simply tied to a prop, as shown in Fig. 14. The bridle system of getting over this difficulty is certainly stronger, but providing the scaffolding does not move at all, and the putlog is tied at each end, the French method answers its purpose.

Among the many minor details of scaffolding may be noticed the use of cripples, trestles, wall brackets, ladder scaffolds, and boats. The cripples are practically identical with those used here, but of trestles there are a greater variety, although used for much the same purposes. Fig. 15 is an illustration of one, which, when used in pairs, allow of a good platform to be laid for painters and plasterers. Fig. 16 is an illustration of an appliance which is similar in appearance to the ladders used by our window cleaners, with the difference that the sides do not meet at the top, but are about 12in. open. This opening, however, varies, and for a deliberate purpose. By fitting a pair together, as shown in Fig. 17, and bolting through, a serviceable trestle results, which has the advantage of a considerable base.

The Scottish wall bracket, which has met with severe condemnation on account of its dangers, has also its prototype, but a difference is made in the method of fixing. The northern bracket is fixed by a spike through its back plate. Consequently, the joint made with the wall cannot be seen. A practical man will appreciate the disadvantages of this. Our southern neighbours have got over the difficulty in this manner. The spike is first driven into the wall, and if a good connection results, the bracket is hung from it by cordage (Fig. 18). To get over the tendency to roll, a scantling is nailed at right angles to the back plate, and by thus widening the area of pressure, the arrangement is kept safe. A scaffolding on this principle was seen in Dieppe. It was fitted with a guard rail and edge boards, and served good purpose for the light work it was erected for.

Ladder scaffolds at the present time are



FIG. 12.



FIG. 13.

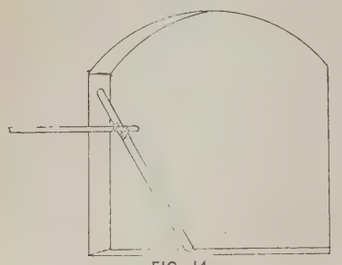


FIG. 14.

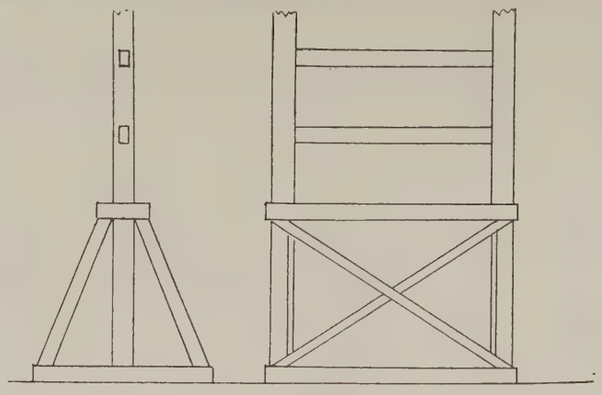


FIG. 15.

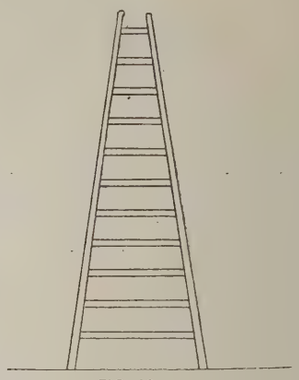


FIG. 16.

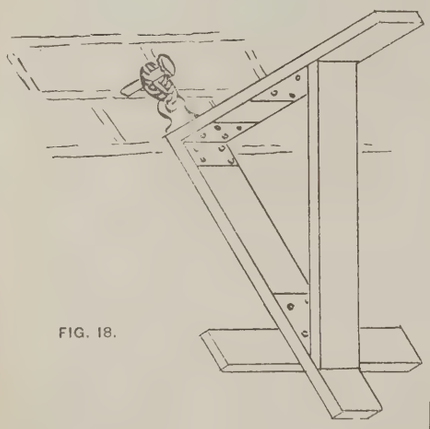


FIG. 18.



FIG. 17.

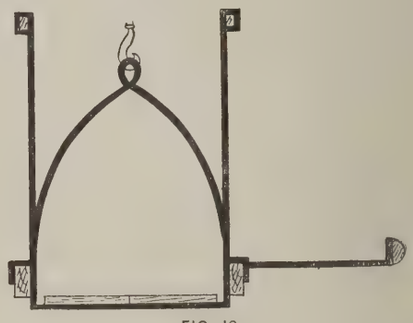


FIG. 19.

much in vogue, especially for examinations and repairs. They are on the same principle as those which were seen in London a few years ago, but which for some unaccountable reason went out of use, although, if rumour speaks correctly,

(To be Concluded.

NEW BRIDGE OVER THE WEAR AT SUNDERLAND.

The heaviest independent span for a bridge has now been completed over the River Wear at Sunderland. The bridge has two decks, the upper carrying the North Eastern Railway, and the lower the public roadway. The weight was three times that of the Forth Bridge central girders. The problem set for the builders, Sir Wm. Arrol and Co., of Glasgow, was to construct in position this immense bridge span without interfering with the river traffic, and they applied in a new way the well-known cantilever principle, which is embodied in the Forth Bridge. Having completed the 200ft. span, forming the approach of the main river crossing of 354ft., the great towers were set up, the right arm steel ties taking support from the approach spans, while the left arms, also of steel sinews, supported the girders of the river span as they were constructed bay after bay, from the ends of the land span. Some idea of the magnitude of this temporary steel work will be appreciated by the fact that it weighed over 800 tons, while the weight supported by the arms was 2,600 tons. For seven months an army of workers have been busy building this girder work into space from each end, and eventually the projecting ends met. Natural phenomena were important factors in the meeting of the centre arms. Every detail of the work had been designed with great precision to ensure accurate meeting when the temperature was 60 degrees F. Great variations, such as have been experienced in our recent summer, might have involved difficulties. Observations had shown that the ranges in recent days caused expansion and contraction of the metal to such an extent that the projectings ends rose and fell about ½in. to ¾in., while on hot days the ends moved laterally from the sum as much as 1½in. Provision was made so that if the day were abnormally hot or cold, the whole structure could be tilted or moved longitudinally, so that the ends would meet. Nature assisted so far, that although there was a cool S.E. breeze, the sun at noon gave sufficient warmth—the thermometer showed about 60 degrees F.—and thus there was gradual expansion, and the holes in the heavy connecting plates were exactly in line with the corresponding holes in the heavy connecting plates were soon a great array of bolts were put in, and later, were replaced by rivets, and thus the two projecting brackets became a complete unit. Credit for this precision in the scheme of operations is again shown by the fact that the girders are 42ft. high and that they are 32ft. apart.

The bridge, which has been designed by Mr. Charles A. Harrison, the chief engineer of of the N.E.R. Co., is, in other respects, interesting. It is, with its approaches, 1¾ miles long, and has cost about half-a-million sterling. The foundations are of great depth. Like those of the Forth Bridge, they consist of great steel boxes 63ft. long by 35ft. wide, sunk by air pressure to a depth of 75ft. below high water. While they were being sunk, the superstructure of granite was being built on the top, and thus the mass, sunk through silt to the rock bed, ultimately became 16,000 tons in weight. The steel work used totalled about 10,000 tons, the granite 32,000 tons, the sandstone 60,000 tons, and large quantities of bricks and other material.

Sir William Arrol took a special interest in the work, together with the managing director, Mr. A. S. Biggart, who took the principal direction of the operations, frequently visiting the works. The method of erection was schemed out in detail by Mr. Adam Hunter, Assoc.M.Inst.C.E., the chief engineer of the contractors, whose agent at the site was Mr. R. C. Macdonald.

Matters of Opinion.

No. 1 (continued).—The Increased Employment of Specialist Contractors.

An analysis of the letters already published on this subject, September 16th, October 14th, and October 21st, shows that the grievances of the contractors are:—

1. Contractors have no control over specialists workmen, while largely responsible for their acts and for the satisfactory character of their work.

2. Are required to provide "attendances" and "making good" for and after specialists, these amounts being not always foreseeable, and therefore cannot be properly priced when tendering.

3. Incur loss through delayed progress or completion of works, due to specialists being directly employed by building owner (through architect generally).

4. Complication of liabilities under Workmens Compensation Acts.

5. Contractor relegated to position of a mere agent, but remains responsible for acts of specialists whom he cannot adequately control.

6. Contractor often gets no profit on specialist work (owing to excessive competition).

On the other hand, architects' replies indicate that:—

a. Specialists are a necessity of the times, owing to progress of invention, providing ever fresh forms of construction or finishing, and their use should be regulated, not opposed. Contractors themselves so largely resort to subletting that they can hardly complain of the employment of specialists, and it is obvious why architects go directly to the specialist.

Specialists fall into two classes, viz.:—

Those for work which the contractor cannot himself execute, and

Those for work which some contracting firms can execute satisfactorily, while others cannot, both classes being represented among those tendering for most jobs. Consequently, provisional sums are included as a protective measure, but architects are willing to entrust firms with this latter class of work if they can show their fitness.

b. It is conceded that the increasing tendency of architects to introduce specialists often creates a situation exceedingly detrimental to the financial interests of the general builder, and that the responsibility of the contractor for specialist work ought to be strictly limited, and sometimes entirely abrogated; even to the extent of providing separate contracts for specialists.

c. Clause 20 of the form of contract issued by the R.I.B.A. in agreement with the Builders' Institute and the National Federation of Builders, sufficiently covers the complicated liabilities arising between contractors and specialists.

We think that the weight of the considerations set forth under group A, would be admitted by builders, except that they do not think it fair that the architect should go direct to the specialist for the purpose of saving the cost of the builder's commission or profit on that part of the contract, while continuing his responsibility in other respects for the specialist's work, and there is some indication in the correspondence that such is the case

The considerations set out under group B frankly admit the builder's grievance, but the cure suggested would hardly work well in practice, indeed, Clause 20 of the form of contract referred to under C, appears expressly designed to overcome the difficulties inherent in having sub-contractors about the works, who owe no consideration whatever to contractors.

When properly made use of by the contractor, Clause 20, which only becomes operative by and through the initiative of the contractor insisting upon every sub-contractor and (or) specialist entering into a sub-contract with the sole contractor, by which he accepts his share of all the sole contractor's responsibilities under the contract, is probably quite sufficient to remedy many of the grievances complained of; but this clause is not to be found in the majority of contracts.

Among the contractor's grievances which do not seem to be touched directly by any of the replies, are:—No. 1, relating to control of workmen; No. 2, provision of "attendances," etc.; No. 3, delay in completion; and No. 6, no profit on specialist work. As regards Nos. 1 and 3, Clause 20, previously referred to if carried out, gives some remedy against the specialist. As regards No. 2, architects, if approached, would probably substitute a provided sum to cover "attendances," etc., as, indeed, has been done in certain localities by friendly consultation with the local architects. As regards 6, the chief trouble arises from the differing degree of stringency with which architects and surveyors interpret the clause as to profit on provisional or specialist amounts, together with the severity of competition which causes tenderers to omit the profit item and trust to the generosity of the architect. Probably the difficulty would largely disappear if architects stated in the quantities that all provisional sums included a profit of so much per cent. to be paid by the specialist or allowed by the architect to the contractor at settlement of his account. A scale for this to be agreed upon between the Builders' Federation and the R.I.B.A., suitable to varying circumstances and sizes of contracts, instead of requiring the tenderer to add his profit as is now done. Having regard to the foregoing considerations, and especially to the frank admissions of the architect correspondents (see b), the question seems fairly narrowed down, and ought to be capable of solution by conference between the representative bodies concerned.

Federation News.

CONFERENCE OF SECRETARIES.

The Conference of Secretaries, as has already been notified in THE JOURNAL, took place at 31 and 32, Bedford Street, Strand, London, W.C., on Tuesday, October 20th, 1908, Mr. E. J. Brown (senior vice-president) in the chair.

CHAIRMAN'S ADDRESS.

Gentlemen,—I feel that I am quite the wrong man to take this place this morning. We have a President in Mr. Barnsley second to none, and I am sorry indeed that he is not here to address you, and to take part in the discussion that is to follow, because Mr. Barnsley is a man of very great tact, and he possesses that power which, unfortunately, I do not possess, the power of eloquence—and has a happy way of expressing himself. I am sure that we shall all of us feel that we have lost something by not having his services to-day. However, the honour of filling his place has been offered to me, and I accept it with the greatest possible pleasure. I must mention, to begin with, that I must be brief, because we have many interesting matters to discuss, and if I were to give what Mr. White has been pleased to call an "opening address," I am afraid I should attend more particularly to two of the points that are placed on the agenda, and I should infringe upon the rights of Mr. Moss; because if I had to preach a sermon to anyone, it would have as a text the word "organise."

It has even been our ambition here in London to organise, but there has always been one weak point in this question of organisation. One serious obstacle always crops up—*i.e.*, that there are unfortunately a large number of master builders of small, medium, or considerable standing in business, who hold themselves aloof from their local associations, thereby holding themselves aloof from the main body, which is the National Federation, and I do think that this is a matter of great regret—almost a matter of shame that there are men who take advantage of the experience, the money that has been spent, the time and trouble that has been given by the members of our London or other Associations, and yet do nothing at all to help those Associations. We feel that certain gentlemen of the building trade avoid this Society of ours. There is always the hope and belief that some of them will come in, but, so far, many firms have not come in, and they subscribe in no shape or form to our funds. This is a matter that the secretaries of the Associations might very well try to tackle. Members of the Associations feel that they have not the tact that you secretaries have in so great a measure. They go like a bull at a gate. They buttonhole the gentleman, and say, "Here, you must join the Association." He replies, "Oh, don't worry me," and nothing comes of it! I think that some of these difficulties might be overcome. We should thereby strengthen our local Associations enormously. The one thing that can be done to make a Federation such as ours successful is strenuous organising.

I take it that the secretaries and members here present are enthusiastic secretaries. I am sorry that there are not more present, but London, perhaps, is far away from some of the districts. I take it, however, that we have a very representative body of secretaries here, and that all are gentlemen who put their backs into the work, and mean to make their Associations, and with them the Federation, a power in the country and a success.

Gentlemen, there is another matter on the agenda which will take a good deal of discussion, namely, our official journal. A very great deal hangs upon this official journal. I do not know which gentleman is going to take the discussion of this in hand, but I would say that the success of the journal is a matter of the greatest importance, because the success of the journal means a great increase of power throughout the Federation.

Turning now to the question of finance, Mr. Nicholson said last year that he did not think it was fair and proper to assess men who would not make a return of their wages. I rather differ from Mr. Nicholson. Our funds in London have been built up very largely indeed by what I may call the magnanimity of our members. We have a lieu payment for those who prefer not to disclose their amount of wages' bill, and we assess them at a pretty tall figure. There is no doubt in my mind that these lieu payments have been largely the means of establishing a reserve fund for the London Association.

The work of getting in subscriptions to Associations is a matter for local secretaries to deal with. I am quite certain that this is no enviable position. A local secretary cannot insist upon a member making his return if that member refuses to do so. The secretary is in a very difficult position, and my sympathy is with him. The financial basis has been a weak point in the organisation of the Federation, and may continue to be for some time. However, I hope for better things in the future, and by means of the official journal we shall be able to show the weak spots of the organisation of the Federation, and may continue to be for local Associations, which go to make up the Federation.

With regard to the monthly reports, which we ask secretaries to send in regularly to the official organ, I hope the various Associations will make this monthly report an important thing—one

that will be of interest to everybody concerned, and that will make it absolutely necessary for every member to buy the journal. Half-a-dozen lines, at any rate, stating what has been done in your town should be possible, and I hope every secretary will at least do this, for his own sake and the sake of his Association and district.

I do not know whether it is a secret or not, but I am able to inform you that the London Association have practically arranged to take offices elsewhere, and in going to these new offices we hope to take the National Federation with us. It is of some consequence to the Federation to be in a building in conjunction with the London Master Builders' Association, Builders' Benevolent Association, and the Builders' Institute, and we have obtained very fine premises, premises which we can look upon with a certain amount of pride, where we can hold our meetings, and meet friends from the country for conferences and other purposes.

There are other matters of considerable importance which we shall discuss this afternoon. There is the question Mr. Nicholson touched upon last year. I do not know what progress has been made in regard to the use of the form of contracts with architects in the provinces. Many architects will not use the National form of contract. It is absolutely necessary that not only the members, as builders, but also that the secretaries of Associations should do all in their power to insist upon the National form of contract being used. The worst cases seem to occur in Ireland, where they have the most terrible difficulty with regard to the correct form of contract. If there is any thing the Federation can do to assist them we shall be only too glad to know of it. The great thing, however, is to see if we cannot persuade our own architects at home to adopt the proper contract form.

I feel—we all feel—that the position of the secretaries just now is a very difficult one. The pay is not what it might be, but the pay, gentlemen, cannot be improved unless you do your utmost to increase the membership in your districts, and to urge outside builders to join the Associations. I look forward with absolute certainty to the time when our Associations will be in the happy position of being able to say to their secretaries, "Your salary has been little, but we have the greatest possible pleasure in doubling it." Some day we shall reach that happy millenium, and the doubled figure will not be zero, but will require three figures to make up the total.

I thank you heartily for asking me to be your chairman to-day. I am convinced that such conferences as these are of the greatest importance to the Federation. The papers are prepared by men who know their subject, and I think that all association secretaries should make a point of attending this yearly conference, and in that way have the pleasure of meeting their colleagues from all over the country, and also the advantage of an interchange of ideas which must result in a renewed keenness and determination. It lies in the power of each secretary to make his Association a credit, a strength, and a power in and to the National Federation.

MR. WHITE

I have several letters of apology from secretaries. I will not trouble you by reading them all. They are from the following:—Messrs. James Grundy, John Tomlinson, J. McAulay, J. Wilkes, H. Williams, J. Hall, F. B. Roskell, A. Wright, and Mr. Porter, of Derby.

DISCUSSION OF PROPOSED MODEL RULES FOR A LOCAL ASSOCIATION ADJOURNED FROM 1907 CONFERENCE AND ANY RESOLUTIONS ARISING.

MR. DEAN (Oldham).

Mr. Chairman and Secretaries,—I am very gratified to find, as a result of the paper which I read at the 1906 Conference in Birmingham, that the National Council have formulated and submitted a model set of building rules for local Associations in accordance with the resolution which was passed at the 1907 Conference in London. This model set has been before the secretaries for the last twelve months, and now, subject to any alterations and conditions suggested by this Conference for the consideration of the National Federation, we ask you to approve them, and then to submit them for consideration to the National Federation. I have also to suggest that an addition be made to Rule 10, by the insertion of the following words:—

"*Members desiring to engage operatives shall not solicit such operatives to leave the employ of other members by offering better terms or otherwise.*"

This rule has been adopted by the Oldham Association under the heading "Soliciting operatives." We have a case on record where a member invited an employee of another firm to leave his employment by offering a higher rate of wages, and this was done in spite of the fact that the employee had no desire to leave. In this instance the Executive imposed a fine of one guinea. Of course, the rule is not intended to prevent a man working for another member. It is only to prevent, if possible, the soliciting of operatives who are satisfied with existing positions. It may be argued that this should be left to the good sense of the members. Where, however, there are a large number of members to deal with, it is scarcely wise to leave anything out of a model set of rules.

MR. WHITE.

Perhaps someone will move a resolution that such a rule, as indicated, be embodied.

(Mr. Dean did this.)

MR. SMITH (Sheffield).

Mr. President, I have much pleasure in seconding this resolution. It is a rule that we have embodied in our rules in Sheffield; and it is a rule that is honoured by time. The Sheffield Association rule is:—

"*Members of this Association shall not induce any other member's workmen to leave their employment, or set on men who have left their last employer in an improper manner, nor shall they employ any workman or boy out on strike or locked-out from the workshop of any member during the continuance of a strike or lock-out.*"

MR. BIGWOOD (Birmingham).

Is this rule necessary? I have been secretary of a Builders' Association for 25 years, but I do not think I ever heard of a dispute on this point raised. It seems to give such a low opinion of the members of the Association that I think it would be better left out.

MR. VOSE (Bolton).

I have had to adopt a similar rule with regard to our people. I would, however, suggest to Mr. Dean that "workmen" or "employees" should be used instead of "operatives," as men who are not members of Operative Societies do not like to be called "operatives."

MR. HOPE (Northern Counties' Federation Secretary).

What we have to keep in view is to produce a fair model set of rules. We should not alter the rules to suit the peculiarity of any Association or district. If we do, we shall destroy the character of the model, and it will become a particular set of rules rather than something that is general, and can be accepted by every Association. There are several difficulties in working the rule under discussion in some districts. A man might have a large contract, and advertise for men; that should not be such a breach of the rule. If we can endeavour to make these rules as generally useful in their application as possible, they will fit every Association.

MR. AMPHLET (Midland Centre Federation Secretary).

I support the amendment. The more we can put into these rules the better. It is much easier to eliminate than to add. We had this rule before a large number of Associations. In Birmingham we do not want the rule omitted, and other Associations find it useful. The rules are a model set—not intended to be a rigid set, but to be a pattern and example, and I think the more we can put in the greater opportunity we give of suggestions, and I support the amendment for that reason.

MR. CAMERON (Scottish Building Trades' Federation Secretary).

I have had experience of an employer falling on bad times. His employees found employment elsewhere, and when he had work again he offered them ½d. and 1d. more than standard rate to get them back. We have no rule to regulate this. If the rule is objected to in any particular district, it should be left to the different Associations to act as they wish.

MR. DEAN (Oldham).

Responding to requests, read the amended rule:—"*Members desiring to engage employees shall not solicit such employees to leave the employ of other members by offering better terms or otherwise.*"

MR. BULLEN (Liverpool).

I hesitate somewhat to venture to express an opinion on the question of forming rules when I have before me a gathering of secretaries, whom we employers consider are experts in this matter; but I know in my little experience in Association work that one of the greatest difficulties we have to deal with is getting employers in some cases to join our Association, and in other cases to try and induce some of those who are members to give up their luke-warm attitude. We legislate too much altogether. Our rules are continually being added to, and I do not think in the majority of cases with any good effect. I have not read the set of model rules, but judging by the space they take they are far larger than they should be, if we are going to send them out as model rules to every Association. We cannot attempt to legislate for every contingency which will arise. The rules will become like a family Bible, and I suggest leaving matters of this kind to the honour of our members. We must trust one another to some extent. I would suggest that Mr. Hope's advice is best, and that we do not press the matter any further.

MR. WHITE.

Mentioned that Rule X, page 11, "Unanimity among members," etc.—"*In order to preserve that unanimity so*

essential, etc.," largely met any particular cases which were not covered by specific rules.

MR. BIGWOOD (Birmingham).

These rules to be adopted must suit the needs of every Association.

MR. R. SMITH (Sheffield)

drew attention to Rule VII., par. 3:—"*Ordinary members shall have the option of having the amount of their subscription assessed at — guineas per annum in lieu of making the aforesaid return.*" This is in direct contradiction to Mr. Nicholson's remarks at the Conference last year. At Sheffield we are not willing to allow a man to have the option of having such assessment made. Returns can be treated as private and confidential, and they should not be known even to the president and treasurer. I have the greatest objection to anybody but the professional auditor and secretary seeing the returns. I move that this clause be deleted.

THE CHAIRMAN (MR. E. J. BROWN).

My experience is that Mr. Smith's suggestions with regard to the treatment of returns would be, practically speaking, impossible. The secretary of an Association is a builder in many cases, and he would see these returns.

MR. DAVIDSON (Yorkshire Federation Secretary)

drew attention to Rule VII., par 4:—"*These returns shall include all wages paid to foremen and workmen, also all wages paid to sub-contractors (except those nominated by architects), who contract for labour only, within the radius covered by these rules, and shall also include all wages paid to workmen sent from this district to work outside the radius covered by these rules. Wages paid to clerks not to be included.*" By some local people a large proportion of work is done outside the radius covered by their own Association. They do not become members of the Association within whose radius the work is performed, and so their Association does not get full returns of the wages for the work they do. There should be a rule that a member should pay for this amount of work into the funds of the Association he is actually a member of. We ought to dispose of these rules so far as this Conference is concerned. I have given careful thought to the whole of the rules submitted, and think the classification is excellent. We have to thank Mr. White, as well as the Council, for the trouble and attention they must have involved in drafting these rules. Rule VII., though, is causing considerable misgivings.

After some further remarks by Messrs. Hope, Smith, and the Chairman,

MR. MOSS

proposed an amendment that the model rules should be referred to a Committee of Secretaries, consisting of National and County Federation secretaries, for consideration, and then recommended to the Administrative Committee. This was carried.

THE CHAIRMAN

then put the amendment as a substantive motion: "That this matter be referred to the secretary of the National Federation, together with the secretaries of the Centres and Federations for consideration and then recommended to the Administrative Committee."

Resolution carried.

THE OFFICIAL JOURNAL. WHAT IS THE BEST METHOD OF OBTAINING GENERAL SUPPORT FOR IT?

Suggested by the Committee of Lancashire, Cheshire and North Wales Federation.

MR. HALL (Bury)

introduced this question, and after a short discussion, a resolution was proposed by Mr. Moss (Liverpool), and seconded by Mr. Richards (Newport, Mon.), which seemed so adequately to meet all the difficulties, and while conserving to Federation subscribers the most favourable terms as to price and delivery, provided suitable remuneration to secretaries for their services in obtaining subscriptions, that it was unanimously agreed to, and recommended to the Journal Committee for confirmation. The full particulars to be communicated by circular to secretaries as soon as possible. The members present expressed their intention to do their utmost to support the Journal in every way.

Mr. BULLEN,

Mr. Chairman and Gentlemen: I have come up to London specially on this matter, at my own invitation, because, from events that have taken place in my Federation of Lancashire and Cheshire, I did not anticipate such a happy ending to the discussion as that we have arrived at. I have thought much about it, and I am very pleased that the result is what it is. Speaking from the employers' point of view, and as one who has taken deep interest in Federation matters for some time, I have looked for years for the time when we should have a Journal which we could call our own. We all know that the Journal Committee which was appointed has worked very hard. It is the third journal we have had negotiations with, and I hope it will be most successful. I feel, so far as employers are concerned, we have great cause to be thankful, and we have one duty to perform, and that is to support the Journal and the arrangements which have been made by the Journal Committee. I was surprised at one of our Administrative Committee meetings at Manchester of the Lancs. and Ches. Federation to be told by one or two secretaries that they did not intend to do anything to help on the Journal. This was also a blow to Mr. Smethurst, who was sitting by my side (I happened to be in the chair), and I could not help feeling that, as president of that meeting, if the matter had come to that position that we were going to be told by our secretaries that they were not going to help on this matter and that they would go against it—well, if that was the position I would create another. If any Association or Federation I am connected with is going to take that position we will have either new presidents or secretaries. I have heard several objections already given both by secretaries and members of the Associations against the Journal, and not one of them worth anything. One of our leading members in Liverpool says the greatest fault with the Journal is that the Federation news is printed in small type, and he will not subscribe. I felt inclined to hit the man. Mr. Hall has heard that some members in the trade do not feel inclined to spend time in reading technical matter. Then I say the sooner they get out of the building trade the better. With regard to the subscription, there is no necessity for the fuss made about it. It is a personal matter. I have taken the paper for some time from a local newsagent. I have had it sent to me every Wednesday, but as soon as I heard of the arrangement that had been made to represent us officially, I said I was sorry I could not take the paper any longer through the newsagent, but that I should take it through our local secretary, although it was costing me more money. If it had been £2 something I might have considered the cost, but for a matter of 2s. 2d. it was ridiculous. Mr. Moss made the remark that the secretaries should accept the terms offered by Mr. Hastings. Well, they have done so. I want to give this warning. It is not true, I know, at least I hope not with the secretaries in this room, but I feel that many secretaries, speaking of the country at large, are beginning to look at matters of this kind too much in their own interests and not in the interests of the Association, and while I think the better they are paid the better secretaries we shall get—and we want better ones—the point I want to mention is that this scheme is one belonging to the Builders' Association and to the National Federation, and not to the secretaries, and it has got to go! As secretaries you have already given your word that you will make it go. The secretaries who have not considered it wise to come here to-day will also have to help, or there will be some more plain talking on the matter. You secretaries should allow me to move a vote of thanks for you to Mr. Hastings for the way he has met you in this matter with a view to overcoming this difficulty.

MR. HASTINGS, the Managing-Director of THE BUILDERS' JOURNAL, spoke, thanking the secretaries for the way they had received his suggestion, and for their promise of loyal support to the Journal.

On resuming in the afternoon, a number of papers were read, two being by Mr. A. G. White, the National Federation Secretary. These we propose to give in these columns during the next few weeks, including in this issue one only by Mr. White on "Federation Benefits." The National Secretary's papers were the last on the agenda, and this one is given a little out of its right order:—

Federation Benefits.

To the National Conference of Secretaries in 1907 I presented a paper entitled "Association Benefits," which was subsequently issued in pamphlet form for the use of secretaries when canvassing for members.

On that occasion a suggestion was made by the Secretary of the Midland Centre (Mr. Amphlet) that it would be useful and helpful to have a paper submitted this year, setting forth the benefits accruing to local associations by becoming affiliated to the National Federation through a county federation. In pursuance of a promise I then gave the following is submitted:—

Since the Federation is essentially a union of local associations, and the greater includes the less, so a Federation, provided it is efficiently conducted, can confer all the benefits which a local association can confer (see paper, "Association Benefits"), but on a larger and more influential scale.

In addition, a Federation is capable of conferring certain further benefits which could not generally be secured by a local association. If, however, a federation is to do this it must be efficiently conducted, and, as I have already shown in regard to local associations, certain things are necessary (see paragraphs 1 to 10 in paper on "Association Benefits"), and they

need not be here repeated, beyond saying that they are as necessary to a federation as they are to a local association.

The additional benefits referred to may be stated as follows:—

The prestige due to increased size enables a federation to negotiate on equal terms with other federations or national associations, whether of workmen, architects, or public bodies, not to mention its larger influence on individuals or firms. A local association has not this advantage. A federation permits such important matters as maximum rates of pay in given areas, to be dealt with on general principles and kept under reasonable control. Prevents sectional attacks by local branches of employees, and makes a national scheme of conciliation possible. Enables a contract agreement of national applicability to be negotiated and its use extended and maintained, exercises a wholesome restraint on the fads of individuals, whether architects or clients, and enables unreasonable persons to be brought to a sense of their limitations. Enables pressure to be applied to public bodies in restraint of their tendency to start and maintain works departments. Local association can do this, but to a much more limited extent. Enables ministers or government departments to be approached and influenced to afford reasonable opportunities for the builders' side to be heard and appreciated when legislation affecting the interests of the building trade is before Parliament, or when additional trade regulations are about to be introduced.

Where collective bargains are in question, the larger body of the federation can generally offer larger business and obtain better terms than can be done by a local association, while the existence of the National Federation makes possible a very large and advantageous scheme of insurance if the membership desire to improve their position in this respect.

Encroachments, whether by trades unions or others, can be resisted more successfully and at less cost by a federation than by a local association, while the control which a federation exercises over each local association in regard to granting advances of wages, makes for greater uniformity in the average wage level, and prevents hasty and ill-considered variations in wages or rules, and generally prevents or controls abuses of any kind.

Where it becomes necessary (as has been the case on numerous occasions), to grant financial assistance to individuals or to local associations who are contesting a principle, it need hardly be said that the federation reserve fund enables such assistance to be given at a less cost to individuals than would be the case if the whole burden had to be borne by any local association.

Generally a federation can act with a much greater prestige and effect than can a local association, and in any case the local association feels strengthened and encouraged in its own actions if it feels that it has behind it the opinion, power, and influence of the larger body.

One of the most powerful factors in influencing the action of individuals, public bodies, and even Parliament itself, is a clearly expressed public opinion.

The expressed opinion of the members of any great industry on any matters affecting that industry must have an important influence in forming or modifying public opinion.

There is no more effective way of giving expression to the opinion of the building trade than by resolutions passed at local meetings, confirmed at county federation or centre meetings, and approved and adopted at national meetings, and subsequently placed before the public in the columns of our federation journal; also the excellent system adopted by our journal, by which monthly reports from every part of the federation are encouraged affords every facility for the rapid dissemination of all kinds of information likely to be useful to the membership. Federation, and federation alone, has rendered this possible, and placed at the disposal of the building trade an effective method of making its voice heard.

As to future possibilities, these are obviously with the federation; the continual increase of facilities for rapid intercourse in this country is making our island a very small place so far as regards time and distance, this in its turn extends the area over which each local employer can, may, or must extend his operations, and the more he so extends the less his own local association is able to help him, and the more he has to look to the County or National Federation for any assistance or influence he may need.

As regards legislation, too, the future is full of presage of Socialistic reforms which are likely to bear hardly on industries of every kind, and will demand the most unceasing vigilance if disaster is to be avoided. It is to the extent and strength of combination that employers will have to trust to defend the interests of this great industry, and in the Federation with its democratic and representative constitution and its power of expansion will be found the best weapon if only the grit to use it be forthcoming.

These seem to be the chief benefits which affiliation to a federation confers on a local association and its membership, and they are well worth its cost.

A. G. WHITE.

MR. SMITH (Sheffield).

I have to thank Mr. White very much for the paper which he has given us, and it is a very good addition to the paper he gave last year. I notice he gives the point her about the Federation being better able to deal with matters which crop up than the local bodies. That is perfectly true, and it should be held out, of course, as an inducement to increasing membership, with the fact that the member who is the member of a local association becomes also a member of the Central Federation and National Federation. To carry the argument a little farther, I think too that we ought also to be members of the International Federation. Our National Federation goes so far as to mould into a homogeneous whole, but we ought to go further afield and join the associations on the Continent. I am pleased to see that Mr. White is going to Paris to the International Conference there. That International Conference gets a fair amount of prestige by their Congress, also the direct representation of the various Government and Board of Trade officials. This official connection, I consider valuable, as we should not then be so much like people who are crying out in the wilderness. The Government officials would be directly in touch with the builders' associations.

MR. AMPHLET (Midland Centre).

I am partly responsible for the production of this paper, and it will not be altogether out of place if I second the vote of thanks. I found, as secretary of the Midland Centre, three or four years ago, there were a number of associations in the Midlands who were not affiliated to this Federation, and the reasons that one might use to persuade such associations to join the Federation have been well set before us by Mr. White in this paper. He has exactly answered the question that I put, and I am sure that the paper will be of great service to us in bringing the associations I have referred to into line.

Market Reports.

We have received the following letter from a well-known firm of contractors:—

"We cannot say we find the prices current of builders' materials published in THE BUILDERS' JOURNAL of any use. Prices and materials vary so very greatly according to the point to which they are delivered, that even if your prices were accurate for delivery to any one spot, they would be quite misleading for other places. The prices, moreover, as far as we have checked them, do not seem to be very useful. Take the item of 5s. 6d. for Thames ballast. A casual enquiry by telephone on Saturday gave us a price 4s. 4d., delivery in cart in London. We certainly should not, ourselves, and we cannot think that any other contractor would, rely on any price in such a list for tendering purposes. If an exact price is wanted, it is a very simple thing to write to a maker for a price. If an approximate price is wanted, the telephone enables one to get such a price in five minutes from any merchant. Moreover, we do not think that any merchant would give you the real price of materials for the purpose of such a list, because the fluctuations in ordinary material, such as Thames ballast and cement are very considerable, and each order stands on its own merits, and is governed by the status of the firm ordering, the quality of the material which the merchant supplies, and most important of all, the point to which it is delivered. Speaking for ourselves, we never refer to the prices current in THE BUILDERS' JOURNAL, or any other paper."

We publish this communication because it is typical of many that we have received during the last two years; and it shows that it is almost impossible to give accurate rates for all parts of the United Kingdom. Moreover, materials now change hands so often, as the result of special quotations, and deals are so frequently effected quietly and without reference to current market rates, that the latter are apt to be more misleading than useful. A brickmaker will quote specially low terms to clear his yard; three or four cement firms will give prices for a certain quantity required for some job; and one of them will generally accept a lower offer from the contractor; timber merchants or brokers will quote realisation prices for partially mortgaged stock, and so on. Special quotations rule so largely now that we contemplate dropping the feature of market reports in THE BUILDERS' JOURNAL. We have much other useful information for which we want space, and if market prices are not useful, then the sooner they are abandoned the better. At the same time, we desire our readers to have a say in the matter. If the majority find the prices useful, we will certainly continue to give them. We hope therefore to receive opinions on the subject during the next few weeks.

Current Market Rates of Materials in the Various Trades.

The quotations given in this list apply only to larger quantities purchased in London (the minimum quantity for which these prices are applicable being given where practicable). Retail purchasers must expect to pay a reasonable advance on wholesale rates, as well as carriage. The trade discounts for each item have not been considered, as these would be affected by the quantity of the goods purchased. The endeavour is made to give fair average prices, which would in many cases be affected by the quality of the materials required.

BRICKLAYER.		Current rates.	Rates similar materials on Oct. 1.
The current rates for stocks, Flettons, and other common building bricks, and for local facings are not given, as local considerations obviously affect their prices, and readers who may make use of the information given in these columns can readily obtain quotations for themselves.			
Best blue pressed Staffordshire bricks	per 1,000	3 5 0	
do. bullnose bricks	do.	3 15 0	
Best Stourbridge fire bricks	do.	4 15 0	
Glazed Bricks.			
Best white and ivory white glazed one side	per 1,000	10 7 6	
do. glazed one end	do.	9 17 6	
do. quoins, bullnose bricks, and bricks glazed on 4½in. side	do.	13 17 6	
do. glazed two sides (double stretchers)	do.	15 17 6	
do. glazed two ends (double headers)	do.	12 17 6	
do. glazed one side and two ends	do.	16 17 6	
do. glazed two sides and one end	do.	17 17 6	
Splays, chamfers, and squints (to an angle of 45 degs.)	do.	15 7 6	
Double bullnose bricks, double splays, round ends, bullnose stops, and mitres	each	0 0 5	
Double bullnosed mitres ...	do.	0 0 7	
Internal angles, 2¼in. radius	do.	0 0 4	
do. do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Best buff and cream	per 1,000	11 17 6	
do. glazed one end	do.	11 7 6	
Other colours, extra ...	do.	4 0 0	
do. quoins, bullnoses, and bricks, glazed on 4½in. sides*	do.	15 17 6	
do. glazed two sides (double stretchers)*	do.	18 17 6	
do. glazed two ends (double headers)*	do.	15 17 6	
do. glazed one side and two ends	do.	19 17 6	
*These bricks in other colours, extra	do.	3 10 0	
do. glazed two sides and one end	do.	20 17 6	
Splays, chamfers, and squints for an angle of 45 degs	do.	19 17 6	
In other colours, extra ...	do.	3 0 0	
Internal angles, 2¼in. radius	each	0 0 5	
do. 4½in. radius	do.	0 0 10	
Moulded bricks (stretchers and headers)	do.	0 0 8	
Ordinary-quality salt-glazed bricks, glazed one side ...	per 1,000	8 17 6	
do. glazed one end	do.	8 7 6	
do. quoins, bullnoses and bricks, glazed on 4½in. sides	do.	12 7 6	
do. glazed two sides (double stretchers)	do.	14 7 6	
do. glazed two ends (double headers)	do.	7 6	
do. glazed one side and two ends	do.	1 7 6	
do. glazed two sides and one end	do.		
do. splays, chamfers, and squints for an angle of 45 degs.	do.	13 17	
Specially prepared or dipped salt-glazed with plain glazed side or ends, as described above, same price as for best ivory whites	per 1,000		
Ordinary-quality salt-glazed double bullnoses, double splays, round ends, bullnosed stops and mitres	each	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed double bullnosed mitres	do.	0 0 4	
Best dipped salt-glazed do.	do.	0 0 5	
Ordinary salt-glazed internal angles, 2¼in. radius	do.	0 0 3	
do. 4½in. radius	do.	0 0 5	
Best dipped salt-glazed internal angles, 2¼in. radius	do.	0 0 4	
do. 4½in. radius	do.	0 0 8	
Ordinary salt-glazed moulded bricks (stretchers and headers)	do.	0 0 8	
Best dipped do	do.	0 0 8	

		Current rates.	Rates on Oct. 1.
Second-quality glazed white and ivory white, 30s. per 1,000 less than best white			
Second-quality coloured bricks, same price as best whites of their respective descriptions			
Plain arch bricks £6 per 1,000 above list for respective kinds and colours			£4 per 1,000 above list.
Cambered arch bricks 1s. 2d. each, any kind or colour, if not exceeding 9ins. by 4½ins. by 2 ins			1s. each.
Rich majolica glazed bricks (headers and stretchers)	per 1,000	21 17 6	
do. quoins and bullnoses ...	do.	26 17 6	
Sand, Ballast, Cement, Lime, and Fireclay.			
Thames and pit sand ...	per yard	0 7 0	
Thames ballast	do.	0 5 6	
Best Portland cement ...	per cask	0 5 10	
Best ground blue lias lime (NOTE.—The charge for the sacks to be added to prices per ton.)	per ton	0 19 0	
Grey stone lime	per yard	0 11 6	
Stourbridge fireclay in sacks	per ton	0 27 6	upwards
MASON, SLATER AND TILER. *The average current prices for stone per foot cube are given in the following list, the railway rates being calculated on the assumption that orders will be given for full truck loads of about 4 tons upwards.*			
Brown Whitbed Portland stone (in blocks containing on an average 20 ft. cube)	per ft. cube	0 2 0	
White Basebed do.	do.	0 2 1½	
Bath stone	do.	0 1 6	
Beer stone	do.	0 1 6	
Ancaster stone	do.	0 1 10	
Greenshill stone	do.	0 1 10	
Chilmark stone	do.	0 1 9	
Darley Dale stone	do.	0 2 3	upwards
Red Mansfield stone	do.	0 2 4	
Closeburn red freestone ...	do.	0 2 0	
Hard York stone	do.	0 2 10	
do. 6 in. sawn both sides landings (random sizes)	per ft. super	0 2 4	
do. 6 ins. rubbed two sides do.	do.	0 2 7	
do. 3 ins. sawn two sides slabs	do.	0 1 0	
do. 2 ins. self-faced random slabs	do.	0 0 6	
Broken Granite (blue Guernsey), 1½ ins. ...	per ton.	0 9 9	c i.f. Thames
do. do. 2 ins. ...	do.	0 9 6	do.
do. do. 2½ins ...	do.	0 9 0	do.
do. (Imperial blue Scotch), 1½ ins.	do.	0 8 0	do
do. do. 2 ins. ...	do.	0 8 0	do.
do. do. 2½ ins. ...	do.	0 8 0	do.
do. (Midland Counties), 1½ ins.	do.	0 11 0	London station
do. do. 2 ins. ...	do.	0 10 9	do.
do. do. 2½ ins. ...	do.	0 10 6	do.
Granite Kerb (Norwegian). 6 ins. by 12 ins. ...	per foot	0 1 4	c.i.f Thames
do. do. 12 ins. by 6		0 1 4	do.
do. do. 12 ins. by 8		0 1 6	do.
do. (Imperial blue Scotch) 6 ins. by 12 ins.	do.	0 1 2	do.
do. do. 12 ins. by 6		0 1 2	do.
do. do. 12 ins. by 8		0 1 4	do.
do. (grey Jersey), 6 ins. by 12 ins.	do.	0 1 3½	do.
do. do. 12 ins. by 6		0 1 3½	do
do. do. 12 ins. by 8		0 1 5½	do.
Circular kerb 4d. per foot	extra.		
Granite Pitchings (Aberdeen), 3 ins by 5 ins ...	per ton.	1 15 0	do.
do. do. 3 ins. by 6 ins.	do.	1 14 0	do.
do. do. 4 ins. by 5 ins.	do.	1 14 0	do.
do. do. 4 ins. by 6 ins.	do.	1 13 0	do.
do. (Imperial grey Scotch) 3 ins. by 5 ins.	do.	1 9 0	do.
do. do. 3 ins. by 6 ins.	do.	1 7 6	do.
do. do. 4 ins. by 5 ins.	do.	1 7 6	do.
do. do. 4 ins. by 6 ins.	do.	1 6 0	do.
do. (grey Jersey), 3 ins. by 5 ins.	do.	1 8 0	do.
do. do. 3 ins. by 6 ins.	do.	1 7 0	do.
do. do. 4 ins. by 5 ins.	do.	1 7 0	do.
do. do. 4 ins. by 6 ins	do.	1 5 0	do.
do. (blue Guernsey), 3 ins. by 5 ins	do	1 14 0	do.
do. do. 3 ins. by 6 ins.	do.	1 13 0	do.
do. do. 4 ins. by 5 ins.	do.	1 13 0	do.
do. do. 4 ins. by 6 ins.	do.	1 12 0	do.

Slates.		Current rates.	Rates on Oct. 1.
*Best blue Bangor Countess slates	per 1,000 of 1,200	13 0 0	upwards
do. 20 ins. by 12 ins.	do.	13 15 0	
First-quality Bangor Countess slates	do.	12 17 6	
do. 20 ins. by 12 ins.	do.	13 10 0	
do. Ladies	do.	7 5 0	
Permanent green Countess slates	do.	11 10 0	upwards
do. 18 ins. by 10 ins. ...	do.	9 10 0	
do. Ladies	do.	6 10 0	
Best "Eureka" unfading green Countess slates ...	do.	15 15 0	
do. 20 ins. by 12 ins. ...	do.	18 7 6	
do. 18 ins. by 10 ins. ...	do.	13 5 0	
do. Ladies	do.	10 5 0	
Best blue Portmadoe Countess slates	do.	13 10 0	
do. Ladies	do.	6 10 0	
These prices are for lots not less than 4 tons.			
Tiles.			
Plain red roofing tiles ...	per 1,000	2 2 0	
do. hip and valley tiles ...	per doz.	0 3 6	
Best Broseley tiles	per 1,000	2 10 0	
do. ornamental tiles	do.	2 15 0	
do. hips and valley tiles ...	per doz.	0 3 10	
Edwards's (Ruabon) brindled red or brown tiles ...	per 1,000	2 17 6	
do. ornamental do.	do.	3 0 0	
Valley tiles	per doz.	0 3 9	
Hip tiles	per doz.	0 4 0	
Peake's mottled or red Staffordshire tiles	per 1,000	2 12 0	
do. ornamental do.	do.	2 15 0	
Valley tiles	per doz.	0 3 6	
Hip tiles	do.	0 4 0	
Best "Rosemary" plain tiles	per 1,000	2 8 0	
do. ornamental do.	do.	2 10 0	
Valley tiles	per doz.	0 3 8	
Hip tiles	do.	0 4 0	
"Hartshill" sand-faced tiles	per 1,000	2 10 0	
do. pressed do.	do.	2 7 6	
do. ornamental	do.	2 10 0	
Valley tiles	per doz.	0 3 5	
Hip tiles	do.	0 4 0	
CARPENTER AND JOINER.			
Fir timber best middling Dauzig	per load	4 15 0	
Seconds	do.	4 10 0	
Riga and Libau, full size	do.	3 5 0	
Swedish Balks	do.	3 0 0	
Pitch-pine (average 30 ft.)	do.	4 5 0	
Swedish Deals, 3 ins. by 11 ins., and 4 ins. by 11 ins. 1st quality	per standard	22 10 0	
do. 2nd do.	do.	20 0 0	
do. 3rd do.	do.	13 10 0	
do. 4th do.	do.	11 5 0	
do. 1st quality 3 ins. by 9 ins.	per standard	19 10 0	
do. 2nd do.	do.	16 0 0	
do. 3rd do.	do.	12 10 0	
do. 4th do.	do.	11 10 0	
Swedish Battens, 2½ ins. by 7 ins. 1st quality	per standard	14 10 0	
do. 2nd do.	do.	13 0 0	
do. 3rd do.	do.	11 10 0	
do. 4th do.	do.	10 10 0	
Battens, 2½ ins. by 6 ins., 2 ins. by 6 ins., and 2 ins. by 4 ins. do.	do.	9 10 0	
do. 2 ins. by 4½ ins. and 2 ins. by 5 ins.	do.	9 0 0	
For foreign sawn boards 1 in. by 7 ins. and 1¼ ins. by 7 ins. add to price of battens	do.	0 10 0	
For ¾ in. do. add	do.	1 0 0	
White Sea first yellow deals 3 ins. by 11 ins. (average price)	do.	24 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Second yellow deals 3 ins. by 11 ins.	do.	19 0 0	
For 3 ins. by 9 ins. deduct	do.	2 0 0	
Third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	12 0 0	
White Sea first yellow battens 2½ ins. by 7 ins. and 3 ins. by 7 ins.	do.	17 0 0	
Second do.	do.	13 10 0	
Third do.	do.	11 10 0	
Petersburg first yellow deals 3 ins. by 11 ins.	do.	21 10 0	
For 3 ins. by 9 in. deduct from above	do.	4 0 0	
do. second yellow deals 3 ins. by 11 ins.	do.	14 0 0	
For 3 ins. by 9 ins. deduct	do.	1 10 0	
do. third yellow deals 3 ins. by 11 ins. and 3 ins. by 9 ins.	do.	11 0 0	

		Current Rates.	Rates on Oct. 1.
Petersburg battens, 1st per standard		14 0 0	
do., second	do.	11 10 0	
do. third	do.	10 10 0	
White Sea, first white deals, 3 ins. by 11 ins.	do.	15 10 0	
For 3 ins. by 9ins. deduct from above	do.	1 0 0	
do., second white deals 3 ins. by 11 ins.	do.	13 10 0	
For 3 ins. by 9 ins., deduct from above	do.	1 0 0	
do., first white battens ...	do.	11 0 0	
do., second do.	do.	10 0 0	
Pitch-pine deals	do.	19 0 0	
Add for less than 2 ins. thick	do.	0 10 0	
First yellow pine regular sizes	do.	40 0 0	
do., oddments	do.	32 0 0	
Second yellow pine regular sizes	do.	33 0 0	
do., oddments	do.	28 0 0	
American whitewood planks	per ft. cube.	0 4 6	
Kauri pine planks	do.	0 4 0	
1 in. by. 7 ins. yellow flooring, planed and shot ...per square		0 14 0	
Add, if matched	do.	0 0 6	
¼ in. by 7 ins. yellow, planed and matched ...	do.	0 16 6	
1 in. by 7 ins., white planed and shot	do.	0 12 6	
1 in. by 7 ins., white, planed and matched ... per square		0 13 0	
¼ in. by 7 ins., do.	do.	0 15 6	
¾ in. by 7 ins., yellow matched boarding, beaded or V-jointed	do.	0 11 6	
1 in. by 7 in., do.	do.	0 15 0	
¼ in. by 7 ins., white do. ...	do.	0 10 0	
1 in. by 7 ins. do.	do.	0 13 0	
For 6 ins. boards deduct from the above prices ...	do.	0 6 9	

Hardwoods.

Teak	per load	18 0 0	
Danzig and Stettin oak logs (large) ... ... per ft. cube		0 3 0	
do., small	do.	0 2 6	
Wainscot oak logs	do.	0 5 9	
Dry wainscot oak (in the 1 in.) ... ... per ft. super		0 0 9	
¼ in. do., do.	do.	0 0 7	
Dry Honduras mahogany (Tabasco), in the 1 in. ...	do.	0 0 10	
do., selected Figury do. ...	do.	0 1 8	upwards
do., American walnut do....	do.	0 0 10	

FOUNDER AND SMITH.

Cast-iron columns and stanchions, including patterns	per ton	7 10 0	
do., drain pipes, 3 ins. diameter, L.C.C. weights, in 9 ft. lengths, coated with solution	per yard	0 2 4	
do., do., 4 ins. diameter ...	do.	0 3 0	
do., do., 5 ins., do.	do	0 3 10	
do, do., 6 ins., do.	do.	0 4 6	
do., do., 9 ins., do.	do.	0 6 3	
Rolled steel joists, Belgian (ordinary section)	per ton	5 10 0	
do., English	do.	5 15 0	
Rolled steel fencing wire...	do.	8 10 0	
do., galvanised	do.	10 0 0	
Steel compound girders (ordinary section)	do.	8 0 0	
Angles, channels, etc., do.	do.	7 0 0	
Galvanised sheets, common brands	do.	12 15 0	
Wrought-iron gas tubes (current discount off standard lists)	p.c.	70 p.c	
do., water tubes	do.	67½ p.c.	
do., steam tubes	do.	62½ p.c	
do., galvanised gas tubes...	do.	57½ p.c.	
do., do., water tubes ...	do.	55 p.c.	
do., do., steam tubes ...	do.	50 p.c.	

		Current Rates.	Rates on Oct. 1.
Expanded metal lathing, ⅜ in. mesh (short way) 24 gauge, in quantities of not less than 300 yds. ...	per yard	0 0 10	
do., 22 gauge	do.	0 1 3½	
do., 20 gauge	do.	0 1 5½	
do., ½ in. mesh, 24 gauge...	do.	0 0 10½	
do., 22 gauge	do.	0 1 4½	
do., 20 gauge	do.	0 1 6½	
(For quantities of between 300 and 700 yds. deduct approximately 10 per cent. from above; for quantities of between 700 to 1,400 yds., deduct approximately 15 per cent.)			

PLUMBER, COPPERSMITH, AND GLAZIER.

Sheet lead, 3 lbs.	per ton	17 12 6	17 5 0
do., above 3 lbs.	do.	17 2 6	16 15 0
Lead water pipe up to 2 in.	do.	17 12 6	17 5 0
Lead barrel pipe	do.	18 12 6	18 5 0
Lead pipe, tinned inside ...	do.	44 10 0	44 2 6
do., and washed outside ...	do.	47 0 0	46 12 6
do., soil pipe, up to 4½ ins.	do.	20 12 6	20 5 0
do., do., to 6 ins.	do.	21 12 6	21 5 0
do., do., above	do.	22 7 6	22 0 0
Lead sash weights	do.	20 2 6	19 15 0
Sheet zinc	do.	28 0 0	upwards
Copper sheets	do.	73 0 0	do.
do., nails	per lb.	0 0 11	
,, wire	do.	0 0 10	
Plumber's solder	per ton	65 0 0	
Tinman's solder	do.	80 0 0	
Old lead (against account, etc.)	do.	12 0 0	
Clean scrap copper, do ...	per cwt.	2 12 0	
Clean scrap brass do. ...	do.	1 18 6	
Old zinc, do.	do.	0 14 6	
15 oz. English sheet glass, thirds (in crates)	per foot	0 0 2½	
do., do., fourths	do.	0 0 1¾	
21 oz. do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 2	
26 oz., do., do., thirds ...	do.	0 0 3	
do., do., fourths	do.	0 0 3½	
32 oz., do., do., thirds ...	do.	0 0 4	
do., do., fourths	do.	0 0 3½	
For obscured sheet glass add to fourths	do.	0 0 1	
15 oz. fluted sheet	do.	0 0 3½	
21 oz., do., do.	do.	0 0 4	
For obscured fluted sheet, add to above	do.	0 0 1	
⅛ in. plain rolled plate ...	do.	0 0 2½	
3-16 in., do., do.	do.	0 0 2⅝	
¼ in. do., do.	do.	0 0 3	
For rolled fluted plate add to the above prices ...	do.	0 0	

Works in Progress.

Alnwick.—The new infirmary at Alnwick, which was opened by the Duke of Northumberland on Wednesday last, is expected to cost, including lands, roads, building, and fees, but not the furniture and apparatus, about £6,000. The designs were selected in an open competition, for which Mr. Frank Caws, F.R.I.B.A., acted as assessor. The successful architects were Mr. J. Wrightman Douglas, of Alnwick and Newcastle, and Messrs. Boyd and Groves, of Newcastle. The builders were Messrs. Elliott Bros., of Chathill.

Bridgnorth.—The Committee of the South Shropshire Infirmary, finding some time ago that the accommodation had become insufficient for the needs, instructed Mr. Edward C. Maidman, architect, Edinburgh, to prepare plans for the enlargement of the building; and they have just decided to proceed with the work, accepting the tender of Mr. Thomas Lay, builder, Bridgnorth.

Burslem.—Extensive new pottery works have just been completed in Scotia Road, for Messrs. Grindley and Co., under the supervision of Messrs. A. R. Wood and Son, architects, Tunstall and Burslem; the whole of the constructional steelwork and fire-resisting floors being carried out by Messrs. Homan and Rodgers, Manchester.

Cardiff.—New bank premises are to be built at Roath, for the National Provincial Bank of England, Ltd. Mr. W. H. D. Caple, F.R.I.B.A., Cardiff, is the architect.

Florence (Italy).—The central railway station here is to be enlarged at a cost of £880,000. The new works will provide for the erection of a central building, with large waiting-rooms, offices, etc., and of two lateral buildings, the one on the right for the arrival of passenger trains and the other on the left for the mails, luggage and other special services. The permanent way between the two lateral buildings will be furnished with departure platforms and six railway tracks.

Fulham.—For the rebuilding of Stanley Bridge, Fulham, which is situated on one of the main traffic routes of south-west London, the tender of Messrs. Dick, Kerr and Co., Ltd. (£10,048 19s. 6d.), has been recommended for acceptance, three lower tenders having been passed over.

Gourock.—The members of the Ashton M.F. Church have received copies of a report by Mr. John J. Burnet, architect, Glasgow, on the plans for a new church, prepared by Messrs. Stewart, Tough and Alexander. The present fabric has been condemned as the roof and walls are both defective. The congregation will worship in the Church Halls till the new church has been erected. It is estimated to cost £3,800.

Hereford.—"Venn Wood," near here, which was completely gutted by fire last year, has been rebuilt, from the designs of Messrs. Groome and Bettington, architects, of Hereford. Whilst the new structure has been re-modelled more or less on the old lines, the opportunity has been taken to effect many improvements in the plan and equipment. The contractors for the whole of the works were Messrs. Bowers and Co., of Hereford.

London, N.—A new fire station at Holloway, N., which has just been formally opened for service, has been built by the London County Council Works Committee. The architect's estimate was £9,895. The main elevations are faced with red brick, with a salt-glazed brick dado; the elevation to Hertslet Road having stone dressings.

London, W.—A new central block for the Royal National Orthopædic Hospital is being erected in Great Portland Street, at a cost of more than £35,000.

Mansfield.—The church of St. Lawrence, of which the foundation stone was recently laid by the Duchess of Portland, has been designed by Mr. L. A. Westwick, F.R.I.B.A. The builders are Messrs. T. and R. Moore, and the contract price is £3,025. Only the nave, chancel, and transepts, giving accommodation for 326 persons, are to be built at first; but aisles are to be added when funds are forthcoming.

Oldham.—The new Palace and Hippodrome, erected for the George Dance Syndicate, will be opened next week. Seating accommodation is provided for 1,800 people.

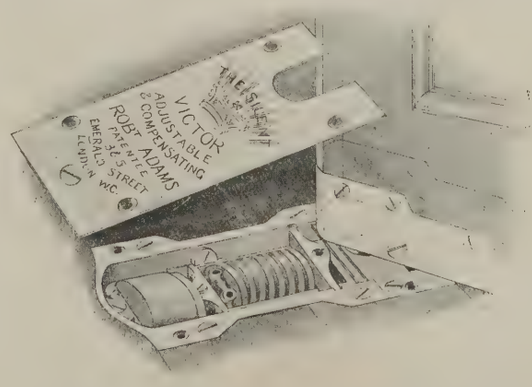
Smethwick.—New Technical Schools are being erected in Crocketts' Lane at a cost of £14,535. Mr. F. J. Gill is the architect.

Wrexham.—A theatre is to be built on a site in Regent Street, adjoining the Imperial Hotel, and the work of preparing the site for the erection of the theatre has been commenced. The contractors are Messrs. Farringdon and Co., of Blackpool, and the architect is Mr. Thomas Price, of Liverpool. The cost of the new building, exclusive of the site, is estimated at £12,000 or £13,000. The theatre is expected to be completed by the spring of next year.

Wythall, Warwick.—The tower that has been added to Wythall Church is finished with the gable roof and timber fleche of which so many examples are seen in the villages of the North and North-east of France. The tower is 25 feet square, and is 115 feet high. Mr. W. H. Bidlake, of Birmingham, is the architect, and Mr. Harvey Gibbs, of King's Heath, the builder. The church, which was built about forty years ago, was designed by Mr. F. Preedy.

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POINTS FROM THE FEDERATION AND CENTRE REPORTS.

Two important conferences are noted in the National report. At the National Conference of Secretaries, held in London, several papers of practical interest were read and discussed, and various methods of turning to best advantage the Federation's connection with THE BUILDERS' JOURNAL were suggested. At the Yorkshire conference it was shown that the inter-trading rule had been very effectual in improving organisation and increasing membership. Other items in the National report refer to the consideration of the agreement with the National Association of Master Plasterers, to the Federation's interest in the constitution of the Court of Arbitration, and to the forthcoming International Congress of Builders and Contractors at Paris, of which a summarised programme is given.

The Administrative Committee of the Lancashire, Cheshire, and North Wales Federation have decided to give notice to the local associations of a new rule providing for arbitration as between sole and sub-contractors for the settlement of business disputes. It was also agreed to recommend the local associations to hold their monthly meetings on simultaneous or approximate dates, to facilitate reporting to the Administrative Committee.

Yorkshire Federation have circulated 5,000 copies of the paper on "Municipal Works Departments" that appeared in our issue of October 28th. With respect to the Census of Production returns, a letter was read from the Administrative Committee to the effect that, in supplying the returns, totals would be sufficient to satisfy the requirements of the Local Government Board. It was resolved to ask the Federation to watch closely the course of the Building Operations and Engineering Works Bill before Parliament, with a view to checking drastic alterations at the behest of Labour members or their friends. It was resolved to communicate with the President of the Local Government Board requesting that master builders may be more equitably represented on the panels of the Court of Arbitration, and that in the constitution and deliberations of the Court due regard should be given to varying local customs and conditions.

The Northern Centre has decided to give notice of certain alterations to the Conciliation Board rules. The proposed emendations refer to disputes arising on a job of an employer outside his own town or district; to decision of voting; to the period of duration of decisions; and to private consultation at board meetings.

The Midland Centre has forwarded a circular letter to all its affiliated associations advising them to give notice for alteration of working rules, with a view to securing uniformity in all branches, and from the Birmingham report it will be seen that that association has already taken action.

MONTHLY OFFICIAL REPORTS.

THE NATIONAL FEDERATION.

National Conference of Secretaries.

The National Conference of Secretaries was held on October 20th in London. Thirty-one attended, and, under the chairmanship of Mr. E. J. Brown, Senior Vice-President of the Federation, an interesting and instructive meeting resulted. The papers read merited and received the best attention of those present. The discussion of the best method of obtaining support for the Official Journal was of a particularly interesting and practical character, and as a result the conference unanimously approved of the suggestions made, full particulars of which will be sent shortly to every local association secretary. The papers read are appearing in the BUILDERS' JOURNAL. A fuller report will be forthwith prepared and issued to secretaries. If, as on former occasions, any desire a supplementary supply of copies, the National Secretary would be glad to have early information as to the number.

Yorkshire Conference of Secretaries.

The monthly meeting of the Yorkshire Federation Executive Council at Leeds, held on October 22nd, was followed by a Conference of Secretaries of that Federation. The National Secretary participated by invitation. There was a good attendance, and in discussion much information was elicited as to the progress and working of the inter-trading rule which has been successfully put into operation at Sheffield, York, etc. It was especially shown how usefully the larger towns could co-operate with the smaller places in carrying out the rule, and they will be earnestly asked to do so. The National Secretary noted with satisfaction the very substantial progress that has been made in the direction of improved methods of organisation in the Yorkshire Federation since he first visited the district, and that both Sheffield and York were able to show a substantial increase in membership and Association activity as a result of adopting the inter-trading rule.

N.A.O.P. Agreement.

It was arranged that on November 9th the Special Joint Sub-Committee, consisting of representatives of this Federation and of the National Association of Master Plasterers, would meet in London to consider the above agreement, in accordance with the resolution of the last general meeting.

Court of Arbitration.

Through the Employers' Parliamentary Council, steps have been taken to call the attention of the President of the Board of Trade to the desirability of having representatives from this Federation on the panels he is forming in connection with the Court of Arbitration.

International Congress of Builders and Contractors for Public Works at Paris.

This Congress, postponed from September, is now fixed to take place this month. The proceedings begin with a reception of delegates by the French Builders' Federation, on the evening of Sunday, November 15th. On Monday, 16th, opening meeting, followed by visit to the works of the Metropolitan Railway. On Tuesday, 17th, sittings of the various sections, followed by visit to the Special School for Public Works at Arcueil-Cachan, and in the evening Grande Soirée de Gala at the Marigny Theatre. On Wednesday, 18th, sittings of sections, followed by mayoral reception, and visit to the National Opera House. On Thursday, 19th, closing session, and banquet. A circular giving full information as to this congress has been sent (under date October 21st) to the federations for distribution to local associations. The National Secretary is going as representing the National Federation, and will be glad to make arrangements for a party to travel together if advised at once.—A. G. WHITE.

THE NORTHERN CENTRE OF THE NATIONAL FEDERATION

COMPOSED OF

The Lancashire, Cheshire and North Wales Federation, The Yorkshire Federation, and The Northern Counties Federation.

Secretary: JAMES DENVER, Cromwell Buildings, Blackfriars Street, Manchester.

The sub-committee appointed at the meeting of the Northern Centre held in Leeds on October 5th, to consider the proposals for alterations to the National Conciliation Board rules, met at the Boardroom, Blackfriars Street, Manchester, on Monday, October 15th, and decided on several amendments thereto to lay before the executive council on October 27th.

The executive council met in special meeting at the Grand Central Hotel, Leeds, on Tuesday, October 27th, to consider the above sub-committee's recommendations for alterations to the Conciliation Board rules, and after giving the same full consideration it was decided to delete two of the clauses, and finally resolved to give notice as follows, which notice was sent in to the parties to the scheme on October 29th:—Rule 2—Lines 20 to 24.—To add the portion underlined [italicised] to provide for dealing with employers from another town:—"If however the principal place of business of the contractor is not situate within the district covered by the Local Conciliation Board, *or should a dispute arise on a job of an Employer outside his own town or district then* it shall be competent for him to demand," etc., etc. Rule 13—Lines 105 to 107.—Decision of Voting: "But should there be cross voting the decision shall be given in favour of the side securing a majority of *at least three* of such cross votes, etc., etc." Also that the following should be made new rules of the scheme:—Period for which a Decision shall Endure: "That it shall be the duty of every Board of Conciliation when giving a decision to take into consideration the desirability of stating a minimum period for which such a decision is to endure. Private Consultation at Board Meetings: "That should either side desire to retire for private consultation during the sitting of any of the Boards after hearing the evidence, they shall be allowed to do so."—J. DENVER.

THE LANCASHIRE, CHESHIRE AND NORTH WALES FEDERATION

Secretary: JOHN TOMLISON, Cromwell Buildings, Blackfriars Street, Manchester.

The Administrative Committee of the Lancashire, Cheshire, and North Wales Federation met at the Boardroom, Manchester, on Friday, October 9th, when the president (Mr. William Bullen) presided over a good attendance of members. It was decided to give notice to the local associations for the adoption of a new rule at the December general meeting providing for arbitration between sole and sub-contractors for the settlement of business disputes. It was agreed to recommend the local associations to hold their monthly meetings on simultaneous or approximate dates, so as to be able to report to the monthly meeting of the administrative committee.

The chairman reported the proceedings of the Northern Centre executive with regard to the Conciliation Boards, and the appointment of Mr. J. B. Johnson, of Liverpool, to represent the centre of the National Committee to deal with the N.A.O.P. agreement.

Meetings of the joiners, stonemasons, bricklayers, plumbers, and painters' trade committees of this Federation have been held during the month with reference to relations with operatives, but no definite united action was decided upon.—JOHN TOMLISON.

LOCAL ASSOCIATIONS AFFILIATED TO THE LANCASHIRE, CHESHIRE, AND NORTH WALES FEDERATION.

ALTRINCHAM, SALE & DISTRICT ASSOCIATION.

Secretary: W. Moody.

The number of members to date is 145.

The annual meeting of the members of the Altrincham, Sale, and District Association was held at the secretary's offices on Thursday afternoon, October 29th, Mr. James Hamilton (president of the association) in the chair.

The secretary, in presenting the annual report and balance sheet, stated that seventeen new members had been admitted during the year, and that nearly the whole of the local masters were now members of the association. The total receipts for the year had been £85 18s. 4d., and the expenses (including the subscription to the Lancashire, Cheshire and North Wales Federation) £65 5s. 1d., showing a surplus in the year's working of £20 12s. 3d.

The chairman reviewed the work of the association for the past year, and congratulated the members on the healthy state of the association and finances.

Various matters were discussed, particularly the better education of apprentices by means of evening continuation and technical classes. A hearty vote of thanks to the president and committee terminated the proceedings.

BARROW-IN-FURNESS ASSOCIATION.

Secretary: J. Baker.

The monthly meeting of the Barrow-in-Furness Association was held on October 13th, when it was reported that the new rules in connection with the Operative Masons' Society had been duly signed by the association's representatives. A copy of proposed rules was submitted from the Plasterers' Labourers' Society, and the secretary was instructed to reply stating that the association had, up to the present, recognised only the rules of skilled tradesmen.

The question of the particulars asked for in connection with the Census of Production Act was referred to, and the opinion was generally expressed that in the case of many firms it would entail considerable expense, besides somewhat encroaching on the private affairs of those giving the particulars enquired for.

The subject of the BUILDERS' JOURNAL was introduced, and the members were urged to become annual subscribers.

BURY AND DISTRICT ASSOCIATION.

Secretary: Robt. Hall.

The thirteenth annual general meeting of the Bury and District Association was held at the Boar's Head Hotel, Fleet Street, Bury, on Thursday evening, October 29th. Thirty-five members were in attendance, with the retiring president (Mr. John Hutchinson) in the chair. The minutes of the last general meeting having been confirmed, the thirteenth annual report, as printed, was adopted. The following officers were then elected for the ensuing year—viz., Mr. John Inman (Messrs. J. Inman and Sons), president; Mr. W. Howard, senior vice-president; Mr. A. L. Shaw, junior vice-president; Mr. Jas. Ratcliffe, treasurer; Mr. Robert Hall, secretary; and Mr. H. W. Chell, honorary solicitor, together with two auditors and a general committee of eight.

The annual dinner of the association was fixed for Friday, December 4th, and, in accordance with precedent, it was agreed that the guests to be invited to the dinner should include the presidents of the various operative societies connected with the building trade of the town.

During the past year the committee have had to fine three members for breach of rules, two of whom, feeling dissatisfied with the committee's findings, appealed to the general meeting under the rules of the association.

The aggrieved members having stated their respective cases, it was agreed in each case to remit a small portion of the fine.

During the past month discussion has taken place with the branch trades committees with respect to the Corporation employing its own men, to the detriment of members of the association, and the new committee were instructed to consider the advisability of approaching the corporation, either by deputation or by letter.

The proposed new rules of the association, which have been under consideration for some months, were accepted subject to confirmation by the Federation.

General regret was expressed at the unsatisfactory condition of the building trade. Although several local contracts are in contemplation, none are in a position to be proceeded with at once; and an admitted shortage of cottage property does not seem to affect building.

The thirtenth annual report of the Bury and District Association shows that the number of members at the beginning of the year was 93. During the year two members have resigned, two firms have gone out of business, and ten new members have joined.

As a result of a discussion on the housing question, a committee was appointed to interview Mr. Ellis, Lord Derby's agent, with respect to certain restrictions in connection with cottage buildings. The result of this committee's labours is considered to be very satisfactory. Amongst the questions to which the committee have given time and thought are—the report of the special committee on accidents in the building trade, the conciliation rules, the Federation rules, and the proposed amendments to our own local association rules. Several meetings have been held with the operative stone masons with respect to the definition of the worked stone rule, but no settlement has been arrived at yet. Meetings have been held of all branch trade members with respect to the present rate of wages and hours of work. A small committee of the master plumbers met a small committee of the operative plumbers respecting a dispute at the workshop of one of the members, and after a full explanation the matter was amicably settled. Another small committee of the master plumbers met the chairman of the gas committee with respect to the gas committee fixing gas pipes, etc., inside cottage houses, but no report is yet to hand as to what, if anything, the gas committee have done in the matter. The financial position of the association is satisfactory.

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DARWEN ASSOCIATION.
Secretary: H. C. Jephson.

In connection with the Darwen Association there is very little to report, beyond the fact that trade in this district is still in a very depressed condition. The operative joiners are in rather a better way than most local industries, however, for they receive, as from November 2nd, an increase in wages from 9d. per hour to 9½d. They have also obtained an alteration of rules, the principal item of which is that they are to receive double pay for work done on all recognised holidays.

LIVERPOOL ASSOCIATION.
Secretary: Bertram B. Moss, F.C.R.A.

Several meetings of the Liverpool Association have been occupied with the question of giving notice to the operative bricklayers' societies of a desire to put their working hours on the same basis as those of the joiners and masons, and at a general meeting recently held, it was decided to give the necessary notice.

The plumbers' committee of the association have held a meeting to consider many matters relating to encroachment on plumbers' work, and also with regard to getting the water regulations altered. With regard to the latter question, a small deputation has been appointed to discuss the matter with the city water engineer.

LLANDUDNO AND DISTRICT ASSOCIATION.
Secretary: E. P. Morris, Accountant.

In connection with the proposed Llandudno Carnegie Free Library, at a recent meeting of the Llandudno District Council, a resolution was passed to ask the builders whether they would tender for the work without quantities. A special meeting was held, when it was unanimously decided not to accept the council's suggestion.

MANCHESTER & SALFORD DISTRICT ASSOCTN.
Secretary: John Tomlison.

The re-organisation of the association in the Manchester and Salford district, referred to in a previous report, takes effect from November 1st, and members who have previously been affiliated through a branch trade association en bloc will now have to become individual members, failing which they will cease to be members of the general association. It has been reported that the concretors have now agreed to disband their separate organisation in favour of the general association.

Several meetings in connection with the association have been held during the month, the most important matters under discussion being the question of giving notice for alterations to the operative joiners' and stonemasons' working rules, with the result that six months' notice has been sent to the operatives in each trade. The amendments proposed to the joiners' rules provide for slight modification in the present winter working hours, alteration in the overtime and walking-time rules, and the arranging of a circular boundary of two miles from Albert Square.

The chief points involved in the masons' notice are a reduction in wages of a halfpenny per hour, and alterations in the present working hours—reverting to the summer hours in force previous to the decision given by the local Conciliation Board about six months ago. The branch are also endeavouring to obtain the two miles circular boundary, and a revision of the walking time rule.

Both branches have given notice that the district within which the rules shall apply shall be five miles from Albert Square, except where this overlaps any other organised district, when it shall be a matter for mutual arrangement.

Manchester Conciliation Board.

A meeting of the Manchester Local Conciliation Board was held at the employers' boardroom, Manchester, on Thursday, October 29th, to hear two appeals—one from the operative joiners, with respect to overtime and grinding money, and the other by the operative stonemasons, against an Atherton firm of builders, for bringing worked stone into the Manchester district from a lower-paid district, contrary to the rule. The two appeals were discussed at considerable length, but no decision being arrived at, they will go before the Northern Centre Board, according to rule.

OLDHAM AND DISTRICT ASSOCIATION.
Secretaries: Cowper and Dean.

The number of members to date is 180.

Since last report, the state of the building trade in this district remains about the same. A deputation from this association has appeared before the Oldham Corporation Finance Committee, and given its views against the adoption of a "new fair (?) contracts clause" submitted by the local operatives' Trades Council. The article on this subject issued in the BUILDERS JOURNAL recently, was handed in to the town clerk, and was referred to as expressing generally the sentiments of the deputation, and the clauses were dealt with *seriatim* by Councillor Samuel Smethurst, J.P., Councillor James Ogden, J.P., and Mr. William Rose, who spoke on behalf of the deputation. Councillor Samuel Smethurst said that the Master Builders' Association protested against the fair contracts clause in no antagonistic spirit. They agreed with certain portions of the clauses, but objected to a great deal which was in the other clauses. The "fair contracts clause," ought not to go further than the contractor and the corporation who let the contract. The corporation ought to do their best to see to a contractor whom they engaged to do certain work employing the best class of labour at the standard rate of wages to do that work. They, as master builders, thought the Trades Council had gone too far. He questioned their right to act as a sort of vigilance committee. He believed that the builders of Oldham, and even of all Lancashire, would refuse to tender under such conditions as those proposed by the Oldham Trades Council. Master Builders would like, in the first clause, the words "declared by the organisations of workmen to be the rate recognised" omitted. Those words were unnecessary. As for the standard rate of wages, all master builders in Oldham, as far as he knew, paid them. The second, third, and eighth clauses they accepted, but they objected entirely to the fourth, fifth, sixth, and seventh clauses. They objected to some of the petty interferences in small matters which might arise. He questioned the right of the Trades Council as an outside body to suggest and come in between the corporation and the contractor. It was not fair that the corporation should accept the opinion of an outside body to whom they had no allegiance.—Councillor Ogden said that the Trades Council wanted contractors to do certain things to which the contractors had objected. Between the Trades Council and the Corporation, if the fair contracts clause was adopted, the contractor would be in a vice. They paid the standard rate of wages, and did all they could for the workmen. It cost far more now to do the work than it did formerly. At one time, for instance, it cost £12 to do certain work, whereas at the present time it would cost £24 to do the same work.—The chairman: Which branch of the trade do you refer to?—Councillor Ogden: Bricksetting.—Alderman Horrobin: That suggests you pay bigger wages and get less work from them?—Councillor Ogden: That is so.—The Chairman: That will cause the rents to go up?—Councillor Ogden: Yes, it makes the rents dearer.—The Chairman: And poor people will have to suffer?—Councillor Ogden: Yes, that is so.—Proceeding Councillor Ogden remarked that the Trades Council, before they did anything else, should set their own house in order. They should see to their own workmen fulfilling and carrying out their duties as workmen. There was no desire on the part of the contractors to be unfair in any way, but they did not agree that workmen should go into their offices. They did not agree with the clause that a list of wages paid to the workmen on a certain job should be put up. He thought it was enough if they paid the standard rate of wages.—Mr. Rose remarked that master builders of Oldham had during the past eight years paid one halfpenny per hour more in certain branches of the trade than the majority of other contractors in other towns. As members of the Master Builders' Association, they objected entirely to the Trades Council having anything at all to do with the letting of Corporation contracts.—The Chairman inquired what the position would be if an advance of wages was conceded during the progress of a contract. He thought it would be advantageous if a clause could be framed so that if an advance of wages was agreed upon during the completion of a contract that advance should not touch the present contract in any way or on either side.—Mr. Caffrey, the Trades Council representative, was asked certain questions by the chairman, and replied by naming certain towns, etc., where the "fair contracts clause' was in operation either entirely or in part, as suggested by the Oldham Trades Council.—The deputation and Mr. Caffrey then withdrew.—The committee then briefly discussed the matter, several being of the opinion that it would have been far better if the Trades Council and the Master Builders' Association had amicably settled the matter without bringing it before them. However, they agreed, in response to a request, to allow the Trades Council to send representatives before the committee to put their views before the members of the committee on the matter, and the discussion closed.

The strike in the cotton spinning trade in this district has had, of course, a most unfortunate bearing on the condition of the building industry.

PRESTON ASSOCIATION.
Secretary: John Tomlison.

There is nothing of importance to report from the Preston Association, except that the employers have given notice to the operative joiners for a reduction in wages of 1d. per hour—from 9½d. to 8½d., to come into force on May 1st next.

ROCHDALE AND DISTRICT ASSOCIATION.
Secretary: H. Oldham.

There is nothing to report from the Rochdale and District Association except that the position with respect to the joiners' dispute remains unchanged at the time of writing.

ROSSENDALE AND DISTRICT ASSOCIATION.
Secretary: R. Hall.

A meeting of the committee of the Rossendale and District Association was held at the Queen's Arms Hotel, Rossendale, on Wednesday evening, October 14th, Mr. Jas. Tomlinson, of Haslingden, president, in the chair. Several matters were under discussion, including a question with regard to the Rawtenstall Corporation having asked for tenders for work for which quantities were not supplied, which was against the rules of the association. The meeting was adjourned to Wednesday, November 4th, when it was hoped the date of the annual meeting and dinner would be decided upon.

WARRINGTON AND DISTRICT ASSOCIATION.
Secretary: Bertram B. Moss.

The Warrington Association has had under consideration the advisability of altering the bricklayers' rules, and at their last meeting decided to send a notice of reduction in wages of ½d., and slight alteration to the rules. This notice has been sent, and a counter-notice has been received.

WIGAN AND DISTRICT ASSOCIATION.
Secretary: R. Hollows.

No notices for alterations of present working rules have been forwarded to the operatives' societies by the Wigan Association, but notice has been received from the operative joiners' society demanding a rise in the rate of wages of one penny per hour; that the working hours shall be reduced 5 hours per week in the summer months, and 2½ hours per week in the winter months; that the rate of pay for overtime shall be greatly increased, and that all workmen shall be at the pay table on Saturday at 12 noon, instead of at the "boundary." The master joiners arranged a meeting for the 10th inst., at which a stringent counter-notice will probably be drawn up.

The annual meeting of this association is to be held at the Clarence Hotel, Wallgate, Wigan, on the 19th inst.

The president elect of this Association is Mr. William Webster (Messrs. Webster and Winstanley).

There is nothing to report from Ashton-under-Lyne, Birkenhead, and Wirrall, Blackpool, Bolton and Farnworth, Burnley and District, Chester and District, Crewe and District, Heywood, Lancaster and District, Leigh and District, Longridge and District, Macclesfield and District, Middleton and District, Radcliffe and District, Southport and District, St. Helens, Stockport, Wallasey.

THE YORKSHIRE FEDERATION

Secretary; J. DAVIDSON, 14, Park Row, Leeds.

The monthly meeting of the executive council of the Yorkshire Federation was held at the Grand Central Hotel, Leeds, on Thursday, October 22nd, 1908. The president, Mr. J. Biggin, was in the chair, and was supported by Mr. A. G. White, the National secretary, and forty-eight delegates from the affiliated associations.

A paper on "Municipal Works Departments" was read by the secretary, and submitted by the emergency committee for the consideration of the Federation. On the motion of Councillor G. Mansfield, J.P., seconded by Mr. A. W. Sinclair, it was resolved to insert the statement in as many papers as possible, in order that the electors might not be misled with respect to this subject in connection with the forthcoming elections. It was further resolved, on the motion of Mr. W. R. Thompson, seconded by Councillor G. Mansfield, to print 5,000 copies for distribution among the local associations, and send copies to the other Federation secretaries as required. (The paper appeared in the BUILDERS' JOURNAL of October 28th.)

It was reported that M. Hertogs, late Burgomaster of Antwerp, had passed away since the visit of the Sheffield Association and Yorkshire Federation in August. On the motion of the president, seconded by Mr. W. R. Thompson, it was decided to request Sir Cecil Hertslet, H.M. Consul at Antwerp, to convey the sincere sympathy and condolence of the Federation with the family of the late M. Hertogs, who honoured the members visiting Antwerp by a civic welcome, and whose warm fraternal greeting and generous hospitality were appreciated

The treasurer reported receipts amounting to £26 12s. 6d. It was reported that the Finance Committee recommended payment of the final contribution to the National Federation, and on the motion of Mr. J. D. Cook, seconded by Mr. S. Coop, the recommendation was approved.

The president reported that the Northern Centre were considering the expediency of making the Conciliation Boards optional instead of compulsory, and asked whether the Federation desired to give their representatives any directions on the matter. The feeling of members was expressed in the following motion of Mr. W. R. Thompson, seconded by Mr. P. Rhodes, which was carried unanimously: "That this Federation is strongly of opinion that it would be inimical to the best interests of employers not to alter fundamental principles of the conciliation rules until more experience of the working under normal conditions is available."

A letter from the Northern Centre was read recommending associations when dealing with notices to or from the operatives for any alterations in working rules to endeavour to get a clause inserted in the rules of each trade, so "that at least a fortnight shall be allowed to consider the same and to send in a counter-notice," if such notice or notices should be received on the last day.

It was reported that the Leeds and Yorkshire Architectural Society were in full sympathy with the circular letter of the Federation with respect to the adoption of the National Contract Form, and that a deputation of the Federation had made an appointment with the West Riding Archi-

tect and engineer to discuss the various matters with him personally.

A letter was read stating that the Administrative Committee were of opinion that the basis of contribution to the National Reserve Fund should be considered by the Northern Centre, and if desired brought up at the annual meeting of the National Federation

A discussion took place as to the enormous amount of work which the Census of Production returns would entail if the information asked for was to be accurate and reliable. A letter was read from the Administrative Committee stating that totals only should be given, it being understood that this would satisfy the requirements of the Board of Trade, and this course was recommended to the members of the Federation.

A letter from the Administrative Committee, together with the observations of Mr. Wm. Shepherd on the Building Operations and Engineering Works Bill, were read and considered. On the motion of Mr. P. Rhodes, seconded by Mr. W. H. Holroyd, the National secretary was requested kindly to approach the Employers' Parliamentary Council to ensure that the Bill as submitted to the House of Commons would be carefully watched, with a view to preventing drastic amendments being made at the request or the instigation of the operatives or Labour Party.

It was reported that the Employers' Parliamentary Council were endeavouring to obtain the appointment of a certain number of nominees of the National Federation on the panels on the Court of Arbitration recently framed by the Board of Trade. The first list of members, however, does not include a building trade employer, although two building trade operatives are included. The Federation were strongly of opinion that both the National and County Federations should have trade representatives on the panels of the Court of Arbitration, and that due regard should be given to the varying trade customs of the country and the convenience of the members, and, on the motion of Mr. P. Rhodes, seconded by Mr. W. E. Biscomb, it was resolved to write to the President of the Board of Trade and also to the National secretary.

A letter was read from Mr. Tomlison stating that the National Federation were considering the advisability of establishing a Society for Builders' Foremen, and that it would be of great assistance if the National secretary could be supplied with the reports of previous negotiations on this matter, which are the property of the Lancashire and Yorkshire Federations jointly. On the motion of Councillor Mansfield, J.P., seconded by Alderman Jessop, J.P., the Federation cordially assented to the National secretary being furnished with all necessary documents and available information.

The secretary reported that at the annual Conference of Secretaries, held on October 20th, the proposed model rules for local associations were referred to a committee. With respect to the official journal, arrangements were made, subject to the approval of the Administrative Committee, whereby the subscription rate is reduced from 10s. 10d. to 8s. 6d., which is 1s. cheaper than the rate at which copies can be obtained through newsagents. Members who have paid 10s. 10d. will be credited with the difference. Members were urged to obtain the BUILDERS' JOURNAL in order to peruse the detailed report of the proceedings, which they will find of great interest and instruction. Several secretaries having expressed the opinion at the conference that the next one should be held at a more convenient centre, the Federation, on the motion of Alderman W. H. Jessop, J.P., seconded by Mr. W. Irwin, decided to give a cordial invitation to the Administrative Committee to arrange for the next annual Conference of Secretaries to be held at Leeds. A letter was read from the editor of the BUILDERS' JOURNAL inviting the attention of members of the Federation to the interesting correspondence appearing in the journal under the title of "Matters of Opinion," and requesting information to be sent on any points of importance. The invitation of the Barnsley Association to hold the next meeting in that town was confirmed, and fixed for Thursday, November 19th. Mr. Quibell invited the Federation to hold the December meeting in Hull, which invitation was cordially accepted.

The president of the Leeds Association entertained the delegates to tea, and a hearty vote of thanks was tendered to him for his hospitality.

Conference of Yorkshire Secretaries.

After tea, Mr. Biggin presided at a conference at which many local secretaries and representatives were present. Various suggestions were made for extending the membership and increasing the influence of local associations by Messrs. T. Smith (Sheffield), J. E. Sykes (Huddersfield), A. E. Dalzell (Halifax), H. Fallas (Horbury), E. Quibell (Hull), T. Lindley (Barnsley), and A. G. White, national secretary. The suggestions included, inter alia:—1, Practical utility and value of the inter-trading rule; 2, That merchants and manufacturers may be divided into two classes—(a) full members of local Association where place of business is situated, which would carry with it right to use crest; (b) Associate members for trading purposes in other districts; 3, Periodical issue of a local calendar; 4, Prompt action in matters affecting trade or individual members; 5, Value of good methods of organisation, and how these affect finances; 6, That wages returns may be obtained by the employment of right methods; 7, Appointment of separate trade committees, including builders' merchants, as soon as the number of members can make this possible; 8, Purchase of contract forms and crests through the Federation secretary, to enable statistical information to be available as to adoption; 9, that every member should be a subscriber to the BUILDERS' JOURNAL. The members present made the following recommendation to the Federation:—1, The revision of Federation rules should be proceeded with, and on account of associate members be definitely determined in order to secure uniformity.—J. DAVIDSON.

LOCAL ASSOCIATIONS AFFILIATED TO THE YORKSHIRE FEDERATION.

BARNSLEY ASSOCIATION.
Secretary: F. Denton.

The number of members to date is 50.

The monthly meeting of Barnsley Association was held on October 14th, Councillor G. Haigh, the president, occupying the chair. Eighteen members attended. The main business of the meeting was the reception of a deputation (consisting of three labour members of Barnsley Town Council) from the local Trades and Labour Council, who attended the meeting with the curious object of requesting this association of employers to promote a "local branch" of the "Builders' Labourers' Union." After the members of the deputation had stated their case, Councillor W. J. England, J.P., and Messrs. T. Lindley and W. Dunk, on behalf of the Federation, in replying, sought to impress upon the deputation that the relations between the employers and labourers were amicable, that the standard rate of wages was invariably paid, and in that respect Barnsley compared well with any town or city in the United Kingdom, allowing the highest rate of wages paid in Yorkshire. In answer to an allegation that non-union men were given preference over union men, a strenuous denial was given. The deputation thanked the members present for their very courteous reception. A special committee meeting was held on Monday, October 26th, to support the candidature of the president of the Barnsley Federation, Councillor G. Haigh, who was seeking re-election on the local Town Council. A resolution was unanimously passed thanking Councillor G. Haigh for his past services, and each member individually promised his best support to secure Councillor G. Haigh's re-election.

BRADFORD ASSOCIATION.
Secretary: J. Davidson.

The monthly meeting of the Bradford Association was held on October 27th, Mr. T. E. Taylor, president, in the chair. The question of negotiations for preferential terms with the Bradford Brickmakers' Association was held over for a month or two, by request. The members decided that a suitable letter should be sent to the "Yorkshire Daily Observer," correcting certain misrepresentations in a recent issue, in respect to the monthly meeting of the Yorkshire Federation and its resolution as to works departments. The association have recently lost two influential members through the deaths of Messrs. M. O'Flynn and P. Drake.

The Corporation at a recent meeting decided to apply for powers for extension of municipal trading, but three Socialists have since lost the seats they were called on to defend, and gains were not obtained in cases where they attacked. It is hoped that the clauses may be revised and drastically amended before the Bill is formally lodged.

DEWSBURY ASSOCIATION.
Secretary: E. B. Warmsley.

The number of members to date is 36.

The general meeting of Dewsbury Association was held on Wednesday, October 21st, Mr. Coop, president, in the chair. Eleven members were present. The report of the Yorkshire Federation meeting for September was discussed. It was decided to hold the annual meeting on November 18th, and the annual dinner on November 26th.

LEEDS ASSOCIATION.
Secretary: J. Davidson.

The monthly meeting of the Leeds Association was held on October 13th. The president, Mr. W. Irwin, occupied the chair. It was decided to send a circular letter to each candidate for municipal honours asking for definite replies as to whether they were in favour of and would vote for the abolition of the Corporation Works Department. A letter was read from the Leeds and Yorkshire Architectural Society to the effect that the council would use their influence to obtain the use and recognition by their members of the National Form of Contract. They would also recommend members to fall in with the suggestion to include an item in quantities to cover the cost of Workmen's Compensation Insurance. Officers for the ensuing year were nominated for submission to the annual meeting.

The general committee met on October 27th, and considered the replies from candidates as to their attitude in regard to the Works Department. The committee were gratified to find that the replies were much more favourable to private traders than the ones received from candidates a year ago. Two candidates had not sent replies, and it was only necessary to call the attention of the members to one case in which the reply was considered unsatisfactory.

The results of the elections on November 2nd showed a complete victory for the candidates opposed to the Corporation Works Department and against extension of municipal trading generally. Six Socialist members retired, and only one was successful in being returned.

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SHEFFIELD ASSOCIATION.
Secretary: T. Smith.

The monthly meeting was held at the Builders' Exchange, on Thursday, October 8th. The chair was occupied by the president (Mr. Thos. Eshelby).

A further letter was read from the secretary of the Architects' Society, in reference to the vexed question of the adoption of the National Form of Contract. The architects pointed out that the main objection to the contract was that while it provided for the bankruptcy of the client, it made no provision for such a contingency on the part of the contractor. With respect to the prompt issue of certificates, the architects held that the delay was chiefly caused by the delay of the builders in tendering a full statement of account.

The question of the insertion of an item in quantities to cover workmen's compensation insurance was again discussed. The architects said that they had obtained legal advice on the point, which showed that the risk was exclusively the contractor's. Discussing the point, Mr. Biggin pointed out that where a mason gave a tender, and obtained a contract for the whole work, and sublet certain portions, it was awkward to ask a sub-contractor to produce his receipt for workmen's insurance before the tender was accepted. The matter to be a great grievance. The town clerks took an exactly opposite view to the lawyers, and pointed out that if the builder failed, the proprietors were liable for the insurance, and, at least so far as corporation contracts were concerned, it was thought that it was only fair and reasonable that an item should be inserted in the quantities which the corporations could retain and deal with in cases of necessity. Mr. Sivil thought that perhaps the best course would be for the Federation to approach the architects and agree with them on some eminent counsel, who would give a definite decision on the matter. Mr. Biggin said it was absolutely imperative that they should get the matter settled in the near future.

With reference to a circular letter from the Yorkshire Federation, calling attention to the continued fall in the contributions of the federated associations, it was pointed out that the letter would have been more effective if, instead of giving the aggregate totals of each year, it had given the contributions of each association. So far as Sheffield was concerned, it contributed £54 last year, and this year had paid already £50; while a further £7 was in hand ready to send. Sheffield was perhaps the only association in the Federation which had its wages based in the main on the actual pay-rolls of the members, and its subscriptions to the Federation were increasing. If a detailed statement of each association were given, special attention would be directed to those associations which were in arrear, and investigation could then be made as to the cause.

In the absence of the treasurer, his report was read by the secretary. The report showed the continued improvement of the association's financial condition. Despite the state of trade, the subscriptions and levies already collected for the current year were £57 7s. 10d. more than for the whole of 1906, and £20 15s. 10d. more than for the whole of last year. The secretary was instructed to deposit with the association's bankers the mortgage deed for £200 Sheffield Corporation stock, in which the association had invested a portion of its surplus funds. Accounts amounting to £21 16s. 5d. were passed for payment.

It was mentioned that, in view of the reception which had been given to the Sheffield and Yorkshire builders on the occasion of their recent visit to Belgium, it was, apart from the advantages which might accrue, an act of courtesy that some members of the Sheffield Association should attend the International Triennial Conference at Paris, which, in consequence of labour disputes in Paris, had been postponed to November. The secretary said that at least two other members of the Yorkshire Federation were willing to go—Councillor Dawson, of Huddersfield, and Mr. W. R. Thompson, of Dewsbury—and it was thought that probably Mr. Biggin and Mr. Forsdike would join them. One of the main advantages was that if English builders were officially represented at the Conference, it would no doubt be possible to induce a representative of the Board of Trade to attend in the same way as the Governments of the other countries at the Conference would be represented, and this constituted an important lever in influencing or preventing subsequent Parliamentary legislation. The matter was subsequently left over for further discussion.

As the association had been unable to obtain a direct representative to contest a seat at the forthcoming elections, a vigilance committee, consisting of the following gentlemen, was appointed: The president, and Messrs. W. Longden, C. Boot, J. A. Watson, J. D. Cook, and W. Hughes.

A letter was read from the Architects' Society, stating that they had no objection to the institution of a uniform holiday week for the building trades, and the matter was therefore left for further discussion with the operatives.

The attitude of the Amalgamated Society of Joiners in bringing an alleged breach of rules in regard to walking time to the notice of the corporation before submitting the matter to the Conciliation Board, was considered. The contractor concerned explained that in making an arrangement with the men to pay tramway fares both ways for a portion of the distance, it was not pointed out by the men or their society that the arrangement constituted a breach of the rules, and as a matter of fact, despite the provisions of the rules of the Conciliation Board, and also the rules of the Joiners' Society, not a word had been written or spoken to them about the matter until they received a letter from the hospitals committee of the corporation, asking them to attend a meeting, the upshot of which was that the corporation, under the provisions of the Fair Contracts Clause, had fined them £24, although the wages in dispute for all the men concerned amounted to less than 30s. The matter led to a long and animated discussion, the purport of which was that in taking the action as outlined above, the Joiners' Society had taken a high-handed course, which could not be justified on any grounds. The right of operatives to bring an infraction of the Fair Contracts Clause to the notice of the Corporation on any corporation contract on which a contractor might be engaged was not disputed, but it was held that that was no justification for treating the Conciliation Board with contempt; and even if the Conciliation Board did not exist, the ordinary working rules of the joiners provided that any matter in dispute should first be discussed by the employers and representatives of the workmen concerned.

The matter was most serious, and the secretary was instructed to write to the society concerned, asking for an explanation, and pointing out that so far as the employers' section of the Conciliation Board was concerned, it must either be the Conciliation Board, or it must cease to exist. After these preliminaries, it was unanimously decided that a special meeting of the Conciliation Board must be held to consider the whole facts of the case.

SHIPLEY AND DISTRICT ASSOCIATION.
Secretary: J. Davidson.

There has been very little work or trouble in the Shipley district, and this has had a bad effect on the attendance of members. A special appeal however, has been made for attendance at the annual meeting to be held in two or three weeks' time.

YORK ASSOCIATION.
Secretary: J. Hague.

Schedule of Prices.—The old schedule is being revised and brought thoroughly up to date. Special trade committees have been elected to undertake the work of redrafting, and the draft schedule will be brought before the next quarterly general meeting for discussion, alteration, or approval.

The following committees have met up to time of going to press:—Masons, Bricklayers, Joiners, Plasterers, and Slaters

York By-Laws and Traction Traffic.—An enquiry was held at the Guildhall, York, on Thursday, October 22nd, before a Local Government Board Inspector (Mr. Ponsonby Moore Crosthwaite, M.Inst.C.E.), relative to the proposed changes in the existing by-laws. The enquiry was of great interest and importance to the York Master Builders' and Contractors' Association, which had in June, 1907, made representations to the local authorities on the matter, and had, in addition, sent a deputation on July 23rd in that year, which had been successful in obtaining the removal of some of the imposed restrictions. At the enquiry, the town clerk of York (Mr. H. Craven) placed the case before the inspector on behalf of the Corporation, and Mr. J. R. Macdonald (London) appeared in opposition to the proposals, primarily on behalf of the National Traction Engine Owners' and Users' Association. The town clerk, in opening the case, referred to the by-laws, which had been framed under the Locomotive Act, 1898, and by which certain streets were totally closed to traction traffic, and others partially so. Under the new proposals, several additional streets would become totally closed, owing to their narrow thoroughfares and the consequent greatly congested state of the traffic. The nature of the subsoil also was unsuitable to traction traffic, which caused vibration and consequent damage and injury to property. It was, however, proposed to afford greater facilities for obtaining special permits. Complaints and memorials had been received from residents and traders in various parts of the city with reference to the nuisance caused by the vibration. Several witnesses were examined and cross-examined on the case for the corporation. Mr. Macdonald, in opening his case, said that the backbone of the city was the Great North Road, which it was now proposed to close at both points where it entered the city, making engines divert their way. He suggested that the Corporation should take into consideration certain classes—the Kent and Birmingham, and the steam roller exemption clauses, which allowed exemption from restriction (1) for purpose of access in carrying material for highway repair, (2) for locomotives wishing to traverse not more than 200yds. of a prohibited road in crossing it during any journey, (3) for municipal and county steam rollers. On the town clerk's enquiring whether the first clause would do away with the restriction as to time, and receiving an affirmative answer, he said he could not see his way to accept it, as it would kill the by-laws and make them of no effect. Special permits, which he would endeavour to see were within reason, made more easily obtainable, might meet such a case. The inspector agreed that the clause would make the by-laws nugatory. With reference to Ouse Bridge, which it was proposed to close between 9 a.m. and 1 p.m. and 2 p.m. and 5 p.m., Mr. Macdonald said the association wanted the bridge open at all times. Mr. L. Wray, brick manufacturer (a member of the York Master Builders' and Contractors' Association) said that his firm's works were on the Huntington Road. Most of their business was, on account of the restrictions, done on that side of the river. If the restrictions were removed, they could extend their business done on the other side of the river. A day's work was often lost owing to inability to get to the bridge before 9 a.m., as in the winter it was dark up to 7 or 7.30 a.m., which did not allow them time to get loaded up and travel the 1½ hour's journey from their works to the bridge. The average number of journeys would not exceed twenty per annum. Mr. Geo. Sharp (president of the York Master Builders' and Contractors' Association) spoke of the effect on trade of the present by-laws. In these days of high prices and pressure it was necessary to economise as far as possible. In their competition with outside traders, they could save fifty per cent. by using engine haulage instead of horses and carts. To all intents and purposes, the proposed new by-laws, if adopted, would double the cost of haulage. The new circuitous route which was proposed would, he thought, meet the case, provided that Ouse Bridge was thrown open all day. Messrs. Shaftoe's manager (members of the association) said the extra hour allowed them in which the bridge could be crossed would be a help. Mr. Rouse, Selby, said the proposed restrictions would greatly hinder the getting into York of his engines, which was a frequent necessity for him to do. After the hearing of other evidence, the enquiry closed, the inspector expressing his wish to see the streets concerned in the through route.

There is nothing to report from Barnoldswick and District, Bridlington, Grimsby, Halifax, Harrogate, Huddersfield, Hull, Malton, Morley Scarborough, Sheffield, Wakefield.

THE NORTHERN COUNTIES FEDERATION.

Secretary: W. H. HOPE, Solicitor, Post Office Chambers, 14, Norfolk Street, Sunderland.

HARTLEPOOLS ASSOCIATION.
Secretary: E. Moody.

At the monthly meeting of the Hartlepools Association, held on Monday, October 26th, Mr. W. M. Thompson (president) occupied the chair, and there was a fair attendance of members. Minutes of previous meeting having been read, were confirmed. The minutes of the Northern Centre meeting and National Conciliation Board meetings were also laid before the members.

The chairman reported upon the difficulty between the Northern Federation and the Durham County Council, respecting the conditions of contract, and the members were requested to do their utmost to influence the members of the County Council to procure the adoption of the Quantity Guaranteeing and Arbitration Clauses.

Complaints having been laid by many sub-contractors as to the state of affairs at present existing between proprietors, head contractors, and sub-contractors, a small special committee was appointed, including representatives of each branch of the trade, to consider the matter fully, and to report to a further meeting of the association. The committee would be glad to hear from the officials of any affiliated association of any special conditions existing in any district or Federation and to receive copies of any contract forms, specially prepared for the use of contractors with their sub-contractors. [See under Bristol.—Ed. "B. J."]

The special committee have since met, and it is proposed to have a conference with the architects and engineers in order to consider the subject from every point of view.

Nominations for officers, committee, representatives to federations, etc., were then made, and the members will vote upon the nominations received at the next meeting (the annual one), which was fixed for November 30th.

NEWCASTLE AND TYNE DISTRICT ASSOC.
Secretary: Wilton A. Rycroft, Accountant.

With the exception of the death of Mr. Edward Weatherley, one of our oldest and most respected members, there is nothing special to report with respect to this association.

The new rules mentioned in my last report have been approved of by a general meeting of the members and are now in the printer's hands.

Trade still remains very dull.

SOUTH SHIELDS ASSOCIATION.
Secretary: J. G. Robertson.

As a result of the adoption of the telephone card, and the putting into operation of the inter-trading rule, increased applications for membership are being received by the South Shields branch. As far as can be foreseen, everything points to this adding very many new members to the association.

The reports, etc., are being got ready for the annual meeting, which it is hoped to hold on Thursday, November 12th.

There is nothing to report from Blyth, Middlesbrough, North Shields, Stockton-on-Tees, Sunderland, Teesside and District.

THE MIDLAND CENTRE OF THE NATIONAL FEDERATION.

Secretary: F. W. AMPHLET, 58, New Street, Birmingham.

A quarterly meeting of the Executive Council of the Midland Centre was held at the Acorn Hotel, Birmingham, on Thursday, October 15th last. Mr. Wm. Wistance (president) took the chair, and there were 15 others present. The secretary was instructed to send a letter of sympathy to Mr. Mark Round (president of Dudley M.B.A.), in his continued ill-health.

The report of the emergency committee, in reference to the proposed Midland Centre rules, was considered, and a letter from the National secretary, suggesting various alterations, was read. The draft rules, with slight alterations, were approved, and recommended to the annual meeting for adoption. In the meantime, the emergency committee were requested to consider Mr. White's suggestions more fully, and (if thought advisable) embody them in the rules.

The secretary's quarterly report stated that the only difficulty with the operatives had occurred at Leicester. The question in dispute (walking boundaries, and definition of district) had been referred to the Mayor of Leicester as arbitrator. The secretary had been instructed by the emergency committee to obtain the names and addresses of all mayors, town clerks, borough surveyors, chairmen of spending committees, and other officials in the district, in order that Mr. White might communicate with them in reference to the use of the contract form.

Great reluctance had been manifested again this year in filling up the annual return of wages asked for by the National Federation.

During the quarter, the secretary had met the members of the King's Norton and Bromsgrove Associations. In spite of repeated applications, the subscriptions had been coming in very slowly.

The report and financial statement were approved, and the secretary was instructed to write an urgent letter to those associations whose subscriptions were still unpaid.

Mr. W. Yates gave a report in reference to the dispute at Leicester. A statement of claim had been sent to the Mayor by both parties. The operatives' statement, however, contained a condition as to the settlement of the dispute which the Mayor had declined to accept, and the matter was therefore at a dead-lock. The Council advised the Leicester M.B.A. to refer the matter in dispute to the Local Conciliation Board, and further recommended that the signed rules with the operatives at Leicester be so altered that all disputes must be referred to the Local Conciliation Board.

The secretary was instructed to attend the conference of secretaries in London, on October 20th last.

The council approved of the admission of the builders' labourers to the conciliation scheme, on the conditions set forth in the report of the sub-committee of the National Conciliation Board.

The secretary read a letter from the King's Norton M.B.A., with reference to the boundary of that association. They wished to adopt a boundary which would include part of the area covered by the Birmingham Association. The members of the Birmingham Association in the district claimed had expressed a wish to remain in the Birmingham Association, and the latter association did not see its way to give up the district referred to. The request had been made largely with a view to facilitate dealings with the operatives, and to prepare the way for the formation of a Local Conciliation Board. No resolution was taken, but it was generally agreed that there was nothing to prevent the King's Norton Association forming a Local Conciliation Board.

The secretary was instructed to send a circular letter to all the local associations in the centre, advising them to give notice of alteration of working rules, with a view to securing uniformity in all branches of the trade.—F. W. AMPHLET.

LOCAL ASSOCIATIONS AFFILIATED TO THE MIDLAND CENTRE.

BIRMINGHAM ASSOCIATION.
Secretary: E. J. Bigwood, J.P.

The committee of the Birmingham Association have discussed at considerable length the advisability of serving notices on the operatives for alteration of the working rules; with the object of obtaining the long-wished-for uniformity of working hours, it has been ultimately decided to serve the following notices:—"The ordinary hours of work to be altered in all trades from the present times to 6.30 a.m. to 5 p.m. in the summer, and to 8 a.m. to 4.30 p.m. in the winter; the men, during the short-time, to have had breakfast before commencing work, and to have half-an-hour for dinner. The short time to run from the second Monday in November to the second Saturday in February, inclusive. Overtime in all trades to begin after 5.30 p.m. in the shops and after 6 p.m. on the job." The committee also decided to serve a notice on the operative masons to reduce fixers' wages by ½d. per hour to the ordinary masons' rate.

A deputation has been appointed to confer with the architects, surveyors, and builders' merchants as to "prime cost" items in quantities.

The annual meeting was arranged to be held at the Grand Hotel, Birmingham, on Tuesday, November 10th; at that meeting the president of the association (Mr. F. G. Whittall) would move that the following addition be made to the rules:—

"Members shall not give or take tenders to, or from, any persons who are not members of this or kindred associations connected with the building trade, and shall not employ such persons to do work for them; the term kindred associations shall mean associations federated to the National Federation."

The following resolutions were also to be moved: "That trade members be requested, wherever possible, in dealing with merchants, or firms of a like nature, to give preference to honorary members of this associatsion."

"That a similar telephone card to the one in use in Liverpool be adopted by this Association."

After the meeting the annual dinner was to be held at the same place; the Lord Mayor elect (Mr. Councillor G. H. Kenrick, J.P.), and the President of the National Federation (Mr. C. H. Barnsley), had accepted invitations to be present.

LEICESTER ASSOCIATION.
Secretary: S. A. Dove.

The number of members to date is 116. There is nothing much to report from Leicester this month. The dispute with the operatives with respect to walking time has not yet been settled, but it is hoped that the trouble will be ended before the next issue is printed. The membership is steadily increasing, and efforts will be made shortly to get the ironfounders and painters to join this association individually, as the intertrading rule would be of great benefit to the members of those branches. I am pleased to report that the members are with a few exceptions remaining very loyal to the association and to the intertrading rule.

NOTTINGHAM ASSOCIATION.
Secretary: W. J. Barton, F.C.I.S.

The Nottingham Association have arranged with the Nottingham University College authorities for a popular lecture to be delivered under their joint auspices. The subject is "Reinforced Concrete," and Mr. William Dunn, F.R.I.B.A., of London, has been secured as the lecturer. The lecture is to be delivered in the large hall of the college, on Friday, November 20th, at 8 p.m. The lecture will be illustrated by lantern slides. The association is purchasing a large number of tickets for the use of its members and their foremen and leading hands, as it is felt that the subject is one on which workmen have yet a good deal to learn, and that they should be encouraged to take an interest in it.

The Association has also offered prizes of the value of £5 5s. to students at the Nottingham University College. A condition is that each student must be bound apprentice to a member of the association. This condition may somewhat restrict the number eligible for the prizes, but will increase the chances of those apprentices who are directly connected with the association. One reason for making this condition is that the association feel it will be to the interest of the building trades that the system of apprenticeship shall be maintained and not allowed to fall out of use, as is the tendency with some employers. The subject chosen for the coming session is "Building Construction," Stages 1, 2, and 3. First prizes of the value of one guinea will be given for Stages 1, and 2, and a guinea and a half for Stage 3, with second prizes of half a guinea for each of the three stages.

The prizes will be awarded on the result of the Board of Education examinations. This is an experiment, and if it is found to be successful other subjects, such as "Builders' Quantities," may be taken up next year. Already a number of apprentices have expressed their intention of competing for the prizes.

The above, it is submitted, are examples of how an association may be of service to its members, and to the building trades generally, and this is obviously one of the most effective ways in which an association can make its position and influence felt. The Nottingham secretary will be pleased to give any further particulars.

WALSALL ASSOCIATION.
Secretary: J. L. Sweet.

From Walsall there is nothing to report for the past month, except that trade still keeps in a depressed condition in this district.

There is nothing to report from Bromsgrove, Burton-on-Trent, Coventry, Derby, Dudley, Hinckley, Kidderminster, Leamington, Lincoln, Long Eaton, Loughborough, Mansfield, Newark, Northampton, North Staffordshire, Nuneaton, Redditch, Stafford, Stourbridge, West Bromwich, Walsall, Wolverhampton.

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Offices: Advertisement and Editorial—Caxton House, Westminster. Counting House and Publishing—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: Advertisement and Editorial—864, Westminster. Counting House and Publishing—2200 Holborn (six lines).

Date of Publication:—The Builders' Journal and Architectural Engineer is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aveley (Essex).—Accepted for erection of a school for 120 infants at Aveley, for the Essex Education Committee:—

H. J. Carter, Grays	£1,701 16 2

Burton-upon-Trent.—For erection of a new police station, superintendent's house, and court house, in the borough, for the Corporation. Mr. Henry Beck, architect, 10, High Street, Burton-upon-Trent. Quantities by Mr. George Kenwrick, Birmingham:—

Sharpe, Barton-under-Needwood	£17,900
Moffatt, Birmingham	17,790
Wilcock, Wolverhampton	16,965
Bishop, Birmingham	15,980
Parnell, Rugby	15,770
Fenwick, Birmingham	15,695
Walker and Slater, Derby	15,560
Hope, Berkeswell	15,400
J. Smith and Sons, Birmingham	15,389
Sapcote, Birmingham	15,127
Hodges	14,990
Johnson, Birmingham	14,844
Dallow, Birmingham	14,825
Elvins, Birmingham	14,770
Barnsley, Birmingham	14,650
Lovatt, Wolverhampton	14,532
Pattinson and Sons, Westminster	14,323
R. Kershaw*	13,990

*Accepted.

Bushey (Herts).—For alterations and additions to the Merry Hill County Council School at Bushey, for the Hertfordshire County Council. Mr Urban A. Smith, architect, county surveyor, Hatfield:—

J. Parren and Son, Earith, Hunts	£2,073 2 4
C. Miskin and Son, St. Albans	1,850 0 0
Haycock and Son, Leicester	1,768 0 0
Chessum and Son, London	1,764 8 2
F. Hitch, Ware	1,721 4 0
C. Brightman, Watford	1,699 0 0
F. P. Bliss	1,685 19 1
J. Field	1,685 0 0
L. R. Ensor, Watford	1,639 0 0
Clifford and Gough, Watford	1,627 0 0
G. Jaggard	1,624 12 7
G. Wiggs, Watford	1,593 0 0
P. R. Paul, Waltham Abbey	1,559 0 0
Bailey and Son, Bushey Heath	1,536 0 0
W. D. Bridges, Bushey Heath	1,481 2 9
Clarke Bros.* Watford	1,479 0 0

Architect's estimate, £1,285.

*Accepted.

Hertford.—For the erection and completion of a new county record and strong room at Hertford, for the County Council. Mr. Urban A. Smith, architect, county surveyor, Hatfield:—

Childs and Townshend, Hemel Hempstead	£1,909 14 0
Lewis R. Ensor, Watford	1,370 0 0
Carter and Wright, Great Yarmouth	1,304 10 4
Rayment and Son, Hertford	1,229 9 6
W. Moss and Son, Loughborough	1,199 0 0
R. Ginn and Son, Hertford	1,148 0 0
Norris and Son, Hertford	1,135 0 0
Ekins and Co., Ltd.*	1,050 0 0

Architect's estimate, £1,016.

*Accepted

Kirkcudbright (Scotland).—Accepted for constructing 150 lineal yards or thereby of a concrete quay wall fronting the river Dee, with excavations, road-making, filling up the existing dock, and other attendant works, for the Town Council. Messrs. J. and H. V. Eaglesham, C.E., engineers, 24, Wellington Square, Ayr:—

Neil M'Leod and Sons, 81, Harrison Road, Edinburgh	£3,245

Morley (Yorks).—For the various works "except masons" required in addition and alteration to Glen Mills, Marley, for Mr. Albert Glover. Mr. T. A. Buttery, architect, Exchange Buildings, Queen Street, Morley. Accepted tenders:—

Pearson and Ainsworth, Britannia Road, mason	£1,025 0 0
A. Furness, Queen Street, joiner	550 0 0
J. W. Stakes, Queen Street, plumber	40 15 0
E. Wilson, Westfield Road, plasterer	37 0 0
J. Atkinson and Son, Whitehall Road, Leeds, slater	108 0 0
The Morley Engineering and Pulley Co., Bridge Street, ironfounders	47 0 0

(*Tenders continued on page viii.*)

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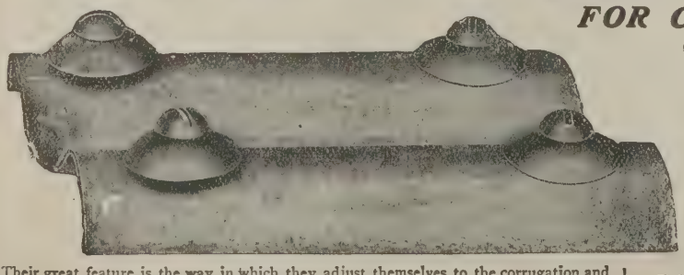


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(Tenders continued from page vi.)

Cardiff.—For pulling down and re-building Nos. 18 and 19, Church Street, Cardiff, for Messrs. Cross Bros., Ltd. Messrs. Veal and Sant, architects:—

	£	s.	d.	£	s.	d.
David Davies and Sons ...	4,360	0	0	209	0	0
Geo. Couzens and Sons ...	4,310	0	0	180	0	0
Knox and Wells	4,250	0	0	130	15	0
Watkin Williams	4,200	0	0	130	0	0
John Gibson	4,129	15	0	130	0	0
W. T. Morgan	4,116	0	0	144	0	0
J. H. Maggs	4,040	0	0	118	0	0
Geo. Griffiths and Son ...	3,999	10	0	164	0	0
Shepton and Son	3,980	5	0	282	7	0
Melhuish Bros.	3,887	0	0	183	0	0
Wm. Symonds and Co. ...	3,886	0	0	157	0	0
Gough Bros.	3,885	0	0	200	0	0
Wm. Thomas and Co. ...	3,685	12	5	133	12	5
James Allan, Ltd.*	3,545	12	3	130	0	0

All of Cardiff.

*Reduced to £2,800 and accepted

The prices in second column are for Bath stone, instead of Forest.

London, E.C.—For headquarters and hotel buildings, for the German Y.M.C.A., City Road. Mr. G. Waymouth, F.R.I.B.A., architect, Raymond House, 3, Theobald's Road, Gray's Inn, W.C.:—

Colls and Sons	£20,516
Kirk and Randall	19,814
Jarvis and Co.	19,676
Shurmur and Sons	19,431
E. J. Saunders	19,190
Whitehead and Co.*	18,980
F. G. Minter	18,979
Chessum and Sons	18,909
Dove Bros....	18,835

*Accepted with tender for the residue of site.

London, S.E.—For the erection of the Norwood Tramways car-shed, for the London County Council:—

F. and G. Foster, Norwood Junction, S.W.	£30,280
Foster and Dicksee, Ltd., Rugby...	28,588
E. Lawrence and Sons, City Road, N.	27,694
Henry Lovatt, Ltd., Wolverhampton	27,660
J. and C. Bowyer, Ltd., Upper Norwood, S.E.	27,618
McCormick and Sons, Essex Road, N.	27,567
Patman and Fotheringham, Ltd., Islington, N.	27,283
Holloway Bros. (London), Ltd., Lambeth, S.E.	27,000
Kerridge and Shaw, Cambridge ...	26,824
Rowley Bros., Tottenham	26,807
J. Mowlem and Co., Ltd., Westminster, S.W.	25,897
Leslie and Co., Ltd., Kensington Square, W.	25,860
Charles Wall, Ltd.* Lloyd's Avenue E.C.	24,723

Architect's estimate, £24,950.

*Recommended for acceptance.

Leicester.—For the following works, for the Corporation of Leicester:—(1) Pulling down nine tenements, etc., in Colton Street, and (2) erection and construction of six cottages on the site thereof. Contracts 1 and 2 respectively. Mr. E. George Mawbey, M.I.C.E., borough surveyor:—

H. Herbert and Sons, Millstone Lane	£1,907 0 0
J. Bentley and Co., Clarendon Park Road	1,814 0 0
J. E. Johnson and Son, Highcross Street	1,807 0 0
J. Rudkin and Son, Albion Hill	1,750 0 0
A. Richardson, King Richard's Road	1,746 0 0
Bradshaw Bros., Tudor Road ...	1,746 0 0
W. Smith, Rawson Street ...	1,700 0 0
Bowles and Son, 8, Gladstone Street	1,698 0 0
J. Hutchinson and Son, De Montfort Street	1,683 0 0
Clark and Garratt, Willow Street	1,680 0 0
J. Chapman, Rutland Avenue, A.P.	1,680 0 0
A. and W. Chambers, Belgrave Gate	1,677 0 0
L. Broughton and Sons, Lytton Road, C.P.	1,674 0 0
W. Foulds, Narboro Road ...	1,658 10 8
W. Hanson, 34, Sparkenhoe Street	1,657 0 0
C. Horspool, 79, Belgrave Road	1,656 6 8
J. Cole and Sons, Bridge Road	1,645 0 0
G. Gurney, 99, Vulcan Road...	1,615 17 9
F. J. Bradford, 6, Leamington Street	1,614 0 0
W. Robinson, Abingdon Road	1,605 3 9
E. Fox*, 6, Evington Street ...	1,559 0 0

*Accepted.

Rickmansworth (Herts.)—For Rickmansworth Mill End County Council School. Mr. U. A. Smith, architect, county surveyor, Hatfield:—

A. E. Wilson and Sons, Northwood	£1,509 1 0
F. and G. Foster, Norwood Junction	1,438 0 0
Sabey and Sons, Ltd., Islington Green	1,390 0 0
W. Moss and Sons, Ltd. Loughborough	1,355 4 8
Spencer, Santo and Co., Kensington	1,341 0 0
Miskin and Son, St. Albans ...	1,316 0 0
J. and C. Bowyer, Ltd., Upper Norwood	1,293 0 0
F. G. Bliss, Bushey	1,287 11 5
L. R. Ensor, Watford	1,269 0 0
Frederick Hitch, Ware	1,264 0 0
G. Darvell, Chorleywood ...	1,255 9 4
Johnson and Stunt, Yiewsley ...	1,250 0 0
W. Bailey and Son, Bushey Heath	1,234 16 0
G. and J. Waterman, Watford	1,232 0 0
G. Henson and Son, Wellingborough	1,230 19 6
H. D. Bowyer, Slough	1,220 0 0
A. and C. Saw, Watford ...	1,191 8 9
Geo. Jaggard,* Bushey	1,111 12 10

*Accepted.

Watford.—For co-operative stores, Market Street, Watford. Mr. Charles P. Ayres, architect, 6, The Parade, High Street, Watford:—

Estimate No. 1.

King and Campion	£1,363 12 0
H. Young and Sons, ...	1,300 0 0
Haycock and Sons	1,290 0 0
S. Swain	1,247 14 0
G. and J. Waterman... ...	1,240 0 0
C. Eames	1,220 0 0
J. Darvill	1,210 0 0
J. L. Tyler	1,200 0 0
L. R. Ensor	1,197 0 0
J. and J. Goss	1,195 0 0
G. Wiggs	1,183 0 0
C. Brightman and Son	1,179 0 0
W. King	1,149 10 0
Clifford and Gough	1,147 0 0
A. E. and C. Saw	1,089 0 0
Clark Bros,* Watford	1,068 17 0

Estimate No. 2.

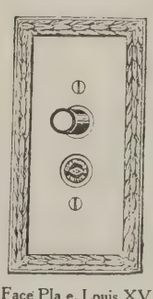
King and Campion	25 0 0
H. Young and Sons	26 0 0
Haycock and Sons	50 0 0
S. Swain	29 6 3
G. and J. Waterman	18 0 0
C. Eames	20 0 0
J. Darvill	12 10 0
J. L. Tyler	42 0 0
L. R. Ensor	30 0 0
J. and J. Goss	20 0 0
G. Wiggs	18 10 0
C. Brightman and Son	29 0 0
W. King	25 2 6
Clifford and Gough	16 0 0
A. E. and C. Saw	19 19 6
Clark Bros.,* Watford	37 13 9

*Accepted.

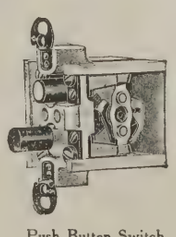
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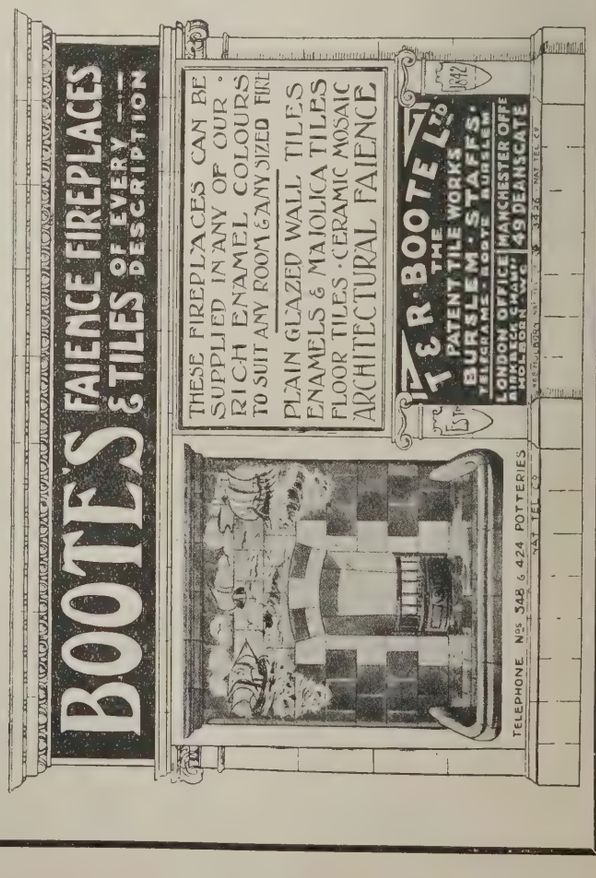
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Nov. 12. LYMINGE.—Erection of receiving wards at the workhouse, Lyminge, for the guardians of Elham Union. Plans and specification can be seen with R. Lonergan, clerk, 11, Cheriton Place, Folkestone, to whom tenders are to be delivered before 8.30 a.m. on Nov. 22.

Nov. 12. BRIDGEND.—Alterations to Llangan Rectory, near Bridgend, for the Reverend Owen Jones, Rector. Plans can be seen, and bills of quantities obtained, at the office of the architect. Tenders are to be delivered by Nov. 12, to G. E. Halliday, F.R.I.B.A., 19, Castle Street, Cardiff.

Nov. 12. GUISELEY.—Execution of various works in the parish church extension, in accordance with plans prepared by Nicholson and Corlette, of 2, New Square, Lincoln's Inn, W.C. Applications for quantities must be made by Nov. 12, to Harold Chippindale, architect and surveyor, Guiseley, near Leeds, when quantities will be forwarded in due course. Applications must be accompanied by a deposit of one guinea.

Nov. 12. DUBLIN.—Alterations and additions to recreation hall, etc., at the Royal Hibernian Military School, Phœnix Park, for the board of public works. Tenders will be received up to 10 a.m. on Nov. 12, by H. Williams, secretary, office of public works, Dublin, where plans and specification can also be seen. Forms of tender and bills of quantities will be supplied on deposit of £1. Separate envelopes containing tender and the bill of quantities must be endorsed "Tender for Works at the Royal Hibernian Military School."

Nov. 13. OLDBURY.—Erection of new schools, Abbey Road, Warley, for the U.D.C. Builders desiring to tender are requested to send their names and addresses by Nov. 13, to Sydney Vernon, secretary, Public Buildings, Oldbury.

Nov. 13. BERRYWOOD (Northampton).—Erection of a new isolation hospital at Berrywood asylum, Northampton. Persons desirous of tendering are requested to send their names by Nov. 13, to Christopher A. Markham, clerk to the visiting committee, 1, Guildhall Road, Northampton.

Nov. 13. CROYDON.—Erection of a testing-room, for the corporation. Plans can be seen, and specification and form of tender obtained at the office of the borough engineer, town hall, Croydon, upon deposit of one guinea. Tenders to be sent endorsed "Testing Room, Waterworks, Surrey Street," by 11 a.m. on Nov. 13, to F. C. Lloyd, town clerk, town hall, Croydon.

Nov. 13. SOUTHAMPTON.—Reconstruction of roof of the headquarters, drill hall, St. Mary's Road, Southampton Territorial Force Association. Plans, specifications and conditions of contract may be seen at the offices of the engineers, Lemon and Blizard, MM.Inst.C.E., Lansdowne House, Castle Lane, Southampton, and bills of quantities obtained, on payment of two guineas. Tenders, on the forms provided, are to be delivered, endorsed "Tender for New Roof, Headquarters, Drill Hall," before 10 a.m. on Nov. 13, to R. A. G. Harrison, C.M.G., colonel, secretary, 32, Queen's Terrace, Southampton.

Nov. 14-23. LONDON (for Fermoy, Ireland).—Erection of 12 "B" married soldiers' quarters at Fermoy new barracks, county Cork, Ireland, for the War Department. Plans and specification may be inspected at the office of the director of barrack construction, Cork, on Nov. 11. Bills of quantities and form of tender may be obtained on application to the director of barrack construction, Pall Mall, London, S.W., acompanied by ten shillings. No application will be considered after Nov. 14. Tenders must be in sealed envelopes, and delivered by noon on Nov. 23, marked "Tender, Married Soldiers' Quarters, Fermoy," to H. De La Bere, director of army contracts, War office, Whitehall, London, S.W. The bills of quantities should accompany the tender in separate sealed envelope, similarly addressed, and marked "Bills of Quantities, Married Soldiers' Quarters, Fermoy," bearing the contractor's name and address.

Nov. 14. BUSHBURY, South Staffs.—Erection and completion of a new council school for about 380 children in Bushbury Lane, Bushbury, South Staffs, for the Education Committee. Persons desirous of tendering should apply by November 14, to Graham Balfour, director of education County Education Offices, Stafford. Quantities will be supplied upon deposit of £2 2s., which should accompany the application.

Nov. 14. WEST VALE.—Alterations to shops at West Vale, for the Sowerby Bridge Industrial Society, Limited. Plans and specifications may be seen and bills of quantities obtained at the offices of the architects. Sealed tenders, endorsed "Tender for Alterations to Shops," to be delivered at the offices of the society, or to Medley Hall and Son, architects and surveyors, 1, Harrison Road, Halifax, by Nov. 14. Fair wages clause.

Nov. 14. PONTYPRIDD.—Erection of a residence, with outbuildings, etc., in the Lan Wood, Pontypridd, for S. G. Hill. Plans and specifications can be seen and bills of quantities obtained at Pontypridd and Tonypandy offices, and at 12, Edward Terrace, Cardiff, on deposit of £1 1s. Tenders to be sent by Nov. 14 endorsed "Tender for Lan Wood House," to W. Morgan Lewis and T. Naunton Morgan, architects and surveyors, Pontypridd.

Nov. 14. LOWESTOFT.—Erection of a new secondary school, Lowestoft (accommodation 300), for the Education Committee. Persons desirous of tendering are requested to send in their names by November 14, to R. Beattie Nicholson, town clerk, Town Hall, Lowestoft. A bond with approved sureties for completion of the work will be required. The application is to be accompanied by a deposit of one guinea for bills of quantities.

Nov. 14. BRACEBRIDGE (near Lincoln). — Additions to the Bracebridge Girls' School, near Lincoln, for Kesteven C.C. Bills of quantities and forms of tender may be obtained at the office of the county surveyor, 53, High Street, Grantham, upon deposit of £1. Specifications and plans may be seen at the office of H. H. Dunn, Silver Street, Lincoln, or at the county surveyor's office, Grantham. Sealed tenders, endorsed "Tender for Bracebridge School," to be delivered by Nov. 14, to Hudson Donaldson, secretary, county education office, 64, London Road, Grantham.

Nov. 16. WHITELEY WOODS, SHEFFIELD.—Erection of new lodge and conveniences at Whiteley Woods, for the City Council. Plans may be seen, bills of quantities and forms of tender obtained, on application to the city architect, town hall, Sheffield. Sealed and endorsed tenders (enclosed in envelope provided) to be delivered by Nov. 16, to R. M. Prescott, town clerk, town hall, Sheffield. Fair wages clause.

Nov. 16. YEADON.—Erection of a cookery room at South View Provided School, Yeadon, for the West Riding education committee. Plans may be seen and bills of quantities obtained on application to the architect. A deposit of £1 is required posted to the West Riding treasurer, county hall, Wakefield. Applications to the West Riding architect, for the quantities. Sealed tenders, properly endorsed, to be forwarded by 10.30 a.m. on Nov. 16, to J. Vickers-Edwards, county architect, county hall, Wakefield.

Nov. 17. HULL.—Alteration and additions to Craven Street school, for the education committee of the corporation. Drawings and specifications may be seen, and quantities obtained (upon deposit of two guineas), of Joseph H. Hirst, city architect, town hall, Hull. Remittances to be made payable to the city treasurer. Tenders, sealed and endorsed "Tender for Alterations and Additions, Craven Street School," to be addressed to the secretary of education, and delivered at the education offices, Hull, before 10 a.m. on Nov. 17.

Nov. 17. MANCHESTER.—Structural alterations and additions required at the depot, Hyde Road, Ardwick, Manchester, for the tramways committee. General conditions, specification, bill of quantities and form of tender may be obtained on application to J. M. M'Elroy, general manager, tramways department, 35, Piccadilly, Manchester, on deposit of £2 2s. Plans may be inspected and further information obtained at the engineer's office. Tenders to be addressed to the chairman of the tramways committee, 55, Piccadilly, Manchester, endorsed "Tender for Alterations, Hyde Road Depot," and must be received by 10 a.m. on November 17.

Nov. 17. CHELMSFORD. — Erection of a cowshed (brick and slated roof), 81 ft. by 63 ft., to accommodate eighty-four cows, and the construction of a roof over an auction-ring in the cattle market, for the Corporation. Specifications, bills of quantities, forms of tender, and full particulars may be obtained (on deposit of £2 2s.). The plan may be inspected, at the borough surveyor's office, 16, London Road. Tenders, on the form provided, in sealed envelopes, endorsed "Market," must be delivered by 4 p.m. on Nov. 17, to W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford.

Nov. 17. PRESTON.—Erection of school buildings in Deepdale Road and St. Stephen's Road, Preston, for the corporation. Plans may be seen, and specification, bills of quantities and form of tender obtained, at the office of the borough surveyor, town hall, Preston, on payment of £2 2s., to whom sealed tenders, endorsed "Tender for Deepdale School," must be delivered by noon on Nov. 17. Fair wages clause.

Nov. 18. CYNLLWYN-DU, TYLORSTOWN. — Erection of a church at Cynllwyn-du, Tylorstown, for the Rev. John Rees. Plans and specification may be seen, and quantities obtained at the office of the architect on deposit of two guineas. Tenders to be sent, sealed and endorsed, by noon on November 18, to E. M. Bruce Vaughan, F.R.I.B.A., architect, 21, Dumfries Place, Cardiff.

Nov. 18. NANTWICH.—Additions and alterations at the police station at Nantwich, Cheshire, for the C.C. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., county architect, Chester, and quantities obtained on deposit of £1. Tenders to be delivered to Reginald Potts, clerk of the peace, Chester, by 10 a.m. on Nov. 18, endorsed "Tender for Nantwich Police Station."

Nov. 13. BARROW-IN-FURNESS.—Erection of a laundry at the workhouse at Roose, for the guardians. Plans and specification may be inspected and bills of quantities obtained on application to Henry T. Fowler, A.R.I.B.A., Cornwallis Street, Barrow. Tenders, marked "Tender for Erection of Laundry" to be delivered at the parish offices, Harrison Street, Barrow, before 6 p.m. on Nov. 18. (See also "Engineering.")

Nov. 18. DARWEN.—Erection of an elementary school to accommodate 510 children, for the corporation. Plans and details may be seen, and bills of quantities, etc., obtained on application to R. W. Smith-Saville, borough engineer and surveyor to the education committee, at the municipal offices, Darwen. Tenders, on the form provided, sealed and endorsed "Tender for School," to be delivered by noon on Nov. 18, to William P. Halliwell, town clerk, town clerk's office, Darwen.

Nov. 18. CHESTER.—Erection of two new public elementary schools for 200 and 660 children respectively, to be erected in Egerton Street and Cherry Grove, Boughton, Chester, for the Corporation. Plans and specifications can be seen at the offices of the respective architects, viz., W. T. Lockwood, F.R.I.B.A., 88, Foregate Street, and Douglas and Minshull, 6, Abbey Square, Chester, and quantities obtained on deposit of £1. Tenders are to be sent by 10 a.m. on November 18, to J. H. Dickson, town clerk, Chester, endorsed "Tender for Egerton Street school, or Boughton school, Chester," as the case may be.

Nov. 19. BROMLEY-BY-BOW.—Erection of a bathroom at the workhouse, St. Leonard's Street, Bromley-by-Bow, E., for the guardians of Stepney Union. Specifications and forms of tender, etc., can be obtained on application to the clerk, and tenders must be delivered by 4 p.m. on Nov. 19, to T. G. Stacey, clerk, guardians' offices, Barnes Street, Stepney, London, E. Plans can be inspected any day (except Thursday) between 10 a.m. and 5 p.m.

Nov. 20. CALSTOCK, Cornwall.—Erection of a United Methodist Chapel and School at Calstock. Plans and specifications may be seen in the school adjoining the old chapel, on application to T. Stone, chapelkeeper, Calstock. Sealed tenders to be sent to J. H. Reed, Tamar View, Calstock, by November 20.

Nov. 20. BELFAST.—Erection and completion of new male schools, Seaforde Street, Belfast. Plans and specification can be inspected at the offices of J. J. M'Donnell, architect, 27, Chichester Street, and bills of quantities obtained from Acheson Ferguson, Scottish Provident Buildings, on deposit of one guinea. Sealed tenders, endorsed "Seaforde Street Schools," are to be delivered to Very Rev. H. Laverty, P.P., D.D., St. Matthew's Presbytery, by 5 p.m. on Nov. 20.

Nov. 21. LEYTON.—Erection of the Sybourn Street Council schools, Leyton, for the U.D.C. Quantities, conditions, and form of tender may be obtained, on written application to William Jacques, A.R.I.B.A., of 2, Fen Court, Fenchurch Street, E.C., not later than November 21, which must be accompanied by a deposit of a £5 Bank of England note. Sealed tenders, in special endorsed envelopes supplied, must be delivered by hand at a meting of the council to be held early in December. The contractor will be required to enter into a bond with sureties for performance of the contract. Fair wages clause.

Nov. 23. MARSDEN (near Huddersfield). —Erection of a new school at Marsden, near Huddersfield, for the West Riding education committee. Plans may be seen and bills of quantities obtained on application to the architect on and after Nov. 14. A deposit of £1 is required, posted to the West Riding treasurer, county hall, Wakefield. Application to the West Riding architect for quantities. Sealed tenders, properly endorsed, to be forwarded by 10.30 a.m. on Nov. 23, to J. Vickers-Edwards, county architect, county hall, Wakefield.

Nov. 23. LUTON.—Erection of a new block of buildings for aged men, and alterations and additions to the male sick wards at the workhouse, Dunstable Road, Luton, for the guardians, according to plans, specifications, and quantities, which may be inspected at the office of Gotch and Sanders, architects, 55, George Street, Luton. Bills of quantities will be supplied on payment of one guinea. Contractors will be required to find two approved sureties. Tenders endorsed "Workhouse Alterations," to be delivered to William Austin, clerk, 7, George Street West, Luton, by 10 a.m. on Nov. 23.

Nov. 24. MANCHESTER.—Erection of women's lodging-house, Corporation Street, for the corporation. Drawings may be seen and specification and bill of quantities obtained at the office of the city architect, town hall, upon payment of two guineas. Cheques or postal orders to be made payable to the order of "The Corporation of Manchester." Sealed tenders, enclosed in the official envelope, to be delivered at the above office by 5 p.m. on Nov. 24.

Nov. 25. DARLINGTON.—Erection of locomotive works, Stooperdale, Darlington:—Excavator, bricklayer and mason, carpenter and joiner, slater, plasterer, plumber, glazier, gasfitter, painter, works required by the directors of the North-Eastern Railway. Plans and specification may be seen, and quantities and further information obtained upon application to William Bell, the company's architect at York. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Loco. Works, Darlington," to be sent by 9 a.m. on Nov. 25, to R. F. Dunnell, secretary, York.

Nov. 26. HEREFORD.—Erection and completion of a mortuary chapel, at the cemetery, Westfaling Street, Hereford, for the town council. Specification, with general conditions, bill of quantities, and form of tender, can be obtained at the office of John Parker, city surveyor, Hereford, upon payment of one guinea. Tenders, sealed and endorsed "Tender for Mortuary Chapel," addressed to the chairman of the "Cemetery Committee," must be in the hands of Joseph Carless, town clerk, town hall, Hereford, by 6 p.m. on Nov. 26.

Nov. 26. NEWCASTLE-ON-TYNE.—Enlargement of the head post office at Newcastle-on-Tyne, for the commissioners of H.M. works and public buildings. Drawings, specification and a copy of the conditions and form of contract may be seen on application to the postmaster of Newcastle. Bills of quantities and forms of tender may be obtained at Storey's Gate, on payment of one guinea. Tenders must be delivered before noon on Nov. 26, addressed to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Newcastle-on-Tyne Post-Office Enlargement."

Nov. 28. PONDERS END.—Erection of an infants' department, with central hall, at the Southbury Road school, Ponders End, and additions to the existing buildings, for the Enfield Education Committee. Applications for bills of quantities should be sent to the architect, G. E. T. Laurence, 22, Buckingham Street, Adelphi, W.C., before November 28, from which date plans and specification can be seen at the architect's address. A deposit of three guineas should accompany the application. Sealed tenders, on the form supplied, must be delivered by noon on December 15, to N. Hepworth, clerk, public offices, Enfield. The contractor will be required to enter into a bond with two sureties in the sum of £500 each for performance of the contract. Fair wages clause.

Nov. 30. GREENHITHE.—Erection of 20 cottages at Greenhithe. Plans and specifications will be forwarded upon written application, enclosing a deposit of £2, to H. Stevens, secretary, the Dartford and District Co-operative Building Society, 122, East Hill, Dartford. Tenders to be delivered by Nov. 30. Cheques should be made payable to Henry Stevens.

No date. BELFAST.—Erection and completion of 11 dwelling-houses at Dunville Street, Belfast, for James Rice. Plans, specification, and particulars of the work can be obtained at the office of W. J. Moore, architect, 35, Royal Avenue, Belfast.

No date. HARROGATE.—Erection of new business premises, Oxford Street, Harrogate, for Warwick and Co. Contractors desirous of tendering for the various trades, are requested to send their names to Bland and Bown, architects, Harrogate, and quantities will be forwarded.

No date. BIRKENHEAD.—Erection of a stable and earthworks in connection with forming a private garden at Palm Grove Nursery, Birkenhead. Bills of quantities and other information can be obtained on application to the architect, John W. Rodger, 14, High Street, Cardiff.

ENGINEERING.

Nov. 12. ELLOUGHTON AND BROUGH (York). —Construction of spring collecting works, collecting chambers, covered storage reservoir, 6,420 yds. of 5 in., 4 in., 3 in. and 2 in. cast-iron water mains, with valves, washouts, fire hydrants, consumers' services, and other works in connection therewith, at Elloughton and Brough, in the county of York, for the Elloughton and Brough Water Co., Ltd. Drawings, specification, etc., may be seen with Fairbank and Son, M.Inst.C.E., engineers to the company, Lendal Chambers, York, from 10 a.m. to 5 p.m., except Saturdays. Copies of specification, quantities and form of tender may be obtained on deposit of £3 3s. Sealed tenders, endorsed "Tenders for Elloughton and Brough Waterworks, Contract A," to be sent to E. Hind, solicitor, Goole, before 10 a.m. on Nov. 12.

Nov. 13. LLYN FAWR (Glam.).—Construction of a reservoir at Llyn Fawr Lake, in the parish of Ystradyfodwg, Glamorgan, with works in connection therewith, including a temporary tramroad connecting the works with the Great Western Railway at Hirwain, for the Rhondda U.D.C. Drawings may be inspected and copies of the specification, schedule of prices and forms of tender obtained upon application to J. E. Hughes, M.Inst. C.E., at his office at Tynewydd, Treherbert, upon a deposit of £5. An assistant engineer will accompany attending contractors to the site of the works on Oct. 27, starting from the engineer's office at Tynewydd, Treherbert, at 11 a.m. Sealed tenders, enclosed in envelopes provided, and addressed to the chairman of the council, endorsed "Tender for Reservoir," must be delivered by 10 a.m. on Nov. 13, to W. P. Nicholas, clerk, council offices, Pentre, Glam. Fair wages clause.

Nov. 14. ECCLES.—Installation of electric wiring and fittings for the lighting of buildings at the town's yard, for the Cleansing and Scavenging Committee of the Corporation, in accordance with a specification prepared by the borough electrical engineer. Copy of specification and form of tender can be obtained from the town clerk. Sealed tenders to be delivered in an official envelope by noon on Nov. 14, to Edwin Parkes, town clerk, town hall, Eccles. Fair wages clause.

Nov. 14. EDINBURGH.—Electrical installation for lighting the cattle market, Gorgie, for the Lord Provost, magistrates and council. Specification, plans and form of tender can be obtained on deposit of one guinea of Frank A. Newington, engineer, electricity supply station, Dewar Place, Edinburgh. Tenders, endorsed "Electrical Installation, Cattle Market," must be sent to the town clerk, City Chambers, Edinburgh, by Nov. 14.

Nov. 14. CASTLEMUNGRET (Limerick). — Execution of repairs to the embankment on the river Shannon, in the townland of Castlemungret, county of Limerick, for the Irish Land Commission. Copies of the specifications and plans, with form of tender, can be obtained on application to the secretary, Irish Land Commission, Dublin, on payment of one shilling. All tenders, duly filled up and signed, are to be sent to the secretary of the Irish Land Commission before Nov. 14. Contractors to be prepared to sign a bond furnishing sureties.

Nov. 17. MANCHESTER.—Supplying (a) two steel boilers, for heating purposes. (b) Hard-drawn copper trolley wire, for the corporation. Specifications and forms of tender may be obtained on application to J. M. M'Elroy, general manager, tramways department, 55, Piccadilly, Manchester. Tenders are to be addressed to the chairman of the tramways committee, 55, Piccadilly, Manchester, and must be received by 10 a.m. on Nov. 17.

Nov. 18. BARROW-IN-FURNESS.—Supplying an engine boiler and other new machinery and fixing existing machinery in connection with new laundry, for the workhouse guardians. Particulars may be obtained upon application to H. T. Fowler, A.R.I.B.A., Cornwallis Street, Barrow. Tenders endorsed "Tender for Laundry Machinery," to be delivered at the parish offices, Harrison Street, Barrow, before 6 p.m. on Nov. 18. (See also "Building.")

Nov. 20. OLDHAM.—Supply and erection of mechanical stokers for the dry-back marine and climax rollers at the generating station, Green Hill, Oldham, for the corporation. Specifications can be seen or obtained on application to S. Wilmott Newington, borough electrical engineer, Greenhill electricity works, Oldham. A charge of one guinea will be made for the specification. Sealed tenders, endorsed "Tender for Mechanical Stokers," addressed to the chairman of the electricity committee, Greenhill offices, Oldham, to be delivered by Nov. 20.

Nov. 21. MANCHESTER.—Supplying and fixing non-conducting covering for steam rollers, steam pipes, etc., at the new hydraulic pumping station, Water Street, Manchester, for the corporation. Specifications and conditions of contract may be obtained upon application to the secretary, waterworks offices, town hall. Any other information from the engineer and manager, hydraulic power station, Whitworth Street West. Sealed tenders, endorsed "Tender for Non-conducting Covering," addressed to the chairman of the waterworks committee, town hall, to be delivered by Nov. 21.

Nov. 21. WEST RUNTON (Norfolk).—Construction of a 9in. diam. iron outfall pipe, 600ft. long, on the foreshore, also erection of two small purification tanks and filters, and the laying of 2,750 yds. of 9in. and 7in. glazed pipes, with necessary manholes, etc., at West Runton, Norfolk, for the Erpingham R.D.C. Plan and specifications can be inspected and copies of the quantities obtained at the office of the engineer, A. F. Scott, F.S.I. Tenders to be delivered endorsed "Tender for West Runton Drainage," by 10 a.m. on Nov. 21, to the chairman, works committee, c/o A. F. Scott, 24, Castle Meadow, Norwich.

Nov. 23. DUBLIN.—Reconstruction of live steel girder bridges, for the directors of the Great Northern Railway Company (Ireland). Parties wishing to tender may see the drawings, etc., at the office of W. H. Mills, engineer-in-chief, Amiens Street, Dublin, or copies of same at the district engineers' office, Belfast.

Nov. 23. BRISTOL.—Reconstruction and maintenance for twelve months after completion, of the plate girder bridge carrying the Bath road over the river Avon, including the removal of the portions to be renewed, for the docks committee of the council. Specification, schedule, form of tender, and form of contract, and copies of the contract drawings can be obtained from W. W. Squire, engineer, engineer's office, Cumberland Road, Bristol, on production of a receipt showing that a deposit of £5 has been paid to the secretary. Tenders must be enclosed in a sealed envelope, endorsed "Tender for Reconstruction of Bath Bridge," addressed to the secretary of the docks committee, docks office, 19, Queen Square, Bristol, and must be delivered before 10 a.m. on Nov. 23.

Dec. 31. LINCOLN.—Supplying two complete sets of steam pumping machinery at the proposed Elkesley pumping station, for the Corporation, some 2½ miles from Checkerhouse station (Notts.), G.C. Railway. Specifications, etc., may be obtained at the office of the engineer, Neil McK. Barron, waterworks engineer, Lincoln, upon payment of £5 5s.

Dec. 31. LINCOLN.—Supply and erection of two complete sets of steam pumping machinery at the proposed Elkesley pumping station, some 2½ miles from Chester House Station (Notts.), G.C. railway, for the corporation. Each set of machinery to comprise one triple expansion surface condensing receiver engine, actuating two deep borehole pumps, and high-lift pump, and to deliver 3,600,000 gallons of water in 24 hours against a total head of 724 ft., also for three Lancashire steam boilers, superheaters, economisers, feed pumps, etc. Specifications and forms of tender may be obtained at the office of Neil McK. Barron, waterworks engineer, Lincoln, upon payment of £5 5s. Sealed tenders, endorsed "Contract No. 3, Elkesley Scheme," to be delivered by Dec. 30, to W. T. Page, deputy town clerk, Bank Street, Lincoln.

No date. SKEWEN.—Heating chapel and hall, for the officers of the Tabernacle Congregational Church, Skewen. Further particulars and permission to view the buildings may be obtained of the secretary, 16, Stanley Road, Skewen.

IRON AND STEEL.

Nov. 16. EDINBURGH.—Supplying a quantity of cast-iron pipes, 4 inches, 6 inches, and 12 inches in diameter, weighing about 272 tons, and about 2½ tons of special castings, for the Edinburgh and District Water Trust. Drawings may be seen and specification and forms of tender obtained at the superintendent's office, 12, St. Giles Street, Edinburgh. Tenders, endorsed "Tender for Cast-iron Pipes," must be lodged by November 16, with William Boyd, W.S., clerk to the Trust, Water Trust Chambers, 12, St. Giles Street, Edinburgh.

Nov. 17. LONDON (for India).—Supplying: 1, steel material; 2, rails and fishplates; 3, fish bolts and nuts; 4, bearing plates; 5, dog spikes, for the Bombay, Baroda, and Central India Railway. Tenders must be made on forms, which, with specifications, can be obtained on payment of 21s. each (which will not be returned), of W. V. Constable, secretary, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C., to whom tenders are to be seen by noon on Nov. 17.

Nov. 20. LONDON.—Supply and delivery of enamelled iron by-law plates at Battersea, Finsbury, and Victoria Parks, for the L.C.C. Persons desiring to tender may obtain the specification, form of tender, and other particulars at the parks department, 11, Regent Street, S.W. Tenders to be delivered in a sealed cover, marked "Tender for By-law Plates—Parks," by 11 a.m. on Nov. 20, to G. L. Gomme, clerk of the L.C.C., County Hall, Spring Gardens, S.W. Fair wages clause.

Nov. 21. YSTRADGYNLAIS. — Supply and delivery at Ystradgynlais station (Neath and Brecon Railway) of about 34 tons of 3-inch cast-iron pipes and special castings, for the R.D.C. Specification, schedule of quantities, and form of tender may be obtained from S. A. Bell, engineer, Herbert Street, Pontardawe, upon receipt of a cheque for two guineas. Sealed tenders, endorsed "Cast-Iron Pipes Contract," should be delivered by November 21, to L. J. Kempthorne, clerk to the council, Dyffryn Chambers, Neath.

Nov. 23. MARGATE.—Supply and delivery of various weights, measures, and weighing instruments, for the corporation. Full particulars can be obtained on application to the town clerk. Tenders, endorsed "Weights and Measures," must be sent by 1 p.m. on Nov. 23, to Edward Brooke, town clerk, Margate.

PAINTING.

Nov. 14. BLAENAVON, etc. — Painting, repairing, papering, etc., the "Market Tavern" hotel, Blaenavon; "Queen Victoria" hotel, Rhymney; "Old Tanyard" inn, Merthyr; "Royal Arms," Pantywaun, for A. Buchan and Co., Rhymney Brewery, Rhymney. Specifications and plans may be seen at each of the houses, or at the office of T. Roderick, architect, Clifton Street, Aberdare. Endorsed tenders for each house to be sent to T. Edwards, Rhymney Brewery, Rhymney, by November 14.

Nov. 17. BIRKENHEAD.—Externally painting the poor law offices, Conway Street, Birkenhead, for the guardians. The premises may be inspected any day between 9—12 and 2—4. Forms of tender, with specification, may be obtained of the clerk, and must be delivered, endorsed "Tender for Painting," by noon on Nov. 17, to John Carter, clerk to the guardians, poor law offices, Birkenhead. Fair wages clause.

Nov. 21. YORK.—Painting and decorating the dining hall at the North Riding asylum, Clifton, York. Tenders to be sent by Nov. 21, addressed to the committee of visitors, and endorsed "Tender for Painting."

PLUMBING & SANITARY

Nov. 14. SCHOLES, near Leeds.—Laying about 112 yds. of 9 in. sewer; also, construction of storm water overflow, settling tank, and circular bacterial filter at Scholes, near Leeds, for Tadcaster R.D.C. Plans may be seen, and specifications, and all other information obtained from H. M. Driver, sanitary surveyor, Garforth, near Leeds. Sealed tenders, endorsed "Drainage, Scholes," must be sent by Nov. 14, to Geo. A. Bromet, clerk to the council, Tadcaster.

Nov. 16. WITHINGTON.—Draining, kerbing, flagging, and sett paving, etc., of Leslie Street, Seddon Street, Grantham Street, and Palmes Street, Withington, for the Manchester corporation. Plans, sections, and specifications can be seen and a form of tender with quantities and any further information obtained from the surveyor to the committee, town hall, West Didsbury. Tenders, endorsed "Tenders for Street Works," addressed to the chairman of the Withington committee, town hall, West Didsbury, to be delivered by noon on Nov. 16.

Nov. 16. GREAT WARLEY.—Construction of about 166 yards of 9 in. and 6 in. stoneware pipe sewer, with manholes and other works incidental thereto, in Hartswood Road, Great Warley, for the Romford R.D.C. Full particulars and form of tender may be obtained upon application to W. J. Grant, surveyor, Victoria Chambers, Romford. Sealed tenders, endorsed "Hartswood Road Sewer," to be delivered by Nov. 16, to William Smith, clerk to the council, 13, North Street, Romford.

Nov. 16. LEEDS.—Paving and flagging the following streets, for the corporation: Methley Terrace, Methley Grove, Methley Drive, Mexborough Drive, back Mexborough Drive, Savile Road, back Savile Road, and Renton Terrace. Drawings may be seen at the city engineer's office, municipal buildings. Forms of tender and bills of quantities may be obtained, and copies of documents inspected, on application at the highways office, 155, Kirkstall Road. Sealed tenders, endorsed "Tender for Private Street Works," and addressed to the highways committee, must be delivered at the town clerk's office, town hall, Leeds, by 10 a.m. on Nov. 16.

Nov. 16. HALIFAX.—Construction of about 180 lineal yards of 9 in. earthenware pipe sewer in Green Lane, off Rochdale Road, and about 200 lineal yards of 12in. earthenware pipe sewer in Burnley Road, at Cote Hill, for the highways committee of the corporation. Plans and specifications may be seen, and forms of tender obtained, on application to James Lord, M.I.C.E., borough engineer, town hall, Halifax, upon payment of £5 for each set of quantities. Tenders, endorsed "Green Lane Sewer," and "Burnley Road Sewer," respectively, must be delivered by Nov. 16, to Keighley Walton, town clerk. Fair wages clause.

Nov. 19. LEEDS.—Execution of sewerage works, at Gledhow Valley, Street Lane, Lidgett Lane, for the corporation. Drawings may be seen, and forms of tender with copies of documents obtained on application to W. T. Lancashire, city engineer, municipal buildings, Leeds, on deposit of £3 3s. Tenders, on the official form, enclosed in a sealed cover, endorsed "Sewerage Works," addressed to the town clerk, town hall, Leeds, by 10 a.m. on Nov. 19.

Nov. 19. LEEDS.—Sewering Gledhow Valley, Street Lane, and Lidgett Lane, for the sewerage committee. Drawings may be seen and forms of tender, with documents forming the contract, obtained on application to W. T. Lancashire, city engineer, Municipal Buildings, Leeds, on deposit of £3 3s. Tenders must be on the official form, enclosed in a sealed cover, endorsed "Sewerage Works," addressed to the town clerk, and delivered at the Town Hall, Leeds, by 10 a.m. on Nov. 19.

Nov. 20. OAKHAM.—Construction of about 1,500 lineal yards of 9 in. diameter stoneware pipe sewer, with junctions, manholes, lampholes, ventilators, and other works in connection therewith, for the R.D.C. Plans, sections, and specifications, may be seen on application to the clerk; or Charles W. Maudsley, civil engineer, South Street, Oakham (from whom the bills of quantities and other information may be obtained), between 10 a.m. and 4 p.m. (Thursdays, 10 to 1). Sealed tenders, endorsed "Oakham Sewerage," and directed to the R.D.C., are to be delivered by 4 p.m. on Nov. 20, to W. Batts, clerk to the council, Oakham.

Nov. 23. CHELTENHAM.—Construction of a new brick and concrete outfall sewer about two miles in length, for the corporation. Upon a deposit of £3 conditions of contract, specification, bills of quantities, and form of tender may be obtained on and after Nov. 12, from J. S. Pickering, M.Inst.C.E., borough engineer, municipal offices, Cheltenham, to whom endorsed tenders are to be delivered by 9 a.m. on Nov. 23.

Nov. 24. LEEK.—Works of sewerage at Ball Green, Norton-in-the-Moors, for the R.D.C. Plan and specification may be seen with J. Morris Shaw, clerk, union offices, Leek. Sealed tenders, endorsed "Ball Green Sewerage," to be delivered by Nov. 24, to W. Shufflebotham, Russell Street, Leek, from whom any further information may be obtained.

Nov. 24. CANNING TOWN, E.—Construction of underground convenience, Beckton Road, Canning Town, E., for the corporation of West Ham. Plans and specification may be seen, and form of tender, bills of quantities, and further particulars obtained, at the office of John G. Morley, borough engineer, town hall, West Ham, E., upon payment of one pound. Tenders to be delivered by 4 p.m. on Nov. 24, to Fred. E. Hilleary, town clerk, town hall, West Ham, E., in the envelope supplied by registered post. The contractor will be required to enter into a bond with one surety, for performance of contract. Fair wages clause.

Nov. 30. AUSTWICK.—Re-building the latrines at Austwick school, and connecting the same with the main drainage. Tenders to be sent by Nov. 30. Plans and specifications may be seen with James Capstick, The Nook, Austwick.

Nov. 30. WILLESBOROUGH.—Execution of drainage at the workhouse, Willesborough, for the East Ashford Union. Plan and specification can be seen at the workhouse on and after Nov. 16. Bills of quantities will be supplied on deposit of £1. Sealed and endorsed tenders to be sent to the chairman of the guardians at the workhouse, by 9 a.m. on Nov. 30.

Dec. 14. GOSFORTH.—Construction of pipe sewers and storm water drains, for the U.D.C. The works consist of laying about 8¼ miles of pipe sewers, varying from 9 in., to 36 in. diameter, together with manholes, flushing chambers, etc. Persons desirous of tendering should send their names to the engineer, Harry W. Taylor, A.M.I.C.E. (of the firm of Taylor, Wallin and Taylor), Cathedral Buildings, Newcastle-on-Tyne, by Nov. 14, after which plans and conditions of contract may be seen, and specifications, quantities, and form of tender obtained, on five guineas deposit. Sealed tenders, endorsed "Gosforth Main Drainage Works," must be delivered by noon on Dec. 14, to R. Sheriton Holmes, clerk to the council chambers, Gosforth, Northumberland.

ROADS AND CARTAGE.

Nov. 13. PRESTON.—Levelling, paving, etc., and making good Eldon Street, from Parker Street to Green Bank Street, for the corporation. Plan, section, and specification may be seen, and schedule of quantities and form of tender obtained, at the office of the borough surveyor, town hall, Preston, to whom sealed tenders, endorsed "Tender for Paving, etc.," must be delivered by noon on Nov. 13. Fair wages clause.

Nov. 16. LOWER ROCHFORD.—Removing earth and forming proposed road about 400 yards long at Lower Rochford, for the Tenbury R.D.C. Plans and specification may be seen by appointment. Sealed tenders, endorsed "Rochford Road," to be delivered by November 16, to R. W. Jarvis, surveyor, Kyreside, Tenbury.

Nov. 16. DULWICH.—Kerbing, channelling, foundations for asphalte paving, road work, etc., in Calton Road, Dulwich village, for the Corporation of Camberwell. Specifications and forms of tender can be obtained from William Oxtoby, borough engineer, Town Hall, Camberwell. Tenders must be delivered, by 6.30 p.m. on November 16, to C. William Tagg, town clerk.

Nov. 16. KENSINGTON.—Making-up the roadway of Logan Place, for the Corporation. Plans and specification may be inspected, and further particulars obtained, at the borough engineer's department, Town Hall, Kensington, and tenders, endorsed "Tender for Road Works," must be delivered by noon on November 16, to Wm. Chambers Leete, town clerk, Town Hall, Kensington, W. The contractor will have to, if required by the council, provide two sureties. Fair wages clause.

Nov. 19. BEXLEY.—Supply and delivery, to Bexley Heath station, of 2,000 tons (or thereabouts) of 2½in. broken surface-picked field flints, for the Oaklands and Broadway estates, Bexley Heath, for the U.D.C. Specification and form of tender may be obtained upon application to W. T. Howse, surveyor to the council. Sealed tenders, endorsed "Flints," to be delivered by noon on Nov. 19, to Thos. G. Baynes, clerk to the council, council offices, Bexley Heath.

Nov. 23. SOUTHFIELD.—Executing works of repair upon the carriage road called Gressenhall Road, Southfield, for the Corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained at the borough engineer's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, sealed and endorsed "Tender for Repairing Gressenhall Road," must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed in the box provided by 4 p.m. on November 23. If required the contractor must provide two sureties for execution of the contract. Fair wages clause.

Nov. 23. CLAPHAM.—Making-up and paving that part of Acre Square, Clapham, South, lying between Clapham Park Road and the entrance to the workshop at the south-western end, for the corporation of Wandsworth. Specification and drawings may be seen, and forms of tender obtained, on and after Nov. 13, at the borough engineer's office, new streets department, 56, East Hill, Wandsworth, S.W., between 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in sealed envelopes, and endorsed "Tender for Paving Acre Square," must be placed in the box provided by 4 p.m. on Nov. 23. If required, the contractor must provide two sureties for the execution of the contract. Fair wages clause.

No date. OYSTERMOUTH.—Formation, including the sewerage, of Dunn's Lane to Langland Road, etc. Persons desirous of tendering should apply for copies of quantities, etc., to J. H. Morewood, Welwyn Lodge, St. Thomas, Swansea.

MISCELLANEOUS.

Nov. 14. BRAMLEY.—Execution of slater's, plumber's, plasterer's, and painter's works in two houses at Bramley, for William Abbott. Plans and specifications may be seen with John A. Webster, architect, 2, Basinghall Square, Basinghall Street, Leeds, till Nov. 14, when sealed and endorsed tenders are to be sent in.

Nov. 16. EBBW VALE.—Erection of boundary walls and iron railings at the Pontygof boys' council school and asphalting the new playground there, for the education committee. Plans and specifications may be seen at the office of the architect, Henry Waters, Market Chambers, Ebbw Vale, any day except Saturday. Tenders, enclosed in a sealed envelope, endorsed on the outside, "Pontygof Boys' School," should be delivered by Nov. 16 to Thos. Hughes, secretary, Ebbw Vale.

Nov. 16. LONDON, for Durban (Natal).—Supply and delivery "free on board" of 1 mile each of 6in. and 7in. stoneware sewerage pipes, with a quantity of junctions and bends, for the Corporation. Specifications can be obtained from W. H. Radford, C.E., Albion Chambers, Nottingham, consulting and representative engineer to the corporation, on deposit of one guinea. Signed and endorsed tenders must be delivered to Webster, Steel and Co., agents to the Durban Corporation, 5, East India Avenue, Leadenhall Street, London, E.C., by Nov. 16. Manufacturers only are invited to tender.

Nov. 19. EDINBURGH.—Fencing off a piece of ground presently occupied by the Edinburgh and District Tramways Company, at Shrubhill, and forming an access between M'Donald Road and Dryden Street, with gate entrances to the company's premises, laying pavements, and repairing causeway, for the magistrates and council. Specification and schedules of quantities may be obtained and plans may be seen at the office of the burgh engineer, Police Chambers, from whom all information may be had. Sealed tenders, endorsed "Dryden Street Access," must be lodged by 10 a.m. on Nov. 19, with Thomas Hunter, W.S., town clerk, City Chambers, Edinburgh.

Nov. 21. GUILDFORD.—Provision and erection of about 105 lineal rods of oak close pale fencing around the boundaries of the land recently added to the workhouse premises, Warren Road, Guildford, for the guardians of the poor of the union. Specification and other particulars of the work can be seen and form of tender obtained at the offices of Edward L. Lunn, architect and surveyor, 36, High Street, Guildford. Sealed and endorsed tenders are to be sent by 10 a.m. on Nov. 21, to W. S. V. Cullerne, clerk to the guardians, union offices, Commercial Road, Guildford.

No date. MENWITH-WITH-DARLEY.—Erection of a pitch pine and class screen in the corridor at Menwith-with-Darley council school, where plan, etc., may be seen, for the West Riding C.C. Tenders should be adressed to the divisional clerk. West Riding education offices, Harrogate.

Appointments Wanted.

The charge for Advertisements under this heading 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 5 o'clock on Monday evening.

ARCHITECTS.—GOOD CLASSIC DETAILS. Architect's Assistant with 10 years' thorough experience in good offices on important classic and renaissance work, disengaged. Give part evenings to competition work; age 28; salary £2 5s.—Apply to W. H. Garwood, 32, Marine Parade, South Lowestoft. 4638

ARCHITECT'S Assistant, 25, silver medallist, for town planning (see "Journal" Oct. 14, page 290); 8 years' experience, designs, details, specifications, measuring up, and estate development, surveys, levels, etc.; excellent references; moderate salary.—Gilbert Waterhouse, Park House, Buckhurst Hill. 4606

ARCHITECTURAL Improver, or junior assistant (21), excellent knowledge in good design, very neat and clever draughtsman; assist quantities, surveying, perspectives; moderate salary; specimens.—Box 4635, Builders' Journal Office.

ARCHITECT'S Assistant seeks engagement; has had nine years' experience in good offices (London and the provinces); just completing engagement with City firm; excellent testimonials; moderate salary.—Box 4636, Builders' Journal Office.

ARCHITECT'S junior assistant (21), 5 years' church and domestic experience in busy provincial office; surveying and levelling; excellent references; moderate salary.— Box 4645, Builders' Journal Office.

ASSISTANT (20), builder's or surveyor's, 4 years with quantity surveyor, office routine, abstracting, billing, construction, land surveying, levelling, plans, tracings.—Henry Priddle, 4, Sumatra Road, West Hampstead. 4653

ARCHITECT and surveyor's junior assistant desires situation; 4 years' experience; good draughtsman, plot from sketches; certificates, building construction; also shorthand (100) and typewriting; good testimonials; energetic; would go on trial; age 19; salary £1. — Box 4674, Builders' Journal Office.

A COMPETENT Architectural Assistant (22) seeks appointment; excellent testimonials and hon. certificates. Open to take place with surveyor, estate agent, sanitary engineer, etc. Salary, 30s.—Apply Box No. 4688, Builders' Journal Office.

ARCHITECT'S junior assistant, ten years' varied London experience, references, 35s., or by arrangement; churches, domestic alterations, measuring; London, Provinces.—Dicken, 8, Westbury Road, Ealing. 4650

ARCHITECTURAL Improver, or junior assistant (21), excellent knowledge in good design, very neat and clever draughtsman; assist quantities, surveying, perspectives; moderate salary; specimens.—Box 4635, Builders' Journal Office.

ASSISTANT, A.R.I.B.A. (29), thirteen years' London experience, working drawings, perspectives, specifications, supervision; office work; well up in management; salary 2 guineas; London preferred.—Apply Box 4622, Builders' Journal Office.

ARCHITECT'S assistant (23), over 7 years' London and Provincial experience; excellent references; Inter.R.I.B.A. Exam. — H. J. Wilson, "Brinkdale," Park Road, Peterborough. 4670

ARCHITECT and Surveyor's Assistant (24); 8 years' London exp.; working drawings, specifications, superintendence, prizeman and medallist, testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4669

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, Builders' Journal Office.

ARCHITECT and Surveyor's junior assistant desires engagement; probationer R.I.B.A.; good draughtsman; 4½ yrs.' general exp; moderate salary.—F. G. C., 46, Franklin Road, Gillingham, Kent. 4641

ARCHITECT'S and Surveyor's Assistant desires change; 6 years' varied general experience; assist quantities, good refs.—Box 4617, Builders' Journal Office.

ARCHITECT'S and Surveyor's Assistant, 15 years' good practical experience; excellent draughtsman, designer, and colourist; working drawings, details, specifications, surveying, levelling, and general routine; excellent references; moderate salary.—A. R., 1, Ivy Villas, Cheam, Surrey. 4698

ARCHITECT'S Junior Assistant, over 4 years' London experience, competition work, contract drawings, details, perspective; honours construction, Prelim. R.I.B.A.; very moderate salary.—Box 4661, Builders' Journal Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade. —Apply Box 4585, Builders' Journal Office.

AS Clerk, cashier, depot manager, or any position of trust, 11 years' experience, builder's and coal merchant's trade; age 25; good penman; also reference; moderate salary.—Box 4659, Builders' Journal Office.

BUILDER'S or surveyor's assistant (20), 4 years with quantity surveyor; quantities, estimating, correspondence, plans, tracings, measuring up, levelling, etc.—H. Priddle, 4, Sumatra Road, West Hampstead, N.W. 4705

BUILDER'S general foreman, advertiser seeks engagement; 16 years' service as above with first-class London firm on important and various works; good references.—Address H., 150, Effra Road, Wimbledon, S.W. 4703

BUILDER'S and Surveyor's Assistant (24), practical experience in construction and surveying; also quantities and levelling, supervision; assist estimating; draughtsman; well up in costs, accounts, wages, etc.; moderate salary.—Box 4684, Builders' Journal Office.

BUILDER'S Assistant desires situation; age 23; thorough office routine; can take charge; experienced in estimating; quantities; accounts; p.c. invoices; good draughtsman; moderate salary.—F. Webber, Cranfurd Rise, Maidenhead. 4701

BUILDER'S general foreman desires re-engagement; just finished large schools; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable. First-class testimonials.—W. R., 85, Grove Lane, Handsworth, Birmingham. 4702

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, Builders' Journal Office.

CARPENTER and Joiner (age 32) wants job. Bench, fixing, alterations, or jobbing. Could take charge if required. Good references. Life abstainer.—Pearson, 53, Hartham Road, Isleworth, W. 4681

CARPENTER'S work, carcassing, stairs, shopfitting, etc., wanted. Piecework, labour only; houses, etc., taken right out. Any quantity, and distance no object.—G. Bown, 3, Albert Villas, Old Church Hill, Chingford. 4658

CARPENTER and joiner wants job; all-round hand, used to jobbing shop. Eight years' references last job. Wages moderate.—Cooke, 10, Cumberland Road, Walthamstow. 4652

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, Builders' Journal Office.

ENGINEER, general, wants permanent appointment, official or private staff; thorough all-round experience; electrical, plumbing, smith, married, 34; good testimonials.—86, Bathurst Gardens, Willesden. 4704

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

GENERAL Foreman shortly disengaged, just finishing large job; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable; first-class testimonials.—W. R., New Council Schools, Biddulph Moor, Congleton. 4621

HIGH-CLASS decorator, manager, seeks re-engagement; estimator for all classes of best work; abroad if necessary; excellent testimonials; moderate salary.—Apply Forbes, 7, Eldon Street, York. 4677

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, Builders' Journal Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, Builders' Journal Office.

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER (Reg. by Exam.), well up in hot water and heating systems, capable of taking entire charge; 6 years' ref.; age 38.—H. P., 11, New Buildings, Hampstead, London. 4676

PLUMBER (aged 30); gas and hot water fitter; well up all branches, new or jobbing; wages mod. Town or country.—11, Glaskin Road, Hackney. 4690

QUANTITY Surveyor, London, first-class experience, and qualifications, wishes to arrange with architects or others for preparation of bills of quantities, adjustment of variations, etc.—Box 4675, Builders' Journal Office.

QUANTITY Surveyors.—A builder wishes to place his son (18) in above office; has had some experience. No premium, but can introduce business.—Apply H., Ashford House, Wimbledon Common. 4686

QUANTITY Surveyor, Member Q.S.A., 32, eight years' practical building experience, eight years' office practice, desires post as senior or managing assistant.—Box 4610, Builders' Journal Office.

SLATE MERCHANTS AND BUILDERS' MERchants.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STUDENT R.I.B.A., 23, well trained man, desires situation as assistant; 1½ guineas. — Box 4607, Builders' Journal Office.

STONEWORK wanted (piecework).—Stone dressings, Bath stone fronts to villas, etc.—Apply A. Powell, mason, 15, Elm Lodge Avenue, Reading. 4667

TO Builders.—Situation as improver wanted by young man just out of his time; technical student; neat draughtsman; assist with quantities, supervision, etc.; abstainer. — Box 4662, Builders' Journal Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, Builders' Journal Office.

Appointments Vacant.

APPLICATIONS for architectural situations written promptly in striking form, that will exhibit applicants' capabilities and experience to best advantage, by technical man. — Box 4616, Builders' Journal Office.

CAPABLE clerk required in London office, must have experience of estate work and repairs to house property; book-keeping and rent collecting.—Apply by letter only, stating age and qualifications, to A. J. H., 36, Princess Road, Regent's Park, N.W. 4665

MARBLE.—Smart salesman required, with thorough knowledge of the wholesale marble trade; good opening and permanent post for right man.—Apply Salesman, Box 4671, Builders Journal Office.

TYPIST and shorthand writer wanted, one used to builder's or architect's office; state age, experience and salary required, to Box 4697, Builders' Journal Office.

Purchasing Agents.

A Belfast firm of builders' providers, doing extensively with builders, etc., in Ireland, is open to treat with a few good houses with a view to becoming purchasing agents for them in Ireland; stocks can be kept.—Box 4700, Builders' Journal Office.

November 18, 1908. Volume 28. No. 719.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Hope's Flattering Tale.

Unemployment in the building industry, affecting all grades, from the architect to the labourer, has come so near agony point, and, to the average mind, is so inexplicable, that any authentic pronouncement on the present unhappy posture of affairs is sure to be eagerly welcomed, whether or not it encourages hope of speedy relief. It occurred to a writer in the "Westminster Gazette" that the head of the great firm of Holloway Brothers should know something both of the causes and the effects of the subject, and in the course of the resultant interview Mr. Holloway showed that this confidence had not been misplaced. Mr. Henry Holloway admits that we are in the depths of a depression such as, in thirty years' experience, he had never before seen equalled; but withal he makes, on the whole, an optimistic forecast. The causes of the depression are want of capital and consequent lack of enterprise. People (including municipalities) will not build if they can help it while money is scarce and dear. "What has been absolutely necessary has been done, but outside the absolutely necessary there have been no schemes at all." The speculative builder was paralysed by the prohibitive state of the money market. But Mr. Holloway thinks that we have touched the very bottom of the depression. Money is cheaper again, and this softening of the rates of usance must have the effect of putting in hand the many works that have been held back pending the slackening of the purse-strings. Unless, therefore, Hope, as impersonated by Mr. Holloway, "tells a flattering tale," an immediate improvement is in prospect. One remark of Mr. Holloway's will, we think, be surprising to most builders. He was inclined to deny that the seasons *per se* very greatly affect the volume of London trade. Winter, he acknowledged, bears hard on the painter and decorator, but the chief reason why there are then so many other men out of work is found in the annual influx, especially at Christmas time, of large numbers of men from the provinces. "The amount of work does not fall off, but the number of available workers increases enormously." He thinks that the idea of shortening the hours of work in order to give employment to more men is impracticable in London. Business premises have now to be run up in about a third of the former time, and the master builder has therefore to press on. Relays or shifts of men would be, more particularly in certain classes of work, very seriously inconvenient—in masonry, for instance, you could not take off one mason from the piece of stone he was cutting, and put on another man to finish it. We gather, therefore, that Birmingham's example is but little likely to be followed in London. But, if Mr. Holloway's forecast of "better times ahead" be not falsified, there will be happily no need to extend the experiment.

Another Welsh Idyll.

A week or two ago we referred to the disruption of the amenities in the Vale of Llandyssul; and now some kind friend has sent us a marked copy of the "South Wales Daily Post," wherein we find more trouble—this time in Llandilo—and again over the local surveyor. If the treatment meted out to the surveyors at Llandyssul and Llandilo is at all typical—well, the Welsh surveyors have our sincere sympathy. In the first case, the unfortunate surveyor incurred the wrath of his Council because he wanted an increase on his salary of £5 a year. At Llandilo it was proposed that the surveyor should fill up the cracks in the walls of the electric light station. This does not, on the face of it, sound very alarming; we have seen many Council instructions to surveyors reported in similar terms. But when we explain that this proposal is to be taken literally, and that the Llandilo surveyor was, in the true spirit of the Craft Guilds, to ascend the scaffold and tuck cement into the cracks with the point of the trowel, it will be seen that the story has some elements of pathos—or bathos. Our contemporary's account is very short; it but records the hard and austere facts, and there "may be more behind." Perhaps the surveyor had designed the electric light station, and the proposal was in the nature of a just retribution for the defects that subsequently developed. Some idea of a punishment fitting the crime may have lurked in the mind of the worthy councillor who made the proposal. Who knows? The Surveyor could but plead that such work was not nominated in his agreement, and fortunately, he found a friend, who "referred to the dignity of the office"—nobody seems to have thought of the dignity of the Council—and proposed that "the surveyor be kept to his duties, and not to do mason work." And on a vote—it actually came to a vote—the surveyor escaped. But what has the Bricklayers' Union to say to it all? We recommend the local secretary to keep a watchful eye on the Llandilo Council.

The Parthenon and Some Modern Architectural Critics.

We have recently perused, with much interest and pleasure, the excellent opening address delivered by Mr. Paul Ogden before the Engineering and Architecture Section of the Manchester School of Art. Replete as it is with sterling advice to the architectural student of to-day, we propose to refer to it at greater length on a future occasion. But, in view of the fact that the incongruous design of one of the façades of a lately completed metropolitan building (in which the central feature—a stone screen of Italian Renaissance character is appropriately (?) flanked by Jacobean gables)—has received the loudly expressed approval, both lay and professional, of many would-be critics, we were beginning to wonder whither the same trend of thought would land us could it be applied to some of the purest examples of the purest of all styles of art. Mr. Ogden has solved the riddle by giving us his idea of the kind of criticism to be expected if (immediately on its completion, about the middle of the fifth century B.C.) the architectural aspect of the Parthenon had been reviewed by one of the many modern architects who prefer incongruity to scholarship, and "picturesqueness" to dignity and repose, viz.:—"When are architects going to abandon the copying styles, and give us something new and original? We confess we are tired of this repetition of columnar architecture. Have we no architects whose soaring souls recognise the degradation of copying from their predecessors? It must, however, be conceded that the architects of the Parthenon have carefully corrected optical illusions. Thus the entasis, or graceful swelling of the columns, has been applied to correct an appearance of hollowness in the supports, while the outer intercolumniation has been narrowed for the purpose of making the angle of the temple appear stronger. The slight hollowing of the underside of beams over the openings serves to prevent them from appearing to sag, or drop in the middle. The steps of the stylobates are also raised in the middle to avoid any appearance of sagging at the centre. The inward tendency of the columns prevents an appearance of falling outwards, while the axes of the angle columns would meet, if sufficiently prolonged, at a height of about a mile above the ground. On these points we congratulate them." And we congratulate Mr. Ogden on his pretty knack of parody.

The Enemy at the Gate.

The vicissitudes of the ancient priory church of St. Bartholomew-the-Great, West Smithfield, have been extraordinary, and seem to be interminable. The church, by its history and antiquity easily the most interesting building in the City, has hardly emerged from the scandalous encroachments in which it was immured, when fresh troubles of similar character are threatened. Its ancient gateway is in danger of obliteration, and possibly of destruction, by the proposed erection, in close proximity, of modern business premises. As Sir Aston Webb has said, "It would be lamentable indeed if in the course of one year the City should lose Crosby Hall and the picturesque entrance to the most ancient church in the City," and, but for the ill-omened reminder of the fate of the former building, one could feel quite confident that there would be no difficulty in raising the money necessary for the preservation of this fine fragment of Early English architecture. The gateway, which comprises an acutely pointed arch, moulded in four orders, with a tooth ornament in the hollows, has been supposed by some authorities to mark the site of the original west front; but there is more reason to suppose that it was the entrance to the monastic enclosure. At any rate, it is worth rescuing from the ruin that would probably be its fate if it were inconsiderately freed from the encroachments that, by an odd irony of circumstance, now form its means of support. These encroachments, although it cannot be claimed that they are picturesque, are at all events fairly old and very familiar, and their supersession by brand-new buildings would be disastrous in effect, whether or not the arch survived them. Those of the City fathers who tried to save Crosby Hall, and failed, have now an opportunity of taking a sweet revenge. Let them speak with the enemy at the gate!

Architect as Clerk of Works.

An odd incident has arisen at Southport. A councillor objected to the appointment of a clerk of works from the surveyor's office. The objector admitted that, as architect and draughtsman, the official in question was most competent and able, but it was contended that a clerk of works ought to be a man who to a record of actual participation in manual work added special experience in supervision. Whether this contention—by the way, the councillor who advanced it was a builder—would have been sustained is problematical, for the gentleman who had been nominated for the post took the dignified course of declining to stand, and thus saved his supporters from the risk of defeat. We do not at all insist on a decree absolute that a clerk of works should invariably be drawn from the ranks of the workers. The office is ancient and honourable, and has been reputably held by many respectable architects. But it has certainly come to be regarded as the goal of the ambitious workman—nearly always a carpenter—who may be supposed to have a closer acquaintance with the little tricks that it is one of the duties of the clerk to circumvent, than has the gently nurtured, and hence unsuspecting professional man, who, as a rule, would, as a matter of status, and perhaps with a touch of chivalry, rather remain an architect's assistant at a steady thirty shillings a week than deprive some aspiring ranker of the magnificent opportunity of a periodic or intermittent three-pounds-ten. Whosoever will may call this snobbery; we prefer to regard it as a very proper feeling of professional pride. At the same time, we should by no means feel justified in regarding the architect clerk of works as an outcast and a pariah. The "gentleman ranker" often qualifies as an uncommonly excellent officer.

Sculpture in Vienna.

The extremely able and sympathetic article on Viennese sculpture contributed by Mr. Rudolf Dircks to the November number of *The Art Journal* deserves more than mere passing notice. It contains some remarkably apposite critical notes anent the many splendid examples of the sculptor's art which are to be found in that historical city, and the present writer is heartily in accord with the following general conclusions at which Mr. Dircks has arrived—viz., "Whether it be modern, that is of the last 50 years, or whether it goes back two hundred years, it remains equally a vital and living expression of the artistic spirit of its time. It is never uninteresting, it may possess many defects according to your point of view, but it is never commonplace. You can not get away from the life of it; its tricks are not those of artistic convention, or, in any narrow sense, of artistic formulae. But in the larger sphere of schooling, in anatomical knowledge, in keeping the scale of the forms in relation to the proportions which surround them, in placing, as it were, the right word in the right place you may often find adherence to a formula as old as the Greeks."

Thus, always interesting and scholarly, and ever bearing distinct traces of the traditions and teaching of the school or phase of art to which they belong, the works of the Viennese sculptors, be they ancient or modern, usually attain a high standard of excellence. As an example, mention may be made of the two modern colossal fountain groups in white marble, symbolizing "Naval and Military Power," adorning Fischer von Erlach's curved façade of the Reichskanzlei-Palast, which indeed, by the boldness and originality of their conception, and the anatomical excellence of their modelling, appear to successfully hand on the teaching and practice of the great Michael Angelo. or again—in illustration of other schools of thought—note the exquisite simplicity and restraint—the pathos and poetry—of the charmingly appropriate and graceful memorial to the ill-fated Empress Elizabeth, and the absence of conventionality and general freedom of design displayed by the great Baroque sculptor Raphael Donner, in, among many other works, his well-known fountain enriched with figures of river gods. The successful application of sculpture to buildings is nowhere better exemplified than in some of the beautiful specimens of Baroque architecture with which Vienna is so liberally supplied, and Mr. Dircks has done well to draw attention to the vigorous treatment and masterly craftsmanship usually displayed by Viennese sculptors where they have thus joined hands with the architect.

Attractively illustrated as it is by reproductions of some charming drawings from the facile pencil of Mr. E. A. Rickards, including one depicting the main entrance of the Ministry of the Interior in Wipplingerstrasse (which appeared some time back in the pages of THE BUILDERS' JOURNAL), we heartily commend to the attention of our readers this masterly sketch of old-time and contemporary art.

Mr. Lishman's Water Colours.

The exhibition of drawings in water colour, by Mr. Frank Lishman, A.R.I.B.A., which has recently been on view at the Ryder Gallery in Albemarle Street, is one of exceptional interest to architects. The collection contains many well chosen examples of Italian and English architecture, and some striking landscape drawings, many of which display a fine eye for colour and artistic effect. To particularise, we would mention, as worthy of special commendation, No. 20, The Black Water of Dee, Galloway, noticeable for some fine colouring; No. 31, Chartres (after sunset), a most effective sketch; and No. 57, a charming drawing of Harrow-on-the-Hill, and a very successful example of the artist's powers. Of the many architectural subjects to be seen in the gallery, we prefer No. 9, and early morning impression of Giotto's Campanile at Florence; No. 43, the Tower of San Frediano Lucca; No. 44, Bologna, a rich colour study; and No. 47, the Interior of the Duomo Pisa, which is one of the finest drawings in the room. Mr. Lishman is to be heartily congratulated, both upon his landscape sketches and his excellent pictorial rendering of many extremely difficult architectural subjects.

The Dwindling Timber Supply.

The prophecy of a timber famine was re-affirmed by Mr. Lewis Miller, of Crieff, in giving evidence before the Royal Commission on Coast Erosion at Westminster on November 11th. Mr. Miller, who has had forty years' experience of the timber trade in Scotland, Ireland, Norway, Sweden, Newfoundland and Canada, said that the world's timber supply was giving out. The Scandinavian and Russian forests that had supplied this country for sixty years were nearly exhausted. The United States forests would at the present rate of consumption be exhausted in from twenty to thirty years. The Canadian forests could not last longer than twenty years, and the timber on the Pacific Slope would be wanted during the next twenty or thirty years by the United States, Canada, South Africa, Australia, and Japan. Those best able to judge estimated a timber famine inside thirty years, unless steps were at once taken to prevent it. He recommended that the planting of all our waste land should be made compulsory, as in Germany.

A Word for Terra-Cotta.

A slight misunderstanding with respect to terra-cotta has received "the necessary correction." This material, it seems, is being maligned by those who say that it cannot be produced true to form. The manufacture of glazed bricks, terra-cotta, and pottery, formed the subject of an interesting lecture delivered on November 12th, on the invitation of the Sheffield Society of Architects, by Mr. W. H. Allen, of the Burmantofts Works, Leeds, and the lecturer, having described in interesting detail the processes involved, from clay pit to kiln, dealt with the objections that were formerly raised against the use of terra-cotta in building. The chief of these, one of truth in shape, had now been overcome, and work could now be turned out with great fidelity to architects' designs. Terra-cotta could be manufactured quickly and in large quantities. A further advantage was that it was unaffected by the atmosphere.

THE SENSE OF TASTE IN ART.*

By Felix Clay.

I have intentionally headed my paper "The Origin of the *Sense* of Taste," because I am anxious at the outset to make it quite clear that it is my object to isolate and consider the simple direct feeling of pleasure that we have as a kind of intuition when we see certain forms, colours, etc., or hear certain sounds.

Philosophy of Likes and Dislikes.

We all have a fund of natural instinctive likes and dislikes in colour, form, proportion, and so on. However little of an artist a man may be, he still chooses, and with care, his furniture, his wall-papers, his waistcoats, his neckties, and so on, and he evidently is affected strongly by something in the appearance of things quite apart from the utility or otherwise of the object. Everyone is actuated by likes and dislikes, which, when properly cultivated and developed, become art principles. How did this quality arise? Why should we like some things and dislike others, when they are both equally useful or equally useless? There ought to be some reason to account for our natural delight in symmetry, proportion, balance, rhythm, harmony, and our natural discomfort in their absence. If we follow up our various likes and dislikes we shall find at the bottom they rise from some necessary power of selection that helped to determine survival. We must sooner or later find in what way this curious liking for harmony, balance, symmetry, etc., could have been in its early stages of direct value to the organism in the struggle for existence.

What is Taste in Art?

It is obvious that taste in art is primarily the selection of the beautiful. Roughly speaking, by beauty we refer to something in the appearance of an object that gives us a feeling of pleasure in the simple contemplation of it. The age, historical association, memories, etc., of a building are not true æsthetic qualities, but it so often happens that the associated ideas aroused by a beautiful thing and the feelings and emotions they excite are so much stronger than the simple sense response that they almost instantly monopolise the whole attention, and thus seem to be the beauty that is felt. We are so anxious to get a meaning and ideas that we are apt to neglect the simple sensation of pleasure in the beauty, in favour of the intellectual idea. This aspect of beauty is a fascinating and delightful subject, but now we are considering the simple sensation with its feeling of pleasure apart from *canscious* recognition of its various attributes. Many of our tastes are due to this comparison and memory of numerous small points of likeness to things or persons previously experienced, but which we should be incapable of consciously recalling. This point of the subconscious recognition is one of great importance, as it makes it possible by training and practice to get what seems to be an absolutely unconscious feeling for things which have previously been consciously perceived and recognised.

Taste is Subjective.

Beauty consists in the pleasure that is given to our æsthetic sense. Certain objects, views, sounds, give rise to pleasant feelings. It is a psychological commonplace that whenever our feelings are aroused in connection with an object they are at once projected outward and considered as qualities of that object. Beauty we are apt to consider as in some way a quality of the object in which we perceive it, and yet it only exists in our perception of it. Beauty is our expression for the particular way in which we are affected; a beauty not perceived is a pleasure not felt; it has no objective existence. The sense of beauty is subjective, growing with the growth of the individual, widening and expanding with his increase of understanding and powers of perception, until what was once only a physical pleasure becomes transformed into an ideal delight.

Beauty Not Absolute, but Relative.

Is there, then, such a thing as an ideal beauty — an absolute — towards which our efforts and attempts may be considered to be tending? Beauty is due only to the particular arrangements and functions of our sense organs, evolved in and developed to suit a particular environment.

A thing is beautiful to me because I like it, and it moves me emotionally in a particular way. I do not like it because it is "beautiful," because it conforms to some abstract laws of composition to be discovered by research. Laws of composition are, after all, only the sum of what is found successful, and theory lags but slowly after practice.

Primitive Natural Origins.

Our sensations, and in a rough way, our likes and dislikes, can be traced back into the animal kingdom, becoming less and less differentiated and less keen until they finally merge in the lowest organisms in one single faculty of sensation, probably that of touch. So we shall find the prototype of all our instincts in a more rudimentary form in the animal kingdom. The elements, so to speak, are to be found in the animal kingdom, but the human brain is required in order to arrive at æsthetic feeling. Imagine a primitive organism of a rudimentary type developing into the various stages of advance under the stress of the struggle for existence. Thus we see that one of the earliest of all qualities to be developed is that of taste, the selection of suitable food, suitable position, etc.; this would be in the early stages devoid of consciousness, and not until a certain point of development was reached would consciousness appear, and with it the sensation or feeling of pleasure or of discomfort. Like and dislike are not originally determined by pleasure or the reverse, but our likes and dislikes are the present forms of originally necessary reactions formed by physico-chemical reflexes which drew the organism towards the wholesome or suitable, or away from the dangerous or unsuitable.

We have an innate sensuous pleasure in certain combinations of colour, sound, or form, in rhythm, balance, symmetry, and so on, which is previous to and independent of intellectual appreciation. These qualities must have been, at first, in the position of determining a tendency towards (like) or appetition for the suitable, favourable or necessary, and away from (dislike) the unsuitable or dangerous.

Pleasure in Recognition.

It is easy to see that at a very early stage in the development of feeling and consciousness there would be a sense of pleasure in the recognition of the familiar, and of discomfort in the unknown; for it might possibly be dangerous, and was pretty sure to be unsuitable. The pleasure in simple recognition is very great, and persists with a strength that is often apt to be overlooked. To a child, a savage, or even the ordinary person, to recognise, to be able to name, and thereby to have at least the feeling of understanding, is a great pleasure.

Balance, Action and Reaction.

The law of the universe is balance, action and reaction. An organism developing in it, and moulded by its conditions, must necessarily for itself be so formed as to correspond to this law, however concealed. It does not seem an unfair assumption to assert that the instinctive pleasure in harmony is directly sprung from the impelling need for suitability to environment, and is of the utmost advantage to the organism, as giving information whether it was in harmony with its immediate surroundings at the earliest possible moment.

The Physical and the Moral,

The desire for conformity with environment will not only impel us to make our surroundings suitable and beautiful —*i.e.*, pleasing—so that all our perceptions may as far as possible be harmonious, but the intellectual side will, as always, be developed from the physical, and will also require satisfaction, demanding a life that shall be spiritually and mentally in accord with the meaning of the universe. For perceiving a law and order in the physical world it is natural to conclude by analogy that there must also be an order and meaning in the moral world. So in art, the mind realising the felt beauty of simple objects and the power of rhythm can combine portions of the external world of colour, form, or sound, in new and novel combinations producing new and far more intense sensations of pleasure, but always guided and limited in form by the types that have been with us always, by the ever-present, felt need for harmony.

The suggestion, then, that I have to make, is that taste is the direct outcome of the need for adaptation to environment, and that this accounts for our innate liking for harmony, symmetry, balance, etc.

Cause of Decoration.

One of the many reasons which led to the production of decoration is that which has been described as expectancy. The eye feels the want of something to which it has been accustomed. In all kinds of decoration and form, there is a sense of congruity and fitness in that to which we are thoroughly accustomed; so that anything very striking or new is apt to be disliked at first sight, though we may afterwards get to find it better and like it more than the other, because it is not difficult to imagine a stage of existence at which it was vitally necessary to preserve and quickly recognise the normal and familiar.

The Pleasure Felt in Simple Curves

is of great interest, because we can at times get a feeling of pleasure which is due to the simple sense feeling that is clearly independent of any complication of ideas. If a circle, a straight line, an ellipse or a curve be presented to the eye successively, it is possible to distinguish a slightly different feeling aroused by each. A curve, such as we describe by the terms flowing or graceful, can, we

*Abstract of a paper read before the Architectural Association on November 6th.

may easily imagine, be followed by a more natural and rhythmical movement of the optic muscles than a straight line or an uneven zigzag. A circle may arouse its specific feeling by the monotonous repetition of similar movements as the eye passes from the centre to various points upon the circumference; it is not generally found attractive, nor is a straight line, unless either is in a position that demands for strength, stability, or fitting action, perfect circularity, or an accurate adjustment, only to be secured by perfectly straight surfaces. In this case they are borrowing some of their attraction from the meaning that we are consciously attaching to them. It is, however, easy to see that though form may be indebted to convenience or suitability for its attractiveness, the actual recognition of this aspect may become so unconscious that the resulting feeling arises directly from the impression as a simple sense response, of which we may, or may not, be able by reflection to trace the cause.

Utility a Determinant of Taste.

Utility ultimately has determined our likes and dislikes, for utility has inevitably settled what forms shall survive just as much in artificial as in natural conditions. The useful forms have become the familiar types upon which our idealised conceptions are based. This does not mean that a thing is beautiful because it is useful. The conscious recognition of the utility of a thing by no means enables us to see it as beautiful, but obvious utility will win tolerance for a thing, while glaring obvious unfitness will spoil anything. But for a thing to become pleasing the recognition of its utility must have long passed the stage of conscious appreciation.

The Origin of Art.

Art originated in skill devoted to making the environment more suitable, storing up in some form the accumulated experience of previous generations in improved conditions and the production of useful objects. Beauty then arose, as far as it was produced artificially, as an incident.

It is, I think, quite clear that to whatever source we may attribute the first impulses to art production, we are bound to admit that there must have been pre-existent to the first actually produced work of art an innate sense of taste, likes and dislikes to certain arrangements and forms, colours, and sounds, that made it possible to appreciate the first tentative efforts and that gave enough pleasure to induce continuance and development. It is the natural origin of this upon which I have been trying to make some suggestions.

Art's True Dignity.

One point I must refer to before concluding, and that is to deprecate the idea that there is anything disparaging to the dignity of art in thus suggesting an early physical instinct as the origin of the sense of artistic taste. When we see how all our higher feelings and emotions are based upon animal instincts that have been raised by the power of the mind of the soul into the ideal regions where the joys and pleasures are those of the imagination and intellect, until it is hard indeed to recognise their lowly origin; when we see religious spirit passing from the animism and fetichism of the savage, the rude anthropomorphism of the early races into the self-sacrificing beauty of the Christian ideal or the disinterested self-annihilation of the Buddhist, we need feel nothing derogatory to art in proposing a similar growth and development.

Discussion.

Mr. David Murray proposed a vote of thanks to Mr. Felix Clay, for his excellent paper, which dealt with a subject that had been greatly neglected.

Mr. Simpson, in seconding, desired to compliment the Council upon its courage in admitting such a paper. In subject and treatment, it was a distinct departure from the essays to which they were accustomed. He held that such a paper was unquestionably of practical value to men who were being trained in a scientific art such as architecture. The speaker firmly believed that pain and pleasure formed the mainsprings of art.

Mr. Felix Clay having briefly replied, the meeting ended.

REGISTRATION: THE CASE RESTATED.*

By Geo. E. Bond, J.P.

In his presidential address to the Society of Architects, on November 12th, Mr. Geo. E. Bond, J.P., dealt chiefly with the registration of architects, a subject that may be said to constitute the main *raison d'être* of the Society. After reviewing briefly the past year's work of the Society, and congratulating the members on its steady growth, constantly expanding scope, and ever-widening circle of influence, Mr. Bond referred feelingly to the death of his predecessor in the office of president, Mr. Frank Vallance, and then proceeded to consider

The Bill for the Registration of Architects.

With regard to the great measure with which the name of this Society will ever be associated, said Mr. Bond, viz., the Registration Bill, very little progress has been made. Mr. Atherley Jones, K.C., M.P., who has charge of the Bill in the House of Commons, was again unsuccessful in the ballot, therefore there was no opportunity of introducing the measure. But in the meantime your Council has, by meeting the objections raised by the Association of Municipal and County Engineers, secured their co-operation, without in any way sacrificing the principle of the Bill. Also it has succeeded in removing some objections raised by the Institution of Civil Engineers of Ireland. Thus distinct steps in our advance towards ultimate success have been taken, as every unit of opposition turned to support and co-operation adds materially to our strength, and such progress has been made in this direction, that we may, I think, congratulate ourselves, and also those architects throughout the United Kingdom who have avowed themselves to be in thorough agreement with the principle of the Bill, upon the fact that the forces of opposition have been broken up.

The registration movement was initiated in response to the persistent demand of a large number of provincial practitioners that something should be done to provide proper and adequate facilities for professional training; and also to remove the sense of hardship and injustice under which those were labouring who themselves had strenuously studied in order to become efficient, in having to compete, in an inappreciative market, against others, of all sorts of trades and professions, who chose to call themselves architects, without having a single qualification for the title.

How Unfair Competition is Fostered.

The evils of which they then complained have during the intervening twenty-two years been continuously growing, supported in many cases by public authorities, and without any serious attempt by united action to check them. Further, they have been to a great extent fostered by thoughtless and incompetent members of the profession, men, some of whom have served articles in good offices, but who during their pupilage were presumably contented with the ordinary daily routine of the office, who never made any efforts to keep themselves in line with the continuous advance of scientific methods, and the development of new requirements and materials, who were never earnest in their studies, who considered the necessary preparation for examinations as "too much fag," and who as a result are now content to muddle through their work. Had these young men been compelled by law to pass a qualifying examination before commencing to practice, they would have been constrained to study. Both as an art and as a science, architecture must ultimately be degraded if practised as an interlude between selling crockery by auction and valuing the contents of a beer-house, or in the intervals between repairing a water tap and white-washing a ceiling

Registration the Only Way.

We are told that the evidence taken before a special committee of the R.I.B.A. some three years ago brought conviction to the minds of even the strongest opponents of the measures; and as all are agreed as to the evils, why cannot we agree upon a remedy? I venture to assert that a very large majority of the practising architects throughout the British Empire are agreed that the principle of compulsory examination and registration as embodied in the Bill is the only practical remedy. Then why cannot a Bill on these lines be presented to Parliament, backed by the unanimous support of the profession?

The Bill was prepared in response to a memorial signed by some 1,300 architects twenty-two years ago, and since that time hundreds of others have signified their approval of the scheme.

Compulsory Examinations.

The provision made in the Bill for compulsory examination is but carrying to a logical conclusion the principle adopted by the Royal Institute, for it cannot be consistently argued (especially after deciding that the fellowship class shall only after a certain period be recruited from among the associates) that an examination, both in the art and science of architecture, which shall afford the only means of entry to the Institute, is at the same time undesirable or impossible for testing the qualifications of all who in future desire to practise the profession. The passing of an examination test, as proposed in the Bill, would in the future be a certificate only that the person so passing was qualified to practise, and therefore entitled to be registered as an architect. It would not place him on any different plane from that occupied by other practitioners, nor would it necessarily entitle him to membership of any of the organised architectural bodies. His future success would depend upon his own exertions, and the quality of the work executed from his designs; but the

*Points from the presidential address delivered by Mr. Geo. E. Bond, J.P., to the Society of Architects, November 12th.





Entrance Front.

WHINFELL HOUSE, CROWBOROUGH, SUSSEX. R. G. HAMMOND, F.R.I.B.A., ARCHITECT.

habits of observation, thought, study, and hard work, which would necessarily be encouraged and developed during his probation, would the better prepare him for the serious nature of his life's business.

The Bill Fair and Equitable.

The Registration Committee has at all times been very willing to receive suggestions for amendments to the Bill, from those qualified to offer them, and various alterations have from time to time been made, in order to meet objections raised by allied professions, thus securing, as far as possible, a fair and proper adjustment of the various interests. But although the Bill, practically in its present form, has been before the country for more than twenty years, it has not yet induced the submission of any serious alternative. Therefore I venture to say the time is now ripe for a cessation of mutual jealousies and suspicions, so that we may work with one mind. I say without hesitation that the chief object of the promoters of the Bill is to encourage systematic resort to those springs from which our art draws its perpetual refreshment. As an alternative to united action [by the various organisations], the Education and Registration Bill Committee, as delegates from the large body of architects which has subscribed to the principles contained in that Bill, will continue to work earnestly and energetically to secure its acceptance by Parliament, and take steps to bring the question prominently before the country, and, by forcing discussion, focus the light of public opinion upon what we respectfully submit are the inconsistent and sentimental objections of a small but high-placed minority.

HOARDINGS AND SKY SIGNS.

A conference of representatives of the London County Council and the metropolitan borough councils to consider by-laws under the Advertisements Regulation Act was held recently at the London County Hall, Spring Gardens. A discussion ensued on draft by-laws relating to hoardings, and it was urged that the matter should be left to the discretion of the borough councils. On the question being put as to whether or not the by-laws should be framed at all, this was decided in the affirmative. A by-law prohibiting the use of illuminated advertisements was deleted, and another which prohibited the use of "flashlight or intermittent illumination" in connection with advertising signs was similarly dealt with. At the conclusion of the meeting the chairman (Mr. Goldsmith) said he would lay before the committee of the council the points that had been raised.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street, Strand, London.
Dec. 14	§BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.;
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25 and £10. Instructions may be obtained by letter on or before November 5th, to W. T. Postlethwaite, Council ffices, Swinton, Manchester.

* *These competitions have been unfavourably reported upon by Correspondents.*

§ *The Council of the R.I.B.A. advised Members not to compete, but see note below.*

Londonderry Guildhall Rebuilding.

Members of the Ulster Society of Architects practising in Londonderry have been constrained to address the following letter to the Corporation with respect to the proposed rebuilding of the Guildhall:—

[COPY.]

"Ulster Society of Architects, Londonderry Branch, Commercial Buildings, Foyle Street, Londonderry, October 31st, 1908.—To the Corporation of Londonderry,—Gentlemen,—We, the undersigned members of the Ulster Society of Architects practising in Londonderry, having had under consideration the 'Instructions to Architects' relating to the competition for the rebuilding of the Guildhall, would respectfully ask that you reconsider and amend the following clauses in the instructions, viz.: that (1) A lithographed print of the ground floor and first floor plans of the existing building be issued to each competitor; (2), that the time for delivery of plans be made two months from date of issue of revised conditions. [The "Instructions" require the designs to be delivered not later than 4 p.m. on November 20th.] (3). That the clause with regard to the prizes should be amended to read as follows: £100 for first prize, £60 for second prize, and £40 for third prize, and that the remuneration should be 5 per cent. on the outlay instead of 4 per cent. ["Instructions": First premium, £70; second, £50; third, £30. Remuneration of architect employed to carry out the design, 4 per cent.] (4) that the question of quantities should not be allowed to enter into the competition, nor be included in the architects' fees; (5), the name of the referee should be given; (6), approximate estimate should be arrived at by cubing, stating price per cube foot, and not by approximate schedule of quantities, and should accompany competitive plans. ["Instructions": "An approximate schedule of quantities to follow seven days later than the competitive plans, showing the basis on which the estimate cost is arrived at."] We would respectfully suggest that the above alterations be made in the conditions so as to allow us to compete. (Signed), R. Eccles Buchanan, John M. Robinson, T. Johnston, M. A. Robinson, James V. Johnston, J. M. C. Knox, R. H. Nolan, James Reid, Edward J. Toye, Jas. P. McGrath."

We shall be glad to be informed of the fate of these suggestions.

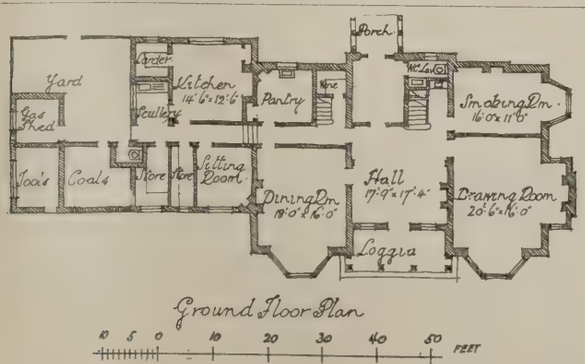
Blackpool Library Competition.

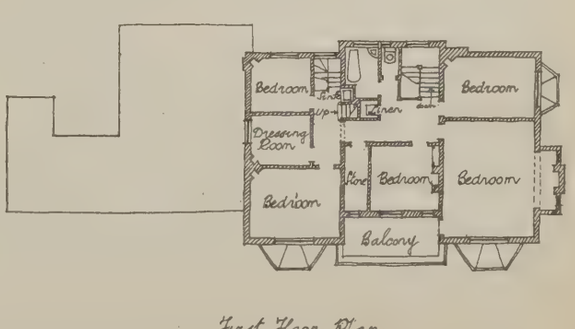
At a meeting of Blackpool Corporation held on November 9th, Alderman Heap suggested that it would be wise for the corporation to accede to the wishes of the R.I.B.A., and thus arrive at a settlement of the dispute, and this course was agreed upon. With respect to the letter from "An M.R.I.A.I.," which we printed in last week's issue, that gentleman now writes:—"It is only fair to say that the amount of my deposit has since been returned to me by the borough treasurer in response to my application for same. Probably other intending competitors who have withdrawn their names will be treated in the same manner."

Our Plate.

"Whinfell House," Crowborough, Sussex.

This house, now completed, has been built for the Hon. Mrs. Brougham. The walls are faced with local bricks, limewhited, and the roofs covered with local hand-made tiles. The house stands on high ground, with a distant view of Beachy Head. The builders were Messrs. Connor Brothers, of Crowborough, and the contract was £2,777. It was designed by Mr. R. G. Hammond, F.R.I.B.A., 16, Essex Street, Strand, W.C.





WHINFELL HOUSE, CROWBOROUGH, SUSSEX. R. G. HAMMOND, F.R.I.B.A., ARCHITECT.



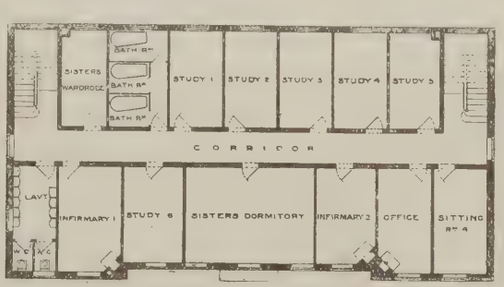
ST. JOSEPH'S CONVENT, BALDOCK. UNDERWOOD AND KENT, ARCHITECTS.

ST. JOSEPH'S CONVENT, BALDOCK.

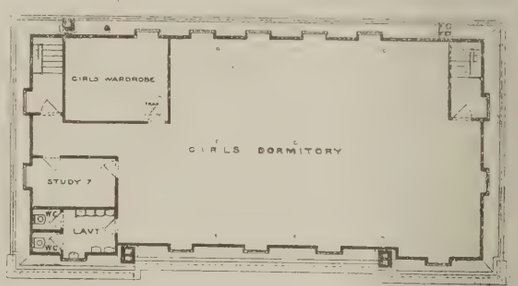
The convent stands on a high site between Letchworth and Baldock, in the uplands of North Hertfordshire, and commands a magnificent view of the surrounding country. It is on the main road from Hitchin to Baldock, and is within one mile of the latter station on the Great Northern Railway. It also closely adjoins the estate of the First Garden City Co., Letchworth, and one of the objects of the building is to provide a good home for girls employed in the factories there. The structure, which has a south aspect, is built of red sand-faced bricks, relieved by gauged arches and dressings of Bath stone, and the roof is covered with Welsh Viking green slates. The internal fittings have been arranged with a view to minimize labour, and with that intention the building, with the exception of the infirmaries, which have open fireplaces, is heated throughout by hot water paper and radiators, and is lighted by incandescent gas. The kitchens, refectories, and recreation room occupy the basement floor. The ground floor is taken up by the sacristry, chapel, community room, work-room, and sitting-rooms. The chapel and community rooms are divided by sliding, folding partitions, as are also two of the sitting-rooms. The first floor is temporarily arranged so that no living accommodation comes directly over the altar and sacristry. On this floor are also private studies for the sisters, and the infirmaries with the sisters' dormitory in close proximity. The whole of the second floor is taken up by the girls' dormitory, which has accommodation for forty beds. Lavatories for the convenience of the inmates' washing, on coming in from work or play, are provided on each floor. Easy access to the various floors is given by a staircase in each end of the building. The convent, which is also intended to be used as an orphanage boarding house and home for ladies, was opened by the Very Rev. Canon Sumart, on September 15th, exactly seven months from the date of laying the foundations. The builders were Messrs. S. Redhouse and Son, Stotfold, and 15, South Street, Finsbury, E.C. The heating was carried out by Messrs. H. Hope and Son, 55, Lionel Street, Birmingham, and Messrs. Adamzes, Scotswood-on-Tyne, supplied the lavatory fittings. The architects were Messrs. Underwood and Kent, of 19, Leys Avenue, Letchworth, under whose personal superintendence the whole of the work was carried out.

The annual return submitted by the Housing of the Working Classes Committee of the London County Council as to working-class accommodation demolished and provided in the County of London and the adjacent district during the year 1907 shows a considerable diminution in the rate at which such accommodation is increasing, the net addition for the year being less than in any year since 1902, when the record was first obtained. The net addition to the number of rooms for the working classes in the county only amounted to 8,806, as compared with 21,475 in 1903.

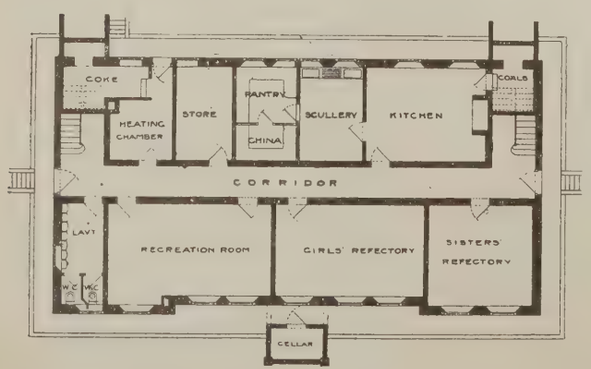
The death is announced from Grenoble of the veteran painter, Antoine Hébert, member of the Institute and Grand Cross of the Legion of Honour. He was born in 1817, was a pupil of David D'Angers and Delaroche, and gained the Prix de Rome, 1839.



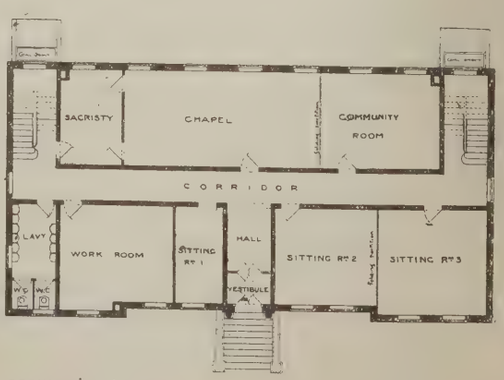
FIRST FLOOR PLAN.



SECOND FLOOR PLAN.



BASEMENT PLAN.



GROUND FLOOR PLAN.

SCALE

ST. JOSEPH'S CONVENT, BALDOCK.

R.I.B.A.

Elizabethan and Jacobean House Design.

At the meeting of the R.I.B.A. on Monday, November 16th, Mr. J. A. Gotch, F.S.A., read a paper on "The development of house design in the reign of Elizabeth and James, as illustrated by contemporary architectural drawings," of which the following is a summary. Mr. Gotch explained that the subject of his paper had been suggested by the exhibition at the Institute last year of original drawings by Huntingdon Smithson, which had been kindly lent for the occasion by Colonel W. L. Coke, of Brookhill Hall, Alfreton. Mr. Gotch had been asked to write this paper in order to describe them more fully and to compare them with the better-known drawings of Thorpe. Colonel Coke had again lent the drawings for the purpose.

[The drawings were hung upon screens in the meeting-room, and many of them were shown by lantern slides.]

Huntingdon Smithson was the architect of Bolsover Castle, and was living at Bolsover in 1601. Beyond these drawings and those of Thorpe there were few, if any, extant which were made at that time of such a nature as to throw much light on the development of house design; but the two collections were sufficient for the purpose. He thought, on examining the drawings, that there was a doubt as to their being the work of Huntingdon Smithson. They were undoubtedly mostly the work of a Smithson, as a number of them were so described in a hand rather later in date than the drawings themselves. But the Christian name of Smithson was never given. The explanatory writing on the drawings themselves was nearly all in one hand; and in the same hand written against one of the drawings were the initials "Jo. S."—"S." presumably for Smithson, "Jo." for John. Robert Smithson and Huntingdon were known; but who was John? There was no answer to this question; but he was almost certain to be of the same family. Wollaton, where Robert is buried, is close to Nottingham; Bolsover is about twenty miles distant. Among the Smithson drawings are some of Bolsover; some of Welbeck, and of Worksop, in the same district; some of Clifton, close to Nottingham; two of Wollaton; some of other houses in Nottinghamshire; and there is a plan of Nottingham Castle. It would seem, therefore, that the author of them did a considerable amount of work in that neighbourhood. The drawings themselves are of varying degrees of excellence. Some are carefully executed, as though for publication; others are roughly done, as though for practical use. They comprise plans of houses and a few elevations; plans and elevations of stables; surveys of houses and of gardens; details of doorways, windows, screens, chimney-pieces, and monuments, as well as drawings of panelling, of fittings, and of a few implements. There are ninety-nine sheets in all, and probably more than twice that number of drawings, since many of the mounts contain two or more. A few of Smithson's drawings bear dates, ranging from 1599 to 1632. Some of John Thorpe's drawings are dated, the earliest 1570, the latest 1621. Hence Thorpe's and Smithson's drawings cover practically the whole of the reigns of Elizabeth and James, and furnish an invaluable series of examples showing the development of domestic architecture during that interesting period.

The planning of houses built before the middle of the sixteenth century was, as a rule, somewhat haphazard, subject always to the old-established arrangement which made the hall the chief apartment, and placed it between the family rooms at one end and the servants' quarters at the other. But in large houses and in houses which had been extended, the additional accommodation had been provided in the manner which seemed at the moment the most convenient. There was but little endeavour to arrange the various rooms systematically, far less was there any real attempt at symmetry. As the influence of Italian design grew stronger, however, symmetry became more highly prized; and by the end of the third quarter of the sixteenth century it had obtained a complete hold of English designers, and dominated their plans in the most obvious and sometimes curious way. By the time that Thorpe began to design, this change in ideas was virtually established, and accordingly we find that he made use of various types. But whatever type he adopted he always treated it symmetrically. If the symmetry did not affect the whole design it affected its component parts, such as the various façades and the courtyard; and as the years advanced the symmetry hardened, as it were; so that the latter examples are more rigidly dealt with than the earlier. This hardening is apparent not only in the plans but in the elevations. The fanciful touches which gave so much charm to the earlier buildings were gradually withheld; the treatment became more staid, the detail more ponderous. The change is noticeable in Thorpe's own drawings, and is quite apparent in comparing his with Smithson's.

The examples selected from Thorpe's drawings the author had chosen in order to illustrate the main types of plan which he adopted, the general accommodation which an Elizabethan house afforded, and the change in the disposition of the hall. With the deposition of the hall from its historic pre-eminence as the principal apartment, mediævalism practically lost its last hold on the English house; henceforward house planning was carried out on new lines. Thorpe and Smithson were the last exponents of the old tradition.

The elevations shown by Thorpe give an excellent conception of the style of the period, and tend to show how house design gradually lost its early freshness and freedom and set its face towards those paths of correctness and severity into which Inigo Jones and his successors finally led it. The author described and commented upon the plans of Burghley House, built between 1577 and 1587; those of Thornton College, for Sir Vincent Skinner, between 1603 and 1611; and of the house described on the drawings as for "Sir Walter Coap at Kensington, p'fected p. me J.T."—now known as Holland House.

In Smithson's drawings, on the whole, a later feeling is found both in the plans and in the elevations and details. Looking at them broadly and in the mass, those built towards the close of James's reign are distinctly different from those built in Elizabeth's. The symmetry which dominated Thorpe's plans is equally observable in Smithson's; if anything, it is more tyrannical. Smithson supplies us with several highly interesting examples of the lay-out of houses with reference to their surroundings—a feature entirely lacking in the Thorpe drawings. Smithson frequently indicates the position of the "garden," "orchard," and "woodyard"; in one or two instances he shows a fragment of a garden with its beds. Thorpe has a plan of Lord Exeter's house, built in 1588, called "Wymlleton, An house standing on ye edg of an hie hill," and he shows the two forecourts with their fine flights of stens leading down to the park. But Smithson's survey shows the whole of the splendid gardens, with their formal walks and flights of steps, the "banketing house," the "heges cut verie finely," the "orcharde with frute treese and roses sett amongest them," the "lyme treese both for shade and sweetnes," the "walls sett with roses," and "a great orchard with walkes nowe in plantinge." Some of the alleys are 660ft. long, and the whole lay-out is devised on a magnificent scale. It brings home to us in a vivid way the fact that splendid formal gardening was understood long before the period with which we are accustomed chiefly to associate it, the time when the third William brought over his Dutch fashions.

Smithson's elevations are not so quaint and fanciful as Thorpe's. It would almost seem as though the close study of text books had begun to stifle the imagination of designers. Fancy of a sort he did occasionally introduce into his detail, but it is fancy of rather an elephantine order. He was not nearly so ingenious in house planning as Thorpe was. The study of Thorpe's drawings is an intellectual treat. The study of Smithson's is interesting in the highest degree, but the interest is of a different kind — as much archæological as architectural. There are more clues to the history of individual buildings to be found in the Smithson collection than in that of Thorpe. They are both invaluable in their way, and they give an illuminating insight into the methods of design at a remarkable period—remarkable not only because of the number and magnificence of the buildings it produced, but also because these buildings combined in themselves the old freedom of fancy with a new and serious effort at scientific planning.

The Institute Club.

A meeting of the executive of the Institute Members' Club is to take place in the R.I.B.A. smoking-room at 5 p.m. on Thursday, November 19th.

Correspondence.

The Architect of To-day.

To the Editor of THE BUILDERS' JOURNAL

SIR,—By publishing the recent very able series of articles on "The Architect of to-day," you have done a real service not only to the architectural profession itself, but to the ever-widening circle of the public interested in architecture.

I should much like to see these articles republished in a form that would attract the attention of those outside our profession, and it would be a great gain if some of our leading daily papers could be persuaded to devote a portion of their space to a subject like this, with a view to arousing public interest in it.

The status of architecture will never be raised in the estimation of the public until it is demonstrated in the clearest possible way that it is of paramount importance that only architects of culture and training should be employed. The public should be taught to insist, even putting the case at the lowest level, the level of its own practical interests, that

all who practice and call themselves architects should at least have proved their competence to do so beforehand. In other words, the public can never be properly protected against the architectural charlatan and the incompetent practitioner until some efficient scheme of registration has become the law of the land.

The miles of hideous buildings, by which all our great cities and nearly every town and village in England is defaced and disgraced, is due in the main to the unintelligent interest and want of interest on the part of the British public in the art of architecture. And a great deal of that apathy is due to the indifference of architects themselves in their own art. Had real love of architecture and consequent enthusiasm first existed in the profession, it would have long ago reacted on the public and aroused a sense of the vital importance of Architecture in national life, and have placed it in its former right and only position amongst the arts—the mistress of them all.

That is the end in view that all architects who are worthy of the name should work for, and were there sufficient enthusiasm and unselfish devotion amongst us, a generation or so would see that end accomplished. It will never come about until there is unity and agreement in our ranks, and until the Institute is made a sure and safe medium through which the wishes of its members can be carried out.

There is a good deal of talk of educating the public in architecture, but, so far, it has been talk only, and talk, moreover, to which the public never listens, possibly because it never hears.

Cannot some united action be taken, as I have suggested, to influence the public press on behalf, not of architects, but of architecture?

To create in the mind of the public a sense of the danger it incurs by permitting the present state of things to continue, and to bring the fact out forcibly and clearly that the only possible remedy by which the public can protect itself is by placing the same barrier across the entrance to the profession of Architecture as that already placed before those of the Law and of Medicine. The vital interests of the public are at least as greatly concerned in the former as in either of the latter two, and so soon as that fact is realised by the public it will insist that architecture shall be in reality and not in name only one of the learned professions, and, as a consequence, its members educated and competent men.

F. V., REGISTRATIONIST.

Unemployment and Undeveloped Land.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—May we call the attention of your readers to a method by which, without any expense to themselves or their clients, they may do something towards relieving the present overwhelming amount of unemployment?

Architects and surveyors at the present moment have control over many thousand acres of land waiting development in and near London and the larger towns. In the vast number of cases this land is lying idle and unproductive, being simply used as dumping grounds for the neighbours' rubbish. This land, however unpromising, may be of great use to the Vacant Lands Cultivation Society.

They are prepared to take any piece of land, preferably over one acre, clean it, and have it planted under capable instruction by men with families struggling to earn a living. Each acre helps to support eight heads of families, and the Society are willing to give the land up at any notice—a week if absolutely necessary—without requiring compensation.

Experience has proved this scheme to be of the greatest value in relieving distress, and should any who see this appeal have control over vacant land, we hope they will offer it to Mr. Joseph Fels, of 39, Wilson Street, E.C., who will give them the fullest particulars of what has already been done, and show plots of land in cultivation.

Apart from the good done by offering land to those most requiring it, it will readily be seen that it is a direct advantage to the owner, land under cultivation being much more desirable in appearance to a possible purchaser than a dreary waste strewn with tins and brickbats.

G. and S.

Cannon Street, E.C.

Cleaning Down Stone Buildings.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am very glad indeed to see this matter opened up [see issues for November 4th and 11th], as I consider its importance can hardly be overrated.

Not long ago I noticed the front of a theatre being treated by either a steam or a sand-blast cleaning process, which fetched off not only the dirt, but the stone as well. The stone peeled off in scales several inches square, and in some parts 1in. deep. The stone was no doubt in a very sensitive condition, and so are a considerable number of other stone-faced buildings in London.

I have examined a number of stone-faced buildings after they have been cleaned by modern methods, and in each case the face has had a very spongy appearance—certainly not the best kind of face to resist the London atmosphere; and in some instances there were alarming indications of decay.

Unless some reliable protective solution is applied after cleaning, the stone is bound to decay more rapidly. My acquaintance with preservatives is limited to the advertised remedies; and, so far as my experience goes, it is necessary to re-coat every few years to be effective.

I should be glad to hear of a reliable preservative for use on the stone buildings under my care; and to my personal knowledge there are many architects who would also be glad to hear of it.

F. HUNGERFORD.

Tuffnell Park, N.

The Status of the Architect.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Your invitation to readers to give their views upon the status of the architect emboldens me to bring my own, of long standing, to your notice. That there is room for improvement both in architects and architecture is, of course, a matter of fact; and that there is a general wish for improvement emanating from the profession itself is a matter for congratulation. But tinkering an evil only makes matters worse; and if improvement is to be permanent, it must have scope and progression.

It appears to me that as long as the profession is over-crowded, so that architects are placed in a very dependent condition, improvement in architecture must come from the education of the public, if at all. But this is strongly suggestive of putting the cart before the horse. If, on the other hand, architects are to direct the public taste, they must be in a position to put their views in a strong light before their clients; and, for this, social position as well as competency is necessary, and this would be attained by weeding out the incompetent quack, by means of the compulsory preliminary of satisfying a thoroughly efficient examination. This having been accomplished, the way would be prepared for a complete revision of the building by-laws (which owe their inception to the shortcomings of the jerry builder and the quack). I would abolish the official surveyor, making in his place any architect (now properly qualified) who prepares, or signs, plans submitted to him, personally responsible for their conformity to the laws (with which every architect is supposed to be conversant, as it is). This throwing of responsibility upon architects would increase their importance, and relieve the profession from the unfair competition of the practising official, and the progress of architecture would be safe in the hands of properly trained men. No one need be prevented from making his own plans if he wished, in the same way that one may draw up one's own legal documents, but I would have similar restrictions as to rights of recovering fees, and plans would have to be submitted to any architect for confirmation of its compliance with the laws.

I submit, with due respect, that the Royal Institute of British Architects might do well to form some definite plan to this end, and to call upon all its members to work for it, as by organised action only is improvement possible.

S. HARRY HERON.

Red Paint that Does Not "Bleed."

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Your correspondent "L.M.," of Leigh-on-Sea, who makes an enquiry (in your issue of November 11th, page 367) with respect to red paint "eating its way through enamel," may be glad to know that Messrs. Williamson, Morton and Co., of Dobbies Loan, Glasgow, make a paint called "Burmese red," for which they claim that it is a permanent red, free from sulphate of barium and carbonate of lime, that it is unaffected by acids or alkalies, and that it stands sulphuretted hydrogen fumes. It is on a pure lead base, and does not "bleed" in oil, and does not come up through white lead, stands weather exposure, and alters less than genuine vermilion.

J. MAYO SMITH.

Barnet, Herts.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

The querist's name and address must always be given, not necessarily for publication.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Salmon Ladders.

FISHER writes: "Will you, sir, or any of your correspondent, kindly give me full particulars regarding the construction of 'Salmon Ladders,' or tell me where such information, with detailed drawings, can be obtained?"

[Perhaps some of our readers can oblige.—Editor B.J.]

Books on Churches.

DERBY.—R. O. writes: "Can you give me any information of a book on Stone Church, Kent? Also a book on Ely Cathedral, dealing with them from an architectural point of view. Also price and publishers of the books."

A guide to Stone Church, Kent, by the late G. E. Street, R.A., may be obtained from the Vicar, Stone, near Greenhithe, price one shilling. Particulars and descriptions have also appeared in THE BUILDERS' JOURNAL for Sept. 20th and Oct. 4th, 1899. A short description, with complete measured drawings, may be found in Cavelar's "Gothic Architecture," Part IV. (1835). D. J. Stewart's "Architectural History of Ely Cathedral," published in 1868, is probably out of print, but a copy could most likely be obtained through Mr. Batsford, 94, High Holborn. The price would depend on the condition. Probably the volume on Ely in Messrs. Bell's "Cathedral Series" (Geo. Bell and Sons, 1s. 6d. nett) would serve your purpose. G.

Dry Rot.

BIRMINGHAM.—MOSELEY writes: "In 1900 I bought a new house, which was doubtless built on a site which had been excavated and subsequently filled in. During the last two years I have had trouble at intervals with the floor boards, joists, or skirting rotting, and have employed two or three different builders, but none have remedied the defect. Can you oblige me with any suggestions with a view to effectual remedy? I may mention that there is no cellar.

The trouble is doubtless dry-rot, due to want of proper ventilation under the floors or to damp rising from the ground. It may, as the skirting has rotted, be due to there being no proper damp-course in the walls. Every bit of timber affected should be taken out, and the sound timber left should be well washed with a solution of corrosive sublimate, or, better still, treated with one of the preservative solutions on the market, such as "Kerno" (Kerner Greenwood and Co., St. Ann's Street, King's Lynn), or Carbolineum (C. A. Peters, Ltd., Derby). If there are no air-bricks in the outer walls under the floor level, these should be inserted two or three to each room, depending on the size of the rooms. Openings should also be made in the interior walls at the same level, so that there is a free circulation of air under the entire house. Our correspondent should also take care that the level of the soil surrounding the house is in all cases below the damp-course. It would be helpful to cover all the soil under the floors with three or four inches of concrete; but this would be expensive. If, as our correspondent suggests, the house is built on "made ground," the trouble may lie in the soil. Made ground is a fruitful breeding place for germs.

Mansard Roof Trusses of Varying Spans.

MANCHESTER.—MANSARD writes: "For a warehouse that is to be built on a tapering site, a Mansard roof is to be adopted. Nine trusses, 9½ft. apart, and a half-truss, of varying spans, are required, as shown in the accompanying plan. Please advise."

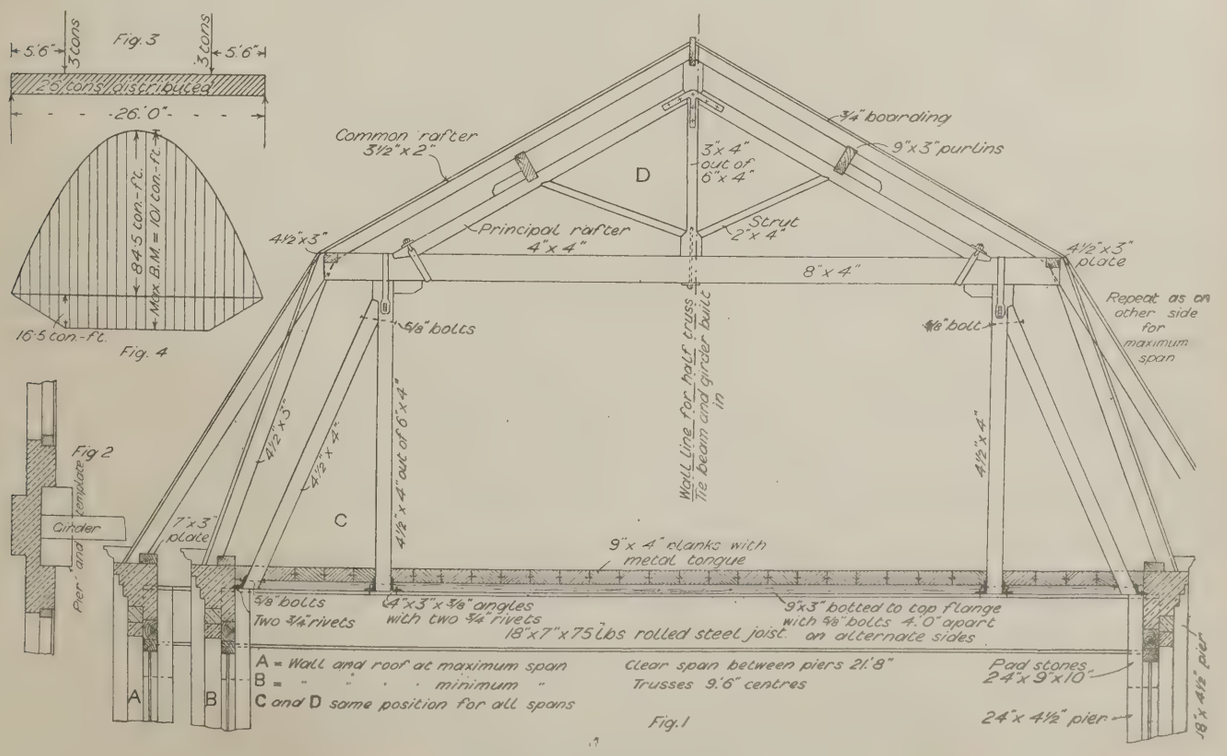
The elevation of the truss for the minimum span is shown in Fig. 1, and the plan of piers in Fig. 2. The central portion of the roof being kept in the same position, the outer rafter will have to shift outwards for the larger spans, giving a slight winding face to the lower portion of the roof. Taking a width of 12ins., the 9in. by 4in. floor planks will carry a load of $\frac{12 \times 4}{9{\cdot}5^2} = 2.12$ cwt. per ft. sup.; and as the usual allowance for warehouse floors is an external load of 2 cwt. per ft. sup., the floor-boards will be strong enough. For the main joists, with a span of 26ft., the load from the floor, including its own weight, may be taken as 2⅛ cwt. per ft. sup., giving a load on each joist of 2⅛ by 9.5 by 26 = say 520 cwt. or 26 tons. The load from the roof coming on to the queen posts = say 9.5 by 26 by ½ = 120 cwt. or 6 tons, which will be 3 tons on each, giving the load diagram as in Fig. 3, and the bending moment diagram as in Fig. 4, whence the maximum bending moment is found to be 101 ton-ft., or 8 by 101 = 808 for the tabular value of the joist required, which is (B.S.B. 28) 18in. by 7in. by 75lb. rolled steel joist. The stroke-and-dot line on Fig. 1 shows the position of the 9-in. wall, and the portion of the truss to the left of this line may be taken as the half-truss required.

HENRY ADAMS.

Calculations for a Steel Stanchion Base.

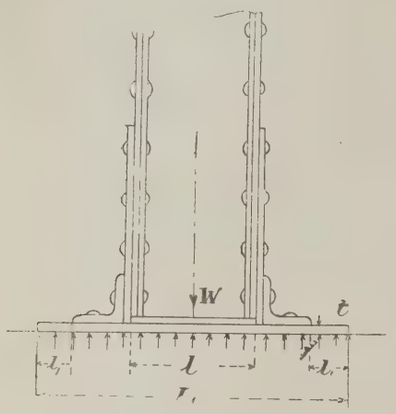
KINLOCHEVEN.—QUERY writes: "What calculations are involved in designing a base for a steel stanchion? Having decided on a stanchion, the base plate and the concrete beneath can be easily settled, but the connections of the stanchion to the base seems to require careful attention. There is frequently a space left, even if it only be 1-32in. between the bottom of the stanchion and the base plate. This stresses the base considerably, and it should be designed sufficiently strong to withstand it. The subject seems to be evaded in text-books I have consulted. Would the expense in planing the edges of the ends of the stanchions "true" be so great as not to justify it being done? Would these calculations apply also to the cap?"

The calculations that are usually made in the design of a base for a steel stanchion are few; the design being commonly worked out by rough general rules. The number of rivets necessary to connect the base plate to the stanchion proper should be calculated. This number is calculated on the assumption that the rivets distribute the whole load from the base plate to the stanchion; if W is the load carried by the stanchion, and r is



ILLUSTRATING REPLY TO "MANSARD."

the least working strength of each rivet in shear or bearing (r will be 3.01 tons for a ¾in rivet, and a working shear stress of 5 tons per sq. in), then the number of rivets required is $\frac{W}{r}$ If there be a space between the bottom of the stanchion and base plate, the stresses in the latter will be very considerable, and may be obtained as follows:—



Let the base-plate, assumed square, be of thickness t, and have each side of length L, and let the depth of the stanchion be l, see figure, then treating the portion l of the base plate as a beam, fixed at the ends and uniformly loaded upwards, we have:—

$$\text{Maximum B.M.} = \frac{pl^2}{12}, \quad \text{Modulus} = \frac{t^2}{6}.$$

taking the width of the plate as unity.

∴ if 7 tons per sq. in. is taken as the safe working stress, we have

$$\frac{pl^2}{12} = \frac{7t^2}{6}$$

$$t = l\sqrt{\frac{p}{14}}$$

but

$$p = \frac{W}{L^2} \quad \therefore t = \frac{l}{L}\sqrt{\frac{W}{14}}$$

This formula give the necessary thickness of the base plate in inches, l and L being in the same units and W in tons. As a numerical example, take

$$W = 90 \text{ tons and } \frac{l}{L} = \frac{1}{2{\cdot}5}.$$

Then

$$t = \frac{1}{2{\cdot}5}\sqrt{\frac{90}{14}} = 1 \text{ inch nearly.}$$

In a similar way, if the amount of free overhang of the plate over the angles or gusset plates is l, treating such end as a cantilever, we have—

$$\text{Maximum B.M.} = \frac{pl_1^2}{2}$$ and this as before must equal $\frac{7t^2}{6}$

$$\therefore t = l_1\sqrt{\frac{3p}{7}} = \frac{l_1}{L}\sqrt{\frac{3W}{14}}$$

The above calculations would apply also to the cap. The planing or milling of the edges of the stanchion true is often specified, and when one considers the importance of the stanchion base, this appears to be desirable; the above working shows that if there is not a true bearing of the stanchion on the base plate, the base plates as often used will be too highly stressed. Some notes on stanchion caps and bases will be found in the writer's book on "Theory and Design of Stanchions," by Ewart S. Andrews, B.Sc. (Chapman and Hall, London, 9s. nett), which is just published. A.

Proposed New Works.

Chapel-en-le-Frith.—Mr. A. W. Brightmore, an inspector of the Local Government Board, has held an inquiry at the Chapel-en-le-Frith Town Hall, into the application of the Rural District Council to borrow £2,000 for the purpose of rebuilding and renewing about fifteen bridges in various parts of the district.

Cowdenbeath.—Plans have been prepared by Mr. William Birrell, of Kirkcaldy, for a combined higher grade and mining school here, which is expected to cost nearly £20,000.

Darlington.—The following plans have been approved by the Streets Committee:—Messrs. Harker and Co., 2 houses Brighton Road; Messrs. Kitching and Lee, printing-house, Parkgate; Messrs. Brown and Son, extensions to John Street Saw Mills; new governor house at the Gas Works; Mr. R. Maughan, 2 houses Beechwood Avenue; Messrs. Clark and Moscrop, 2 houses Kitchener Street; Blake Boiler Company, new workshop.

Hull.—Mr. Hooper, a Local Government Board inspector, began, on November 8th, an inquiry into the Hull Corporation's application for leave to borrow £73,550, for completing the town hall extension scheme. The enquiry was adjourned till November 24th, when the application to borrow £24,000 for the electricity undertaking will also be considered.

London, E.C.—It appears from a report of the Improvements Committee of the London County Council that a bargain has been made by that committee and the City Corporation with regard to the improvement of Bishopsgate Street Without. Of the cost of this work, estimated at £333,900 when the matter was considered in 1904, the Council was asked by the Corporation to contribute half, and the Improvements Committee, while of the view that the improvement was desirable, did not feel justified in asking the Council to contribute in view of the Council's very heavy capital commitments. In May, 1906, the Corporation—which had had in the meantime to deal with some of the properties affected as a matter of urgency—stated that an opportunity was presented for the closing of Acorn Street, whereby owing to the increase in the area of land which would be available for recoupment, the cost of the improvement would be reduced to £313,900. The Highways Committee was anxious to provide for the construction of a tramway in the thoroughfare in connection with the existing lines in High Street, Shoreditch, and the granting of the necessary permission has been conceded by the Corporation on condition that the Council contributes half the cost of improvement. Favourable opportunities being now presented for dealing with six houses needed for the widening, which will take about two years to complete, the Council is recommended to make the contribution.

Nottingham.—The Board of Guardians decided, November 10th, to spend £6,500 on extensions to the workhouse.

Penistone.—Mr. Braithwaite's plans for an extension to Penistone Grammar School, providing at a cost of about £7,000, accommodation for girls have been adopted by the governors.

Porthcawl, South Wales.—An appeal is being made for funds for the erection of a stone church here, to seat 600 persons. The estimated cost is £1,000.

Retford.—It has been decided to erect, with the least possible delay, a cookery centre, at an estimated cost of £500.

Sheffield.—The improvements Committee of Sheffield City Council has resolved that the City Architect be instructed to report upon the schemes for the extension of the Town Hall, and on the plans prepared by the late Mr. E. W. Mountford. It is also recommended that, subject to the approval of the Finance Consultative Committee, application be made to the Local Government Board for sanction to the borrowing of £5,000, being the estimated cost of altering the gradient and widening and improving Psalter Lane, near the Salt Box cottages.

Southampton.—Mr. S. Bircham, solicitor to the London and South-Western Railway Company, has communicated to the Southampton Town Council the intention of the company to apply to Parliament in the ensuing session for power to construct new docks at Woolston on the mudland and foreshore of the River Itchen and of Southampton Water. There would be a short piece of railway between the proposed dock and the Southampton and Netley line. Details of the scheme have not yet been made public, but it is understood that they include the building of a dock capable of accommodating the largest liners in course of construction or contemplation.

South London.—Various rebuilding schemes in connection with the Duchy of Cornwall's South London property are under consideration; but the greatest of all, and one which the King, when Prince of Wales, expressed a hope to see carried out, is that connected with the vast mass of old property still known as Prince's Meadows, and at the back of Stamford Street, and between that thoroughfare and the river. It has been left to the Prince of Wales of to-day to give effect to the wishes of his Majesty, and so soon as the leases expire, in April, operations will be commenced upon the site. About 2,500 houses are involved, and it is intended to replace the present tenements with good residential working-class property, either in large blocks, of the workmen's dwelling type, or even small-class houses. The great wish of the King is that the working-class population of the neighbourhood, the great bulk of whom work upon the wharves and in adjacent factories, should have healthy homes, with respectable surroundings.

Southwark.—The Borough Council have decided to apply for Parliamentary powers to construct a subway at the Elephant and Castle. The Council has received £6,000 from the Baker Street and Waterloo Railway Company towards the cost, but has allowed its powers to lapse through inaction. The estimated cost is £15,000.

Sunderland.—Mr. A. G. Drury, M.Inst.C.E., inspector for the Local Government Board, held, on November 10th, an enquiry into applications of the corporation for leave to borrow £23,116 for works of private street paving, £2,000 for the extension of the Roker Gill outfall sewer, and £2,450 for purposes with respect to the corporation stone yard.

The Local Government Board has decided to hold, or has recently held, as the respective dates indicate, enquiries into proposed expenditure by public bodies as follows:—Water supply works and plant: Haltwhistle R.D.C., £1,900 for Gilsland and Longbyre (November 19); Ampthill and Newport Pagnell R.D.C., £7,700 and £4,973 for Apsley Guise, Apsley Heath, and Woburn Sands (including a 390,000 gallons reservoir) (November 17); Plympton Saint Mary R.D.C., new main, N.A.S. (November 18). New bridges and reconstruction.—Sculcoates R.D.C., £650 (part of new head of bridge) (November 18). Electricity works and plant: Wrexham B.C., £6,850 (November 17); Radcliffe U.D.C., £14,350 (November 18); Bridgend U.D.C., N.A.S. (November 19); Neath R.D.C., £18,000 (November 20). Sewerage, drainage and sewage disposal works and plant: Ampthill and Newport Pagnell R.D.C., £7,224 and £4,774 for Apsley Guise, Apsley Heath, and Woburn Sands (November 17); Gravesend B.C., £3,500 (November 19); Eastleigh and Bishopstoke U.D.C., £200 (November 17); Wimbledon B.C., £9,750 for dust destructor and sludge conveyor (November 20); Bradford C.C. N.A.S. (November 19); Chipping Wycombe B.C., £2,264 (November 16); Bradford-on-Avon for Holt N.A.S. (November 18); Hastings B.C., £4,407 (November 11); Surbiton U.D.C., £60,000 (November 17); Manchester C.C., £1,000 for settling pool on Medlock River (November 20); Accrington B.C., £840 (November 19); Newbury B.C., £535 (November 17); Sculcoates R.D.C., £1,900 for Sutton (November 18); Saddleworth U.D.C., £160 (November 20). Street improvements, new roads, public walks, and pleasure grounds: Devonport B.C., £2,005 and £1,824 (November 19); Uxbridge R.D.C., £2,900 for West Drayton and Yiewsley (November 17); Falmouth B.C., £1,250 and £550 (November 17); Wimbledon B.C., £350 (November 20); Bradford C.C., N.A.S. (November 19); East Kendal B.C., £1,600 (November 19); Eastbourne B.C., £500 (November 18); Manchester C.C., £11,000 and £5,000 and £2,669 (November 20); Manchester C.C., £16,675, £11,000, £5,000, and £2,699 (November 20); Accrington B.C., £1,000 (November 19); Beckenham U.D.C., £1,140 (November 18); Saddleworth U.D.C., £1,470 (November 20). Various: Eastleigh and Bishopstoke U.D.C., £450 for convenience and £400 for depot (November 17); Wimbledon, £3,273 for public baths (November 20); Radcliffe U.D.C., £5,000 for fire station (November 18); Kingston-upon-Hull, £8,300 for public baths (November 17); Accrington B.C., £4,600 for allotments (November 19); Newbury B.C., £1,500 for offices (November 17).

Works in Progress and Completed.

Chester.—Messrs. John Thompson, contractors, of Peterborough, have commenced the important work of restoring the south transept of Chester Cathedral. When it is finished, it will complete the restoration to which the late Dean Howson devoted so many years of an active life.

Doncaster.—As to the Marshgate Bridge scheme at Doncaster, it was reported at a recent meeting of the Doncaster Town Council that considerable headway had been made with the work. The Great Northern Railway Company had promised £30,000 towards the work, and of this £10,000 had been received. Possession had been taken of all the buildings to be handed over, and the contractors, Messrs. Arnold, were taking steps to employ local labour.

Epsom.—The parish church, which was consecrated by the Bishop of Winchester on November 11, will, when completed, have cost £15,000. It is being built in two portions. The first portion, now finished, has cost more than £10,000, of which sum Lord Rosebery has given £1,000. Mr. Justice Bucknill has given £250 towards the building fund, and Mr. Andrew Carnegie £500 towards the purchase of a new organ.

Hull.—The Corporation has accepted the tender of Mr. G. H. Panton, amounting to £10,889, for the erection of the Art Gallery adjoining the City Hall, in Victoria Square.

Kirkby-in-Ashfield.—The rebuilt church of St. Wilfrid (the old church was burnt down in January of last year) was consecrated by the Bishop of Southwell on November 6th. The walls are built of local and Bulwell stone, with Weldon stone dressings, and are lined internally with Kirkby stone, the inside dressed stone being from the Ancaster quarries. The cost is estimated at £8,500. Mr Louis Ambler, F.R.I.B.A., of London, is the architect, and Messrs. Bowman and Son, of Stamford, are the contractors.

Sunderland.—The West End Branch Library is in course of erection at Kayll Road. Mr. Hugh Hedley, F.R.I.B.A., Mr. W. B. Cooper, are the architect and contractor, respectively, of the new building, which is to cost £3,000.

FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY.)

NOTES ON SOME CAUSES OF FIRE IN FACTORY AND OTHER BUILDINGS.

By Harold G. Holt.

Although great attention is now being paid by architects, engineers, and others interested in the promotion of new building schemes, to the prevention of fire, by more adequate structural arrangements than those prevailing a few years back, it would seem with few exceptions that the actual beginning of the trouble, the cause of fire, is neglected generally by all save fire-officers and fire insurance surveyors. It is the writer's object to draw attention briefly to one or two of the apparently remoter origins of fire, among the more general ones, and yet which, were the whole truth known, probably give rise to as many fires, on the average, as the better known causes.

Although a little apart from this subject, strictly speaking, it will be interesting to make some remark on several instances of spontaneous detonation of ammunition that have been the cause of mysterious and terrible explosions in various parts of the world. In 1905, for instance, the battleship "Mikasa" was sunk at Sasebo; in 1906 at Rio de Janeiro a Brazilian battleship was blown up; and in 1907 a terrible explosion destroyed the French battleship "Jéna" at Toulon. These unexplained catastrophes, or at least those cases in which attempted explanations have been improbable and unsatisfactory, are not confined to battleships. A great explosion destroyed ammunition factories and practically the whole of a small town in America recently, and last year a Woolwich magazine exploded at night from no apparent cause. An interesting theory has been brought forward that some possible peculiarity in the condition of the atmosphere at the time, in which unusual electrical conditions have obtained, has been the agent by which the spontaneous detonation of the ammunition in question was brought about. An explosion is, of course, a more or less stable chemical compound, and although when used great care is exercised that it be properly tested to ensure safety, yet the complex nature of the explosive and the various bodies of which it consists, render it liable to slow or sudden alteration, when it is far more susceptible to exterior forces and dangerous to store. Thus two causes are at work in the spontaneous detonation of explosives—the change in the chemical condition of the substance itself, and the action of some external agent upon the changed constituents. The former, as we have seen, may be brought about by conditions of storage, and time is an important factor. But what is the latter, the external force or agent causing the actual explosion? It has been proved that the electrical conditions obtaining in the case of the "Jéna" at Toulon were peculiar, and the vessel was electrically insulated by the wooden props shoring her up in dock. Powerful electric waves were recorded that day in the neighbourhood, and under these conditions the vibrations of the ether communicated by wireless instruments might have resulted in the explosion. When Marconi first experimented with wireless instruments it was believed that the ammunition of battleships might be exploded from a distance by the "Herzian" waves, but this view was discarded later. Yet there are other little known forces which might conceivably bring this about—they may not be electrical—but they would be difficult to guard against. Atmospheric disturbances have strange effects on the receivers of wireless telegraph instruments; exactly what is the cause is not apparently clear, and there are other waves which will easily traverse a thick steel plate and which might have the power of detonating explosives and ammunition from a great distance. The atomic theory has upset many previous ideas, and it is known now that gigantic forces are stored up in the microscopic atoms which, we are taught, compose in various forms all the bodies of which we have knowledge. An explosion, it would appear, is simply the liberation of the atoms forming the particular substance in question, and having regard to the peculiar effects of ether waves—of electric waves—(as we have not the faintest notion of what electricity really is it does not matter what we call them)—is it not conceivable, nay probable, that under certain conditions unstable chemical compounds may be detonated, or atomically disintegrated, by these waves from indefinite distances, causing explosions and subsequent fire?

There is no need to dilate on the danger attached to the placing of timber near smoke flues, or to the dangers involved in many heating and lighting schemes. Coal gas lighting is safe when ordinary precautions are taken, but some of the newer types of gas lighting in which petrol and air are mixed, forming an explosive mixture, will need very careful handling if untoward accidents are to be prevented. Defects in

Electric Light Installations,

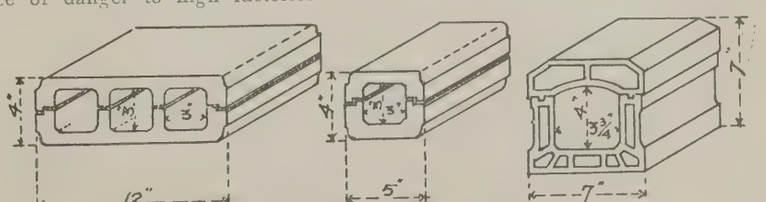
although sometimes to blame, are not always such frequent causes of fire as is often supposed, and where they have been at fault, poor workmanship and material have been to blame rather than any inherent defect in the principles of electric practice. The increasing use of electricity for purposes of lighting and power installation and transmission require attention at the hands of architects and engineers. Electric hazards may in the widest sense be sub-divided into three: (a) The breaking down of cable insulation, with short circuiting due to innumerable causes; this is the most frequently occurring. (b) Lightning is always a possible source of danger to high factories and other tall buildings, especially where towers are engaged. (c) Electrolytic action may be sometimes the cause of fire. Gas main explosions have occurred through this cause, especially in damp situations, and electric cables should be laid well away from gas and water mains for this reason.

Frequent inspections and testing by an expert are the best safeguard against disaster, given a sound installation. Conduits should be preferably of welded iron or steel tubing, with metal junction boxes; wood casings, though good insulators, should not be employed in damp situations, and are unsafe where the current pressure exceeds 250 volts. In cotton and wool spinning mills, flour mills and other hazardous risks, wood casings should not be used at all.

Recently a fire-resisting cable—the Paterson—has been introduced, and tests have shown it to be very satisfactory. In it the ordinary conductor is insulated with Para rubber, vulcanised rubber, and taped; non-flammable manilla paper covers this, bound with braided steel wire further covered with the paper, and finished with a braiding of jute, also impregnated with a non-flammable solution. Fire-resisting conduits of fine porous terra-cotta tile are now manufactured, and Fig. 1 shows three types by the Frazzi Fire-Proof Construction, Ltd.

In all buildings where dangerous occupations are being carried on, care must be observed to keep the installation free from fine inflammable dust or "fly." In bleach works precautions against corrosive gases and vapours or dampness are necessary, and, generally speaking, where chemicals are employed in course of manufacture or injurious products are given off, these may set up a solvent action on the installation and eat it away. Where high tension work and transformers are employed, the latter should be placed in a fire-resisting chamber and well ventilated. The position and style of lamps requires consideration. Incandescent lamps frequently get very hot, and fires have been caused through this, when in the neighbourhood of inflammable material. Holders and lamps should be kept free from dust, etc., and if arc lights are used they should have double globes, unless of the "inverted" type, in which case protecting reflectors surrounding them horizontally, with the arc covered by a glass dome or globe, should be provided. They are not recommended for such dangerous hazards as spinning rooms in cotton mills, etc.

With regard to power installations the alternating or direct current systems each obtain excellent results so far as genera-



FINE POROUS TERRA-COTTA CONDUITS
BY THE FRAZZI FIRE-PROOF CONSTRUCTION LTD.

tion and distribution are concerned. The greatest speeds are probably attained by the direct-current motor, which is well adapted to close speed adjustments, but the risk of fire is greater on account of commutation, which often is not sparkless. So far as lightning risks are concerned, a good conductor system, having regard to all metal work in the building and fixed by experts, is necessary, with periodical examination. A very frequent cause of disastrous fires in factories and workshops is that of

Friction

in machinery and parts. Badly or insufficiently lubricated bearings on lines of shafting are constant sources of trouble at such points as wall box pedestals, shaft hangers, etc.

The steel shafts have bearings usually of brass, gun-metal, or phosphor bronze in certain cases, all of whose co-efficients of expansion are greater than that of steel; should the heat at the bearing increase by friction (through bad lubrication) the brasses clutch the shaft tighter and it becomes overheated to a dangerous extent. Proper lubrication should be provided in the form of a hot bearing indicator and lubricator combined, at dangerous points, with alarm bell attached to draw attention to the state of the bearing; self-lubricating hangers should always be provided. The adjustment of bearings cannot be too carefully watched; bearing surfaces must be quite even, or else irregular lubrication and overheating will result; the lubricating oil must have a high flash point.

All nuts and bolts in machine feet, etc., should be kept well tightened up; they frequently become loose and cause jarring of shaft bearings in some types of machine.

In cotton spinning mills by far the greatest number of fires are caused by friction at the headstock of the spinning mule, where a variety of motions combined with high speeds and complicated gearing are the source from which some disastrous fires have sprung. The danger, of course, is greatly aggravated by the amount of cotton fluff or "fly," as it is termed, which permeates the atmosphere and is highly inflammable; miles of cotton threads and woodwork soaked with oil combine to render the situation constantly dangerous. Some interesting figures in connection with cotton mill fires during a term of years appeared in this paper some time ago, and are well worth careful perusal.

The question of

Spontaneous Ignition or Combustion

as a source of fires in buildings is involved and complicated, but nevertheless of great interest and practical importance, and of which much yet remains to be learnt. For all practical purposes we may include under this heading the three following main divisions:—

(1) Combustion in a homogeneous mass or unit.

(2) The juxtaposition of substances liable to cause fire by possible chemical action.

(3) The storage of substances which give off inflammable vapours, possibly igniting at some distance from their location.

(1) Spontaneous combustion in a homogeneous mass is very common, particularly where vegetable fibres are stored in bulk. The theory of this is interesting. As is well known, vegetables absorb considerable heat in life, and bodies containing so much stored-up heat as cotton waste, oily rags, sawdust, etc., with all matters of vegetable origin, are particularly liable to spontaneous combustion. In decomposing, whilst the materials are gradually returning to their original elements of nitrogen, carbon, etc., the stored-up heat is set free, the amount of heat varying, of course, in proportion to the bulk of material at hand. Cotton, flax, hemp, jute, and similar fibrous goods are particularly dangerous when packed in bulk, especially should oil or fat be present, because they contain the air necessary for oxidisation in the numerous tubes of which they consist. Silk, wool, and animal fibres generally are not so dangerous, but it is manifestly impossible to prevent the presence of air in their storage. Besides this, the pressure caused by the weight of material closely packed induces heat, especially if moisture be present. These goods should therefore be stored quite clear of all possible sources of heat or dampness; the heat from a steam or flue pipe or the sun's rays has been quite enough to cause jute fires. Waste bag stores should have no window, but be well ventilated and free from dampness; cleanliness in storage is essential, as dust in these places is very dangerous and so inflammable that a spark will easily cause ignition. The most dangerous oil so far as the heating of vegetable fibres is concerned is linseed oil; mineral oils are comparatively uninjurious.

(2) Numerous instances arise in which chemicals placed together will give rise to chemical action and take fire; a few instances will suffice, however. Acids need care in storage and handling; nitric acid acting on charcoal, turpentine and other carbonaceous bodies, also sulphuric acid in many cases would cause fire. Generally speaking, substances rich in oxygen should not be placed in contact with easily oxidisable matter. Bleaching powder, giving off chlorine gas, coming in contact with turpentine or tarred rope, has caused fires, whilst permanganate of potash and glycerine, mixed, cause fierce combustion.

(3) Many bodies in common use give off highly inflammable vapours, one of the commonest examples being that of coal, which gives off gases, and through insufficient ventilation the latter hang about until ignited by stray sparks, etc. Coal bunkers, where much coal in bulk is stored, as for electric generating stations, should have constant through ventilation provided. Many highly volatile bodies which are extremely useful in manufacture and textile works, especially crude oils (such as petroleum) consisting of a mixture of various hydrocarbons, give off vapours at comparatively low temperatures. Some require considerable heating before this takes place, and the temperature which has to be attained before vapour is given off is termed the "flash point." The temperature at which actual ignition takes place is generally higher than this, but it is obvious that if the flash point be too low, and vapour is given off at ordinary temperatures, serious danger is imminent. These inflammable vapours are usually heavier than air, and this constitutes a grave danger; they "creep" along the ground often to a good distance, and may be ignited at any point on the journey whereon the flame will flash back and fire the whole material in bulk. The storage of oil in crude or even distilled form is therefore rendered a matter of difficulty. One or two curious instances have come to light in which men have found sewers aflame, sometimes through the leakage from motor garages, despite the precautions adopted in using multiple-seal traps and catchpits.

No oils produced by distillation of coal, Rangoon oil, petroleum, etc., should be used for illuminating purposes with a flash point under 110 degs. Fahr. Colza oil is the safest illuminant.

Valuable information can be gleaned from the reports published under the auspices of the L.C.C. Fire Brigade, obtainable for 1d., as to various causes of fire, and advice is given respecting their prevention.

To achieve the best results and make progress in what may be called the science of fire protection, it is necessary to begin with first principles and work from them, rejecting adventitious methods, and it is hoped that these notes, cursory as they are, may be of service in elucidating one or two matters in this regard which appear to have been somewhat neglected.

A FIRE PREVENTION CONFERENCE AT PARIS.

Proposed Fire-testing Station for France.

France has taken up to the present but little interest in matters of fire-prevention, and such really up-to-date measures as exist are limited mainly to Paris, where M. Lepine, the great police prefect, can influence such matters, and does so in a most able way. His theatre regulations of August last, the measures he adopted for the protection of tube railways, and similar measures, all speak to his thorough grasp of the essentials of fire prevention, but the work he has done in this direction is scarcely appreciated as yet in the Paris professional circles, and is not understood at all in French provincial centres. The general ignorance in France of the fire-preventive side of fire protection is, in fact, quite abnormal, which fact is the more surprising as the fire service side has been most carefully regulated by the State, and few Governments have given so much thought to the organisation of fire brigades on national lines.

An effort has been made of late by a small group of inventors and manufacturers to obtain greater prominence for the subject of fire prevention, and their own wares in particular, and although the public authorities fully recognised the somewhat unfortunate industrial aspect of the movement, matters of this kind are looked at from a different point of view than in England, and a certain amount of official patronage was accorded to the efforts referred to, the proposal being, we believe, that if some of the ideas of the industrial interests put forward find favour in professional circles—as they must eventually do—the public officials and leading members of the profession concerned are to take the lead and place the movement on a proper basis.

An outcome of the effort referred to has been a meeting or conference held at Paris recently, at which M. Lepine, the police prefect, acted as honorary president, and at which the various French public departments concerned were represented. An attempt was also made to obtain support and advice from abroad, and also to clothe the conference with that magic description: "international." By dint of official notification and invitation through the various foreign offices, this attempt was also successful, Mr. Ed-

win O. Sachs (chairman of the British Fire Prevention Committee), for instance, going over to Paris to assist as far as Great Britain was concerned, Colonel Meyer of Copenhagen (the late president of the International Fire Service Council) attending from Denmark, Chief Officer Reichel, of the Berlin Fire Brigade representing Germany, Professor von Empberger coming on behalf of Austria. As a result of this assistance from abroad, there is a probability of some good work eventually being done in France on lines similar to that of the British Fire Prevention Committee, and a proper fire testing station will, no doubt, in due course, be formed from which reliable and independent reports can be obtained. An effort has, indeed, already been made lately to conduct some tests on a piece of ground allotted for this purpose near Paris; but the appliances, facilities, and methods of conducting the tests are so elementary, and the reports so full of personal opinion, instead of facts and scientific data, that these testing efforts, up to the present, are not only of no technical value, but somewhat of a menace at present to proper developments of the subject. All this will, no doubt, be altered, now the movement enjoys the presidency of Mons. Lepine, and the executive officer of the new Paris organisation has, as a matter of fact, visited London this month to see how the work is done over here, for the purpose of applying the British procedure.

There was a general wish expressed at the conference that the methods of testing and form of reports adopted by the British Fire Prevention Committee, shall be strictly adhered to; and if this is done at Paris, another excellent step will have been taken towards standardising the fire tests of the world. At present, the British standard ranks as the universal standard for the United States, Germany, Russia, Belgium, and a number of smaller countries. The inclusion of France would indeed be a gain. There was, indeed, a fairly animated debate on the question of keeping the reports on tests to facts only, as against the present French method of adding personal opinions and advice, and it was pleasing to observe that there was very nearly unanimity as to limiting reports to facts only, although this is somewhat contrary to French custom, where a general airing of personal views and arguments is often to be found in all manner of reports where the personal element is least wanted.

Of matters before the conference, other than the formation of the French Committee and the conduct of tests, we would mention the proposal to publish in a tabular or code form, the measures at present adopted in the interests of fire prevention in different countries. This would certainly be a useful compilation.

Fires in Forests, Fires in Railway Trains, and other matters of this kind were under review.

Altogether, however, the meeting lacked the professional knowledge and keenness we are used to at British, American or German meetings, for with the exception of the strangers present from abroad, and the officials, representing the Ministers, Municipalities and Railway Companies, the parties present were practically amateurs, new to the subject, without knowledge of the doings and literature of other countries, and to put it quite plainly, extraordinarily uninformed.

The conference, however, merits our good wishes, if only as marking the commencement of a new era in fire prevention for France, and there can be no doubt that when the right men take up the matter, as they now will do, France will soon attain the position it has gained in so many other subjects, as a leader of scientific research.

Fires such as those of the Charity Bazaar, the Paris Metropolitan Tube and the Paris Telephone Exchange, were all mainly due to the lack of fire preventive measures, so that the need for work on the fire preventive side in France is very apparent, and claims the closest attention of those concerned.

PRECAUTIONS AGAINST FREEZING.

As many of our readers are interested, as consultants or otherwise, in large industrial concerns, we think it will be useful to reprint a seasonable warning recently issued by an insurance association:—

As the season is now at hand when fire apparatus and water pipes generally are liable to freeze, we submit the following suggestions for protection:—

1st. Examine tanks and all pipes, fittings, and valves, whether for steam heating, general water service, or fire protection. See that none are frozen or have been frozen, and that they are all in operative condition, and where there is any liability of freezing, arrange the necessary protection.

2nd. See that all valves are open that should be open, and try water outlets, in order to ascertain whether all pipes are free and ready for service.

3rd. See that extra sprinklers are on hand in case of need to replace frozen or melted heads.

4th. Be sure that your engineer is fully posted as to the purpose and intention of every valve and pipe.

5th. Try your pumps and see that they are in proper working order.

6th. Test all the hydrants and indicator posts, and see that they drain properly.

7th. Instruct the night watchman thoroughly in the use of all fire apparatus and the operations of all valves.

8th. Examine the end of suction pipe to see that leaves or other refuse matter have not clogged up the holes in the strainer. We have had cases reported by our inspectors where the capacity of the pump has been greatly reduced by this means.

9th. We take this occasion to call your attention to the liability of freezing of water in casks and pails in cold buildings, and suggest that you take measures of prevention, at the same time avoiding danger of water damage.

10th. Chemical extinguishers should be emptied and recharged to insure their being in perfect working order.

AMERICAN FIRE TESTS WITH BUILDING MATERIALS.

We have previously mentioned that some interesting fire tests are being undertaken at Chicago by the Board of Underwriters with fire-resisting materials —materials as distinct from systems of construction—and in a previous issue we have published some few results of tests of this description, which were very favourably to concrete, particularly when made in a more than ordinarily rich and wet state.

The tests which are being conducted in America are somewhat different from those of the British Fire Prevention Committee, being more of a laboratory character than what might be termed full-size tests under natural conditions. In other words, the flame applied is more of the character of a gigantic Bunsen burner playing horizontally on to vertical slabs of the material under investigation, rather than there being a volume of fire, as would be the case in an actual fire. But, for purposes of comparison, the precise arrangement is perhaps immaterial, even if the severity of the test is also of a more moderate character than what is required in London, the duration being two hours, whilst for the full protective class in this country a four-hour test is essential.

To give some idea of how the tests are conducted with slabs, we are presenting



AMERICAN FIRE TESTS ON SLABS. FIG.



AMERICAN FIRE TESTS ON SLABS. FIG 2.

two photographs kindly put at our disposal, from which it will be seen that the test vertical slab is moved into the retort house on rollers, and then brought out from the retort house, and played upon with water in the open.

At a time when ever-greater importance is being attached to official tests from the fire point of view, any information that leads towards a better appreciation of the value of tests should be of use to architects.

FIRE-RESISTING BONDED WAREHOUSE, WASHINGTON STREET, GLASGOW.

A large building of the warehouse type has recently been completed in Washington Street, Glasgow, under the supervision and from designs of Mr. Clifford, architect, of Glasgow, the general contractors for the works being Messrs. Paterson and Son.

In a building of this description, and one in which a large quantity of spirit is stored, one of the most important points to be considered is to have reliable fire resisting construction. This has effectually been carried into operation by Mr. Clifford employing steel and concrete construction for the floors throughout.

The main steel joists are spaced at from 14ft. to 15ft. centres, running in opposite directions, on alternate floors, thus effectually tying the building together.

The reinforced concrete floors have been constructed by the Columbian Fireproofing Co., Ltd., under their system of construction, which was tested by the British Fire Prevention Committee some years back, and consists of ribbed steel bars 5ins. deep, suspended by means of steel stirrups from top flange of R.S.J. at 18in. centres, the whole embedded in breeze concrete 8ins. thick. The whole of the steel joists are encased in concrete on the Columbian system by using a slab fixed by iron clips to lower flange of joists, and the sides filled in with fine concrete. The stanchions are encased in solid concrete and formed octagonally on plan.

These floors were constructed to carry a load of 4cwt. per ft. super., and are now loaded to the extent of about 2½cwt. per ft. super., and not the slightest sign of deflection is visible.



VIEW OF A FLOOR OF WAREHOUSE, WASHINGTON STREET, GLASGOW.

Such a system of construction is well suited to warehouses, as the Columbian floors give considerable strength with but a comparatively small depth, thus saving height in a building and consequently money.



Exterior View.

FIRE-RESISTING BONDED WAREHOUSE WASHINGTON STREET, GLASGOW.

The experience of the Wandsworth Board of Guardians in dealing with the "Battersea unemployed," the "Westminster Gazette" remarks, is instructive. The Board undertook the building of a new infirmary as a means of increasing the supply of work; but the chairman, in answer to a deputation demanding that more should be done, said, "It was a sad reflection that of the men they employed on this new infirmary 10 per cent. had to be discharged for drunkenness or inattention." This experience seems to emphasise the expediency of offering work only under the ordinary conditions as to wages and dismissal. Work given to the unemployed as "the unemployed" would have filled the places of the sober and attentive with the drunken and inattentive.

MESSRS. BUCHANAN & BROS.' NEW BLOCK, GLASGOW.

The object of Messrs. Buchanan & Bros. in arranging for their new block of buildings in Maitland Street was to obtain a structure of considerable fire resistance that would at the same time give the most ample space, light, etc., suitable to the site. The building they have put up is 100ft. by 50ft. by 65ft. high, and consists of six floors, a flat roof, columns, staircases, and lift frame, as well as outside walls built on the Hennebique system, and thanks to the general arrangement of windows, doors and partitions, which by-the-bye are also of a fire-resisting type, the very white interior and the thinness of the walls, there is no doubt the maximum of light and space have been secured.



FIRE-RESISTING WAREHOUSES: MAITLAND STREET, GLASGOW.

The floors have to take 2½cwt. per foot super. and the roof 2cwt. per foot super.; they have been tested for these loads.

Speaking from a general point of view, the importance of this class of building in Glasgow, being of a fire-resisting character, is considerable, especially in view of the number of fires continually occurring which might at any time lead to a serious conflagration. From the point of view of warehousemen, manufacturers, etc., it is even more so, as they not only have immunity from fire as regards their building and the possibility of fire caused by the goods themselves spreading from one floor to another, but the rates of insurance are reduced and a thoroughly up-to-date building, free from maintenance, is secured.

The whole of the works have been designed and carried out under the supervision of Messrs. Wyllie and Blake, civil engineers and architects, Glasgow.

The contractor for the reinforced concrete work was Mr. W. T. Weir, of Howdon, Newcastle-on-Tyne.

Before the meeting of the Surrey County Council at Kingston, on November 10th, Major Coates, M.P., the chairman, on behalf of the magistrates of Surrey and the members of the county council, handed to Mr. Frank Howell, the county surveyor, a cheque on his retirement after fifteen years' service. The money is to be expended in the purchase of George I. plate and a telescope, with an observatory in which to erect it.



FIRE-RESISTING WAREHOUSE, MAITLAND STREET, GLASGOW.

FIRE IN THE PARKER BUILDING.

In our last fire issue, we presented some important particulars regarding the Parker Building Fire, together with some illustrations of an exceptional character. Since then the Red Book No. 132 of the British Fire Prevention Committee has been published, and we observe that it contains an important report by W. C. Robinson, Chief Engineer to the Underwriters' Laboratories, Chicago, concerning this particular fire, which is presented with a preamble by Mr. Edwin O. Sachs, F.R.S.Ed., pointing out how important the lessons of this fire are to this metropolis, having regard to the fact that London contains quite a number of buildings, if not of the same great height as that of the Parker Building, at least not of dissimilar construction.

Having regard to the calculations arrived at by Mr. Robinson, the report should be of special value to the metropolis, and to those acting for public authorities in particular.

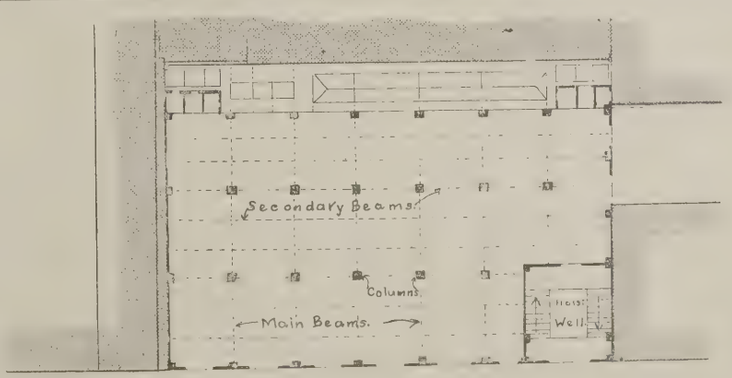
We give the following characteristic utterances of his:—

Cast Iron Columns.

"Cast iron columns should not be used in high buildings, as their failure is usually complete, and results in sudden total collapse of the sections supported. Girders and beams cannot be rigidly attached to such columns, and defects in the material cannot be easily detected."

Fireproofing.

"It is essential that all structural members of fire-proof buildings be protected by a sufficient mass of fire proofing to insulate them thoroughly against the heat which would be developed by the rapid burning of all materials permitted in any storey of such buildings. It is also essential that all fireproofing be firmly anchored, or otherwise securely held in position, where it is of such a nature or so designed that it will become loose as a result of heat. On account of their very great importance



PLAN

FIRE-RESISTING WAREHOUSE IN MAITLAND STREEET, GLASGOW.
WYLLIE & BLAKE, CIVIL ENGINEERS.

structurally, columns should be insulated by at least four inches of fireproofing; and no pipes or conduits should be placed in or back of the fireproofing material. On account of the heavy mass of fireproofing with which girders and floor beams are in contact, a lesser amount of protection can be safely employed at the soffits. Generally, this should not be less than two inches for girders and one and one-half inches for floor beams.

Loads.

"All floor keys should be provided with a large factor of safety, so as safely to carry the imposed loads, not only under ordinary conditions, but when severely exposed by fire."

Safes, etc.

"The support of heavy safes and machinery on wood floors and wood skids in fireproof buildings is a menace to both life and property, and should be absolutely prohibited. Heavy shafting should be attached to ceilings in such a manner that it will not fall as a result of fire.

Openings.

"Exterior openings in buildings should be thoroughly protected against exposing fires. Universal efficient fire protection of exterior openings will practically eliminate the danger of conflagration in cities.

Floors.

"Buildings of large unbroken floor areas filled with combustible contents develop the severest fires and constitute one of the most dangerous sources of general conflagration. Floor areas in buildings of this character should be subdivided by substantial brick fire walls sufficient to form a positive barrier of the spread of fire."

Perhaps we should add that the Report was illustrated by some 30 plates giving detailed constructional drawings, and photographs from the actual fire.

HIGH PRESSURE WATER-MAINS FOR FIRE EXTINCTION.

The recent successful installation of high-pressure water-mains for fire extinction in New York once more raises the question as to why the London County Council have not as yet taken advantage of the London Hydraulic Power Company's mains, which are laid through most of the principal thoroughfares, particularly in the City and West End. The best results are obtained by a combination of Metropolitan Water Board water and hydraulic pressure water by means of injector hydrants; and at a fire which occurred recently at a large brewery on the south side of the river, the Fire Brigade used the hydrants on the premises which are worked on this principle, and found them to be satisfactory. If this was the case with premises easily accessible to fire engines, surely it would be to the general advantage to have similar arrangements made for street hydrants in or near the many narrow courts and alleys which are difficult of access.

We learn from the Power Company that there are now about 162 miles of mains between Wapping and Kensington on the north, and Rotherhithe and Vauxhall on the south side of the river, ample power being available from their six large pumping stations, each of which can supply any point of the system.

The high-pressure water-main system was used for fire extinction in New York for the first time on October 28th, when a fire at a five-storey factory was extinguished in fifteen minutes. Lines of hose were attached direct to the street hydrant, which received water pumped through underground mains by a central pumping station. It seems that the entire city below Fourteenth Street is now protected by sixty-five miles of new underground pipes connected with two pumping stations, from which operations are directed by telephone.

BRITISH FIRE PREVENTION COMMITTEE'S TESTS.

Fire Extinguishing Appliances.

The British Fire Prevention Committee's autumn session has been one of particular activity, every alternating Wednesday, practically, being occupied with important fire tests.

We have mentioned in previous issues the tests that have been undertaken with ordinary small fire extinguishers, and also with the large 125-gallon extinguisher suitable for permanent installation in country houses, where it is rare to find a reliable water-pressure.

Two further afternoons in October have been devoted by the Committee to testing extinguishers intended to put out petrol fires—a subject of the utmost importance at the moment, having regard to the serious increasing fire-risk involved in motor traction and the numerous garages that are being built or formed out of stables all over the metropolis.

The petrol extinguishers, which were subjected to some twenty-four tests spread over two afternoons, are in appearance much like the ordinary extinguisher, but emit a chemical mixture that is intended to put out petrol, and, if we are informed rightly, results were of a satisfactory character.

At this particular series of tests, Mr. Percy Collins, J.P., acted as directing member, assisted by Mr. Ellis Marsland (District Surveyor), Mr. Chatterton (Yorkshire Insurance Company), Mr. Farrow, F.R.I.B.A., and others, whilst the Council of the British Fire Prevention Committee was represented by Mr. Edwin O. Sachs, F.R.S.Ed., and there was a large attendance on behalf of the public authorities primarily concerned, such as the Home Office, Admiralty, etc., the insurance companies, automobile organisations, etc.

Fire-Resisting Shutters.

What we, however, believe will be one of the most valuable series of tests the Committee has been conducting will be the continuation of a series of tests with metal roller shutters.

It may be recollected that about three years ago there was a series of this description in respect to Kinnear roller shutters, made in the United States and brought into this country by Messrs. Gibson, of London.

In the first instance a single shutter was tested in 1905 for 1½ hours, as affording "Partial" protection, and obtained this classification, i.e., Partial Protection, Class "A," under the Universal Standards for Fire Tests. Thereupon a single shutter was tested for 2½ hours for the purpose of obtaining classification of "Full" protection, Class "A"; and a double roller shutter was tested for a four-hour test for the purpose of obtaining classification "Full" protection, Class "B," the highest classification obtainable, and in both cases classification was obtained. In the first instance the single door was on an opening 9ft. wide by 8ft. high, and in the last two cases there were two openings 7ft. wide and respectively 7ft. 6in. and 8ft. high.

The advent of these shutters practically revolutionised the whole question of closing large openings, and in large structures of cubic extent, such as that of Messrs. Selfridge, in Oxford Street, it was the proof of the resistance shown at these official tests that practically gained for them the sanction of the London County Council on so important a structure. Further, had it not been for the results of these tests, Parliament would not have been able to include roller shutters among the means for closing openings in party and division walls.

The Committee are now continuing this series with another type of shutter made by the Wilson Manufacturing Company, of New York, and put forward in this country by Messrs. Mountain and Gibson, Ltd., of Bury.

On Wednesday, November 4th, the first two tests were undertaken out of a series of four tests which the Committee have in hand with these shutters. This series comprises one test with double roller shutters and three tests with single shutters, all to openings 7ft. wide.

Regarding the double shutter test, we understand this has been completed, and that the formal intimation has been received by Messrs. Mountain and Gibson, Ltd., that they have passed the "Full" classification of a four-hour test (full fire protection—Class "B"), which involves application of fire to temperatures up to 1800 deg. Fahr., followed by the application of water from a steam fire engine for five minutes. The official report on this double roller shutter door test should be issued next month, and should prove most interesting reading.

The three single roller shutter door tests will be completed in a few weeks, and reported on in December. They comprise:—

1. A test with a single roller shutter (official test).
2. A test with the same single roller shutter renovated after the first fire test for the purpose of indicating whether such shutters can be renovated and made to work again after an ordeal of fire (experimental test).
3. A test with a single roller shutter door of slightly different make (official test).

In each case these shutters are to be tested on 7ft. openings.

To what extent the technical professions and public authorities are interested in these tests may be gauged from the fact that at the first tests on Wednesday, November 4th, the attendance of the members and representatives of the authorities was quite of an exceptional character. Sir Henry Tanner, I.S.O., principal architect to H.M. Office of Works, personally represented the Council of the British Fire Prevention Committee; Colonel Sir Edward Raban, K.C.B., director of works, Admiralty, represented the Admiralty, and nearly every Government Department had delegates. Mr. Edwin O. Sachs, F.R.S.Ed., and Mr. Percy Collins, J.P., attended on behalf of the Executive, and there was a strong sub-committee in charge of the tests, with Mr. Max Clarke, F.R.I.B.A., as directing member; Mr. Ellis Marsland and Mr. Grellier, F.R.I.B.A., (district surveyors), Chief-Officers Dyer and Henderson (vice-presidents of the National Fire Brigades Union); Mr. Garbutt, A.M.Inst.C.E., and Mr. Fulkes (insurance surveyor).

These roller shutter door tests are of the greater importance for London at the moment, having regard to the question of protecting door openings in buildings of large cubic extent, or the combination of several buildings as permitted under the new Act, for there can, of course, be no doubt that roller shutters generally are of far greater convenience than doors in establishments such as drapers', etc., having regard to the small space into which the door covering can be stowed away overhead when the doors are open.

Notes and News.

Face Bond Building Bricks.—Mr. William Burrough Hill, F.S.I., architect and surveyor, of Southampton, has issued an interesting booklet describing a patent brick designed particularly for use in hollow or cavity walls. In this class of wall, as headers must not cross the cavity, a difficulty arises as to the bond to be adopted. "Garden-wall," "chimney," and "stretching" bond are detrimental to the appearance of the building; and, if "Old English," "Flemish," or other approved bond is adopted, the headers become bats, and the strength of the work is lessened, while labour and waste are greatly increased. The patent face bond building brick will enable the adoption of any kind of bond; the bricks being grooved at suitable intervals for the reception of mortar for the formation of a false or superficial joint, thus giving the appearance of a handsome bond. Thus, one brick is grooved to represent a header and stretcher; another would look like a stretcher and closer; and others are grooved to represent respectively two headers, a header and two closers, a header and closer, etc. The patentee has hit on a notion that, while extremely simple, is at the same time very ingenious. The innocent deception involved in the display of sham joints is perhaps justified by the increase of strength, and by the superior general appearance of the wall surface in which the face-bond bricks are adopted.

* * *

Timber Reserves of Queensland.—In the annual report of the Public Lands Department of Queensland, it is stated that the timber reserves of Queensland aggregate 3,255,751 acres. The Government have done well to set aside these extensive areas, as the saw milling industry is extremely active; in 1907 there were cut 57,274,629ft. of soft woods, and 33,925,650ft. of hardwoods. The local value of softwood worked out at 12s. 2d. per 100ft., and 13s. hardwoods. The beautiful cedar wood of Queensland, specimens of which were to be seen at the Franco-British Exhibition, is valued at 30s. 6d. per 100ft., and of this 552,000ft. were cut in the Colony in 1907. The progress of forestry in the State during the year has shown a very distinct advance. The permanent reservation of nearly 500,000 acres of areas as State forests marks a very great advance on anything previously attempted in the direction of permanently conserving the timber supplies of the State.

* * *

The memorial to Sir George Williams, founder of the Young Men's Christian Association, that was unveiled in the crypt of St. Paul's Cathedral recently, comprises a bust of Sir George, executed in marble by Sir George Frampton, R.A.

THE MAKING OF ABERDEEN

"Archibald Simpson, and the Making of Aberdeen," was the title of a paper read at a meeting of the Aberdeen Architectural Association on November 7th, by Mr. G. M. Fraser, librarian of the Aberdeen Public Library.

By visiting London and the Continent, Simpson was able to refine and extend his knowledge. He returned to his native city in 1813 or 1814. Gradually he came to be recognised, and he ultimately raised public and private buildings in Aberdeen that led to a complete transformation in the appearance of the city. John Smith, who was city architect for nearly ten years before Simpson got his chance, raised many buildings in the city of high architectural quality, and showed engineering capacity far beyond what Simpson ever possessed; yet, in his most ambitious designs, he seemed almost afraid of his own movements, and lacked the spontaneity and freedom which were characteristic of most of Simpson's work. Simpson, in 1818, received a commission for the Medico-Chirurgical Hall in King Street. This hall was the first building in Aberdeen to reveal with convincing force, in its simple, strong Ionic, how effectively the hard angular granite of the district could, when properly treated, be used in public architecture. The Music Hall in Union Street raised Simpson enormously in public favour, and then it was that the people began to take an interest in the architectural development of the city. Simpson was appointed architect for the lunatic asylum at Clerkseat, and took a prominent part in the laying out of Bon-Accord Square and Bon-Accord Crescent. Simpson regarded the Royal Infirmary as his finest work. Simpson's design for a new East Church was accepted, and he drew the designs of several private residences in Albyn Place, including the building known as the Girls' High School. The bank buildings at the corner of King Street, the erection of the New Market and the laying out of Market Street, Hadden Street, and Exchange Street, were also Simpson's work.

GLASGOW CENTRAL STATION EXTENSION.

At the ordinary meeting of the Institution of Civil Engineers held on Tuesday, November 10, Mr James C. Inglis, president, in the chair, Mr. Donald A. Matheson, M.Inst.C.E., engineer-in-chief, Caledonian Railway, read a paper on Glasgow Central Station Extension. The Central Station in Glasgow is the principal station on the Coledonian Railway. It is a terminal station, situated in the heart of the city, at or in the vicinity of the main thoroughfares and the River Clyde. It is constructed partly over the river, and over several streets, as well as over the Underground Railway which runs longitudinally under Argyle Street. The original station was opened in 1879; but, as the traffic has been almost constantly increasing, the accommodation has had to be enlarged twice within about twenty years. The site is a difficult one, by reason of its position relatively to the River Clyde and to adjoining public streets. This affected the designs.

The platforms are 24ft. to 33ft. above the level of some of the main streets which are crossed. The substructure is therefore a costly work of considerable magnitude. It consists of an extensive bridge over the River Clyde, and masonry arching and steelwork construction over and between the streets. These structures carry the station yard and the lines and platforms of the station proper. The space underneath the lines and platforms provides accommodation for a spacious parcels office and other purposes. There are altogether thirteen platforms, but the width of the station at the concourse is so narrow that their ends had to be stopped in echelon. The concourse therefore lies obliquely to the lines and platforms instead of at right angles, as is more usual. The lengths of the main traffic-platforms range from 800ft. to 900ft., and of the less important from 450ft. to 610ft., while the widths vary between 22ft. and 30ft.

The platforms are roofed in to about 86 per cent. of their length. This is a greater proportion than is usual, but the climatic conditions of Glasgow are exceptional. The roofing of the new part of the station, which is about 900ft. long, is constructed of steel and glass, and the girders being elliptical in form there is pleasing vista in the length. The character of station roofing generally is discussed, and the roofing of Liverpool Street Station is set up as being ideal.

The paper concludes with some reference to the principle in design. The author considers it doubtful if more than a very general principle exists, since so much depends on local circumstances.

The works were designed and constructed under the direction of the author, with Sir John Wolfe Barry, K.C.B., past-president, Inst.C.E., as consulting engineer.

WOLVERHAMPTON MODEL HOUSING EXHIBITION.

Judges' Report.

The judges, in their report on the Model Housing Exhibition, Fallings Park, Wolverhampton, notice some of the points that particularly arrested their attention when viewing the various types of houses presented for their inspection.

"It is not enough," the judges say, "that a cottage should be presentable from the road—it should be the study of the architect and builder to make it sightly to its neighbours also. This requisition adds considerably to the difficulties of the problem, both in the matter of expense and planning—but it is one that cannot be ignored. It is an integral part of communal living, one hitherto scarcely recognised, but deserving every encouragement, for it is a form of self-respect. It is attention to the so-called small matters that really counts in easing the apparatus of life—such details as the position of doors in relation to the fireplaces, fireplaces in relation to the windows, provision in the bedrooms for a suitable position for the bed, windows that can be cleaned from the inside of the house and that do not require an external ladder periodically for this purpose. In the usual builders' cottages that help to swell the extension of buildings on the outskirts of a town or alongside a railway, these particulars are so generally ignored, that a tradition has almost grown up that such conveniences are not to be had in buildings of such cost. The Fallings Park houses will show that such demands are not impracticable, that a thoughtfully planned house will not consequently be a more expensive one to

build—whilst it will indubitably be a cheaper one to maintain.

"We think it well to point out that soft water should be stored in closed tanks, and preferably underground, with a pump to the sink in the scullery. The kitchens should be larger than the parlours, because the food wants to be cooked where it is going to be served, and there should be no range in the scullery or any inducement to try and make a kitchen of it. Many of the cooking ranges gave insufficient space for kettles and pots. It is better to have a boiler at the side fed by a ball cock than the 'sham' generally fixed. Coppers should be provided with a draw-off tap at bottom, and have hoods over them connected with the flue, to dispose of the steam.

"Mantelpieces of enamelled slate (such as were fixed in some houses) of pretentious size and design are unsuitable; and many of the cast-iron fireplaces were of poor design and supplied with insufficient fire lumps. The economical combustion of coal and the quantity of heat radiated therefrom, depend on the disposition of the fire lump back and sides, and no amount of florid iron work or pictured slate can compensate for a badly constructed grate. Where staircases open directly from a room, there should be a door at the foot, else the warmed air of the room escapes and is lost in the first floor passages and the roof; a staircase should not open from the scullery. It is a mistake to have hollow wood floors to the living rooms on ground floor; they require to be scrubbed, and the necessary ventilation beneath keeps them cold to the feet. To avoid the labour of scrubbing, they are generally covered with linoleum, and this inevitably produces in a short while decay of the boards from dry rot. It is better to form a layer of cement concrete on the ground and fix the linoleum direct to that. Shelves and dresser tops should not be painted, but the wood should be left plain.

"Regarding the permanent efficiency of the drainage as of as much consequence as the durable construction of the house itself—we consider the local public health authorities are content with a somewhat low standard in the matter of drains. It is perhaps too much to ask, even in a model housing scheme, that the drainage from the houses to the road sewer should be in iron pipes, but it is worth the Estate's consideration whether the larger first cost of a permanent system is not in the end an economy, and whether it is not its duty to insist that the community on the grounds of health shall ensure that every building shall be free from all reproach on that score, not merely at the outset, but permanently.

"We also consider that a 4½in. brick-nogged partition does not make a proper external wall, even though it be rough-casted—in fact, the impervious coat of rough-cast, whilst serving to exclude the weather, occasions the decay of the timbers forming the partition.

"In conclusion, we wish to express the pleasure it has given us to examine so interesting a collection of buildings, and so successful—speaking generally—an answer to the difficult problem of building cheaply and well."

The report is signed with the following names:—Halsey Ricardo, F.R.I.B.A., London (Chairman); Henry T. Hare, F.R.I.B.A., London; Detmar Blow, F.R.I.B.A., London; C. H. Barnsley, President of the National Federation of Building Trades Employers of Great Britain and Ireland; C. E. Bateman, F.R.I.B.A., nominated by Birmingham Architectural Association; Wm. Edwards, President of Wolverhampton Architectural Association; T. Medley and E. Medley, nominated by Trades Council; Kate P. Bantock (Mrs. A. Baldwin Bantock); and M. Evans, Mayoress of Wolverhampton.

The list of awards accompanying the report was given on p. 314 of our issue of October 21st.

Architectural Societies.

R.I.B.A.

The R.I.B.A. Kalendar for 1908-1909 has been issued, price half-a-crown, from 9, Conduit Street, Hanover Square, W. [An abstract of the paper read at last Monday's meeting appears on p. 389.]

Leeds and Yorkshire Architectural Society.

The forty-second report of the Leeds and Yorkshire Architectural Society shows that the total membership on April 30th of the present year was 166—namely, thirty-three honorary members, sixty-nine members, and sixty-four associates, as against a membership of 169 last year.

Northern Architectural Association.

The first quarterly meeting of the fiftieth session of the Northern Architectural Association was held at 6, Higham Place, Newcastle, on November 11th, when the president (Mr. G. T. Brown, F.R.I.B.A.) delivered the opening address, in which, in reference to the Housing and Town Planning Bill now before Parliament, he said that he considered the Bill a most complicated jumble, never saying definitely what was proposed, though the Bill generally should be productive of satisfactory results, as it must be admitted that the extension of towns ought not to be allowed to proceed on haphazard lines. One thing which might have been dealt with in the Bill, but which had not been included, was the valuation at which land could be purchased.

The Glasgow and West of Scotland Technical College Architectural Craftsmen's Society.

At a meeting of this society, held in the Technical College recently, Mr. J. Campbell Reid, A.R.I.B.A. (president), in the chair, Professor Charles Gourlay, B.Sc., A.R.I.B.A., delivered a lecture on "An Architectural Tour in France." The district referred to lay eastwards of Paris as far as Nancy and in a north-eastern direction to St. Quentin. After a few remarks on the buildings of architectural importance in this area, the professor selected five of the ecclesiastical buildings referred to, for further study. In these he traced the development of French Gothic architecture from its Romanesque basis as seen in the church of Morienval, through the Early Gothic church of St. Remi at Rheims and Notre Dame at Chalons-sur-Marne to the later French Gothic as it is found in Notre Dame de l'Epine. Then he dealt in detail with Rheims Cathedral, which, on the grounds of simplicity of plan, singleness of purpose, and remarkable unity of expression, he considered to be one of the greatest of Gothic structures—probably the one in which perfection as a whole had been most nearly attained.

Birmingham Architectural Association.

The Green Book of this Association is in two respects notably different from the usual type of association year book in being more tastefully printed, and in containing, besides the usual information, five plates of architectural illustrations, namely, views of Santa Maria della Salute, Venice, and of the dome of St. Peter's, Rome, by Mr. G. Salway Nicol, A.R.I.B.A.; and three detail drawings of Wolvesey Palace, Winchester, by Mr. C. Russell Corfield. The programme for the session 1908-9 includes the following fixtures, an exceptionally interesting list: November 20, Mr. W. Curtis Green, A.R.I.B.A., on "Students' Studies"; December 11, Mr. Edward S. Prior, F.R.I.B.A., on "English Parish Churches, chiefly of the Fifteenth Century"; December 18, Sir Charles A. Nicholson, Bart., M.A., F.R.I.B.A., on "Churches of Northern France"; January 8, 1909, Mr. James B. Fulton, A.R.I.B.A., on "The Renaissance in Spain"; January 22, Mr. Arthur Dixon, M.A., on "Early Roman Churches"; February 5, Mr. J. A. Gotch, F.R.I.B.A., on "The Elizabethan House as illustrated by Contemporary Architectural Drawings"; February 19, Mr. Frank T. Baggalay, F.R.I.B.A., on "Roman Architecture"; March 5, Mr. C. H. Holden, A.R.I.B.A., on "Aboriginality in Architecture"; March 19, Mr. G. Salway Nicol, A.R.I.B.A., on "Rome and Paris—their Architectural Relations." The president of the association is Mr. J. L. Ball, and the secretary is Mr. E. Marston Rudland.

Liverpool Architectural Society.

Liverpool Architectural Society, which has just opened its sixty-first session, has arranged a decidedly strong programme of papers, which include the following: Mr. Reynolds Stephens on "Sculpture and its Relation to Architecture"; Mr. F. W. Troup, F.R.I.B.A., on "Ornamental Lead Work"; Mr. Lionel Thornley, F.R.I.B.A., on "Practice and its Pitfalls"; Mr. Mawson, on "The Gardens of the Peace Palace of the Hague"; Mr. Faulkner Shepherd, A.R.I.B.A., on "Competitions"; Mr. Mervyn Macartney, F.R.I.B.A., on "The Three Churches of St. Paul"; Mr. T. T. Rees, F.R.I.B.A., on "The Liability of Architects to Clients and Public"; and Mr. E. Guy Dawber, F.R.I.B.A., on "Materials and their Value in Relation to Domestic Architecture."

Architects' Benevolent Society.

Society of Architects' Appeal.—At the conclusion of his presidential address to the Society of Architects, on November 12th, Mr. Geo. E. Bond, J.P., earnestly called attention to the Architects' Benevolent Society. In times of depression, such as those through which we have been passing, he said, we have had ample evidence before us to prove that many of our less fortunate brethren have been reduced to the lowest ebbs of poverty and distress. The Benevolent Society is desirous of assisting such cases in a substantial manner, not by doles, but by putting them on their feet and helping them to secure employment. As representing the Architectural Association, Mr. Bond attended the last meeting of the Benevolent Society on October 23rd, when thirty applicants were dealt with, twenty-three being favourably considered and assisted, the total amount thus granted in relief being £212. Mr. Bond was much struck with the businesslike but sympathetic manner in which the cases were dealt with, and he strongly urged the members of his Society to do all in their power to assist the work.

Federation News.

MONTHLY REPORTS.

GREAT YARMOUTH MASTER BUILDERS' ASSOCIATION.

Secretary: R. J. Hill.

The number of members to date is 46. The twelfth annual meeting of the Great Yarmouth Association was held on Tuesday, November 3rd, at the Crown and Anchor Hotel, Hall Quay, Great Yarmouth. The chair was occupied by Mr. G. W. Beech, the president, who has held this position since the formation of the Association. He much regretted to see so few members present at the annual gathering, but no doubt the slackness of trade had a good deal to do with keeping the members from attending.

The Secretary stated that, in accordance with the rules, each member had been informed by post card a week beforehand,and also had a reminder the same morning of the annual meeting taking place. The yearly balance-sheet was presented, and owing to a falling off in subscriptions during the year, the expenditure had exceeded the income by a few pounds; but, considering the times, it was thought to be very favourable, and was passed.

The following officers were then re-elected: President, Mr. G. W. Beech; Vice-presidents, Mr. G. Chasteney and Mr. A. Jary; Auditors, Mr. B. Moore and Mr. B. G. Beech; Treasurer, Mr. J. Ward; Secretary, Mr. R. J. Hill, and eight other members to form the committee of management. Various papers were passed over from the National Federation, which were allowed to be put on one side, as they were very numerous. The following members were elected on the South-Eastern Centre Board of Conciliation: Mr. G. W. Beech and Mr. J. Chasteney, and Mr. A. Jary as substitute.

It was decided to subscribe to THE BUILDERS' JOURNAL.

It was thought advisable to call, at an early date, a committee for the purpose of going carefully through the rules to see whether any amendments were required, and to recommend them to a general meeting called for that purpose.

BRISTOL ASSOCIATION.

Secretary: A. J. Pitt.

The ordinary monthly meeting of the Bristol Association was held on Thursday, October 29th, under the presidency of Mr. Frank N. Cowlin. The report of the Contract Clauses Committee to the City Council, upon the question of the clause relating to the sub-contracts, was presented, recommending that the following clause be substituted for that now standing, viz.:—"The works shall not be assigned or sublet as a whole to any contractor, nor is any portion of the works to be sublet without permission in writing from the architect (or engineer, as the case may be), and then only to responsible parties approved by the architect (or engineer), and the fact of any sub-contractor being permitted by the architect (or engineer) to undertake portions of the works shall not relieve the contractor from the full and entire responsibility attaching to the contractor, including responsibility under the clause herein contained, with reference to the payment of wages and the observance of the hours and conditions of labour, nor from active superintendence of the works, either personally or by a qualified agent during their progress. Provided that if the contractor shall be required by the architect (or engineer), the corporation, or the specification to employ any particular sub-contractor, he shall not be responsible for work done or materials supplied by such sub-contractor, nor shall he be responsible to see that the clause relating to the payment of wages and the observance of the hours and conditions of labour is carried out with reference to the persons or workmen employed by such sub-contractor."

"For the purposes of this clause, a sub-contractor shall be deemed to include any person who, after the signing of the contract, prepares, with the permission of the architect (or engineer) specified work for the use of the contractor, in carrying out this contract, but it shall not be deemed to mean or include any person supplying materials to the contractor of ordinary stock sizes, or qualities, or which were not specifically prepared for use in this contract.

"Provided that the contractor shall be relieved of liability under this clause, if he prove to the architect (or engineer) that at the time of making the sub-contract he stipulated with sub-contractor for payment of the rate of wages generally accepted as current in the district in which the work he is executing is being done for a competent workman in his trade, and for the observance of the agreed hours and conditions of labour of the various trades in that district, subject to the like liquidated damages, and power to determine the sub-contract as provided for as regards this contract by Clause .... And provided that where called upon by the corporation, he take effective steps to enforce the conditions of his sub-contract."

Mr. A. Dowling reported that much attention had been given to this subject in the City Council, and the above clause had only been arrived at after much debate. The general feeling had been that it would be inadvisable and unfair to make the contractor responsible for matters over which he had absolutely no control, and the clause adopted, he considered, was as fair and equitable a one as they could expect. The president mentioned that the suggested clause submitted to the Trades Council by this Association, defining a sub-contractor, had been practically adopted, only a few alterations and additions having been made. The members present concurred in the opinion that the clause was a very fair one and would be generally acceptable to the trade.

A discussion ensued upon the question of sub-contracting, during which it was suggested that it would be well fully to consider the matter, with a view to some improvement in Clause 20 of the National Form of Contract, which it was felt would be more acceptable if modelled somewhat upon the lines of that just adopted by the City Council, and reported above. The committee were asked to give this subject their attention, with a view to a further discussion at the next meeting, and also to make enquiries as to whether there was in use, in any part of the country, a special form of contract for sub-contractors.

EDINBURGH, LEITH, AND DISTRICT BUILDING TRADES ASSOCIATION.

Secretary: James Cameron, Solicitor.

The monthly meeting of the executive was held in the Building Trades Exchange, 61, Lothian Road, Edinburgh, on Friday afternoon, October 30th. Mr. David McKie presided over a good attendance. One new member was proposed and admitted to membership, viz., Mr. John Cameron, blacksmith, 23, Richmond Place, Edinburgh.

Report on state of trade in the district showed it to be about the same as last month, but worse than last year at this time. There are prospects of an improvement, however. Rosyth Naval Base will probably in the near future give work to a large number of men, while the new cavalry barracks at Redford, Colinton, three miles from Edinburgh, will also give much needed relief.

A remit was made to the Master Plumbers' Committee to consider the position of the Edinburgh and Leith Gas Commissioners. They are doing the plumber work themselves for the alteration and extension of their premises at Waterloo Place. This is municipal trading of a flagrant type, and in their own interest the master plumbers of the city are moving in the matter.

With regard to the memorandum issued by the President of the Board of Trade, anent the proposed formation of a Court of Arbitration for the settlement of trade disputes, the meeting expressed itself as favourable to the proposal. It was agreed, in view of the importance of the matter, to call a special meeting of the Association on an early date, in order that each member may have an opportunity of stating his views.

PERTH ASSOCIATION.

Secretary: James Mitchell.

During the last few years, there has been little building of any importance in the City of Perth and District, and the master builders, joiners, and other tradesmen have felt the depression keenly. Prospects, however, are now somewhat brighter, and at the present moment the School Board is erecting a large school, known as the Northern District School; and the building of a new city hall, it is expected, will be commenced in a few weeks. There is also the prospect of a new infirmary being erected, but no definite arrangements have yet been made in this respect. A building of considerable importance belonging to the Co-operative Society, Perth, is in course of erection in York Place, and consists of shops and dwelling-houses. The Hammerman Tavern, with shops and houses above, is being re-erected in High Street. With these buildings in hand, and with other prospective work, the outlook for the building trade is brighter than it has been for some years. There is practically no speculative building in hand.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

The annual meeting of the Birmingham Master Builders' Association was held at the Grand Hotel, on November 10th, Mr. F. G. Whittall presiding. The committee, in presenting the annual report, regretted that they had to record that the building trade during the year had been in a very depressed state, and that there is at present no sign of a revival. The whole question of serving notices for a general reduction of wages had been fully discussed, and although reduction was justified by the stagnant state of trade it was decided not to reduce wages. A general meeting of the trade in April last approved of the inter-trading rule as in force in Liverpool. The balance-sheet showed that the total ordinary receipts for the year were £199 15s. 8d., which, with the balance from last year, made a total of £423 12s. 8d. The disbursements amounted to £397 12s. 1d., and the ballance to the credit of the association was £26 0s. 7d.—The report was adopted on the motion of the President, seconded by Mr. R. Bulley. On the motion of Mr. J. B. White, Mr. J. F. Whittall was re-elected president of the association for the fourth year in succession. The president, acknowledging his re-election, referred to the notices given to the operatives, and said that for the first time in the history of the association the notices served on the operatives were almost identical with the notices the operatives had served on the masters. While the association asked for a reduction of hours in order to bring the working hours into uniformity, the operatives had served notices for the same reduction of hours in order to provide employment for those who were at present out of work. He could not help thinking that it was a matter for gratitude and congratulation to the bricklayers that they were willing to sacrifice a very large part of what would be their weekly earnings for the purpose of assisting those of their members who were out of employment.

Mr. J. J. Moffatt was re-elected vice-president, Mr. George Twigg was re-appointed treasurer, and Mr. Ernest J. Bigwood was re-elected secretary. The committee were also re-elected, and the auditors (Messrs. J. S. Surman and Ralph Webb) were re-appointed.

The president, in accordance with the recommendations already approved at a special meeting, moved that the following addition be made to the rules of the association: "Members shall not give or take tenders for any work to, or from, any persons who are not members of this or kindred associations connected with the building trade, and shall not employ such persons to do work for them. The term kindred associations shall mean associations federated to the National Federation. That trade members be requested, wherever possible, in dealing with merchants or firms of a like nature, to give preference to honorary members of this association. That a similar telephone card to the one in use in Liverpool be adopted by this association." Mr. Albert Smith seconded the proposition, and after some discussion it was carried by nine votes to seven.

Mr. F. G. Whittall presided at the annual dinner which followed the business meeting. The function was largely attended, those present including the Lord Mayor of Birmingham (Councillor G. H. Kendrick), Mr. C. H. Barnsley (president, National Federation of Building Trade Employers), Lieutenant-Colonel John Barnsley, Messrs. J. Bowen, S. H. Rowbotham, A. G. White (secretary National Federation), W. Wistance (president, Midland Federation), F. W. Amphlet, (secretary, Midland Federation), J. L. Ball (president, Birmingham Architectural Association), E. J. Bigwood (secretary, Birmingham Association), and the presidents of the West Bromwich, Walsall, and Stourbridge Associations.

The Lord Mayor proposed "Success to the Birmingham Builders' Association and the Trade of the City."

The President of the Association responded to the toast. The other toasts honoured during the evening included "The Architects and Surveyors," proposed by Lieutenant-Colonel Barnsley, and acknowledged by Mr. J. L. Ball and Mr. Anthony Rowse, and "Kindred Associations," to which Mr C. H. Barnsley and Mr. A. G. White responded.

Trade and Craft.

MESSRS. MEASURES BROS.' NEW CATALOGUE.

The extent to which iron and steel pervade modern building construction is rather strikingly shown in the new "handbook" that has just been issued by Messrs. Measures Bros., Ltd., London and Croydon. Joists, girders, and stanchions are not the whole of the story; though these are described and illustrated, and their measurements and weights are carefully tabulated, with such completeness as to render the booklet really of high value as a work of reference on all points connected with structural ironwork. Lattice and steel-plate girders are treated with the same exhaustive thoroughness.

It is explained, perhaps not altogether superfluously, that the advantages to be derived from the use of solid steel columns instead of cast-iron columns or steel stanchions depend mainly on the superior strength of the former (e.g., a solid steel column, 9ins. in diameter, and 14ft. high, will carry 213 tons, whereas, to carry the same load, a cast-iron column would have to be about 16ins. in diameter, and a steel stanchion would have to be 15ins. by 18ins.), but there is the further gain that the solid steel columns offer much greater resistance to heat in case the building takes fire, and are far less likely to wreck the structure by twisting. It is hence advised that while a solid steel column is "theoretically expensive," the practical points in its favour outweigh the extra cost.

Flitched beams; angles, channels, and tees, and cast-iron and steel brackets of many varieties, are usefully illustrated; but these matters of detail are easily eclipsed in interest by the large section dealing with iron and steel roofs, which, it is stated—perhaps a little too modestly—are "gradually displacing timber as a material for roofs of large or even moderate dimensions." Many examples of steel trusses are figured and dimensioned with such care as to afford useful guidance as to choice of design or method of construction, and the details of struts, junctions, forked ends and eyes for tie-rods, and various cleated and other connections are given very fully.

Another large section is devoted to cast-iron columns, of which very many designs, plain and ornamental, are shown; and the enlarged details of ornamental column-heads include some really elegant designs, which lend an unexpected touch of beauty to a booklet in which uncompromising utility might well have been pardoned. Elegance of design is further seen, and is perhaps less surprising, in the section comprising ornamental gates and railings, etc., in which the splendid traditions of British ornamental wrought ironwork are well maintained, both in the general designs and in the greatly varied railing heads.

Several designs and details of iron buildings of various descriptions—churches, schools, and sheds—are illustrated with examples of Messrs. Measures Bros.' work in this kind. As the firm's activities are so multifarious, of which it may be assumed that this booklet is a faithful reflex, a mere list of the contents would occupy more space than we can afford; but it should be further mentioned that a section of special interest to builders and contractors is that in which various types of grinding mills for all purposes are described and displayed. Many full-page photo-process plates give interesting views of Messrs. Measures's various yards, foundries, operations, as well as of typical constructional work, completed or in progress, in which they have been engaged or for which they have supplied materials. Altogether, this catalogue is as interesting as it is useful, which is saying a great deal.

* * *

Cairn Mills, Silvertown, are to be partly reconstructed, under the superintendence of Mr. Bruce Dawson, A.R.I.B.A. Mr. William Downs is the contractor. The constructional steelwork is to be put up by Mark Fawcett and Company, of Westminster and Greenwich, and the fire-resisting floors are on the Fawcett system.

* * *

Visitors to Hickling Broad will find that the "Edwardian" chimney pot has travelled into this district, as these pots are to be seen on the Broad House.

* * *

The constructional steelwork, fire-resisting floors, and finishes to the warehouse additions, Stoney Street, Nottingham, and to the Nottingham Co-operative Society's extensions in Marple Street, Nottingham, were carried out by Messrs. Homan and Rodgers, Manchester; the architects being, respectively, Mr. W. H. Higginbottom and Mr. W. V. Betts.

* * *

We are informed that Messrs. Joseph Kaye and Sons, Ltd., of Leeds, and 93, High Holborn, London, who have already supplied more than 25,000 of their patent seamless serrated oil-cans to His Majesty's Navy, have again secured the contract from the Admiralty for the whole of the future supplies for the ensuing three years.

* * *

The Associated Portland Cement Manufacturers (1900), Ltd., of Portland House, Lloyds Avenue, Fenchurch Street, London, E.C., have issued an exceptionally well-produced pamphlet that includes an interesting sketch of the history of the cement trade, and is embellished with about thirty fine half-tone engravings of notable structures in which the firm's Portland cement has been used. These comprise the Houses of Parliament at Victoria, B.C., a reinforced concrete pier at J. B. White and Bros.' Swanscombe Works; the Nile Dam at Assouan; and the Barrage at Assiout; the London and North-Western Railway Docks at Garston; the Blackpool Esplanade; the new Cotton Exchange, Liverpool; the new Record Office; the Mersey Dock and Harbour Board Offices, Liverpool; Monroe Palace, Rio de Janeiro; the Ecclesiastical Commissioners' Building; the new War Office buildings; the new Tower Buildings, Liverpool; Pinkston Power Station; the Caledonian Railway Bridge; Birmingham Corporation Waterworks; Liverpool Technical School; Glasgow Bridge; the new Central Hall, Liverpool; and the Royal Liver Buildings, Liverpool. As the names of the architects, engineers, and contractors, accompany the views, the booklet is quite a little architectural album. The present firm, we infer, is a development of the first English firm of cement manufacturers, which was founded more than a century ago—in 1805, by Mr. John Bazley White. The firm now own the largest cement works in Europe. Architects should send for this booklet; they will find that it is worth having. The firm have also reprinted, separately in handy form, some "Notes on the Use of Concrete in Mines," and some useful memoranda on the same subject. This pamphlet also is well illustrated.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Accident Insurance Coupons have been sent to the following:—

F.W.B. (Lelant), R.R. (Birkdale), W.H.H. (Norbury), J.W.S. (Gunnersbury), L.K.H. (Westminster), R.R. (Grantham), J.V.F. (Gerrard's Cross), J.A.W. (Bradford), J.B.S. (Edgbaston), A.H.A. (Rugby), G.B. (Ryde), H.J.A. (Crouch Hill), H.C. (Chelmsford), E.P.T. (Bradford), S.W.S. (Blackpool), G.C.C. (Liverpool), J.C. (Wandsworth), A.L.P. (Blackpool), T.S. (Liverpool), W.C. (Nottingham), G.N. (Kilburn), W.G. (Barrow-in-Furness), J.W. (Nunthorpe), J.D. (Stockton), F.J.B. (Tiverton), T.E.T. (Bradford), W.S. (Birmingham), H.S. (West Bromwich), G.L.M. (Pontypridd), W.T.W. (Howdon-on-Tyne), A.C. (Leicester), W.T.M. (Cardiff), H.D. (Midhurst), J.T. (Bury), E.W. (Kirkby Lonsdale), T.P. (Leamington Spa), H.F. (Warrington), J.H. (Salford), F.H.R. (Leicester), R.C. (Northampton), S.B. (Blackpool), A.M. (Sheffield), J.W.C. (Leigh), G.H. (Bradford), J.R. (Pendleton), G.J.D. (Southsea), G.W. (Liverpool), A.H.B. (Shipley), J.C. (Blackpool), F.A.C. (Westminster), P.A.H. (Barnsley), F.L. (Clapham), G.H.B. (Brighton), F.C. (London, W.), J.L. (Aberdour), J.E.H. (Exeter), J.W.H. (South Shields), J.G. (Dromore), W.E. (Carlisle), G.D.B. (Edinburgh), P.T.F. (Blundellsands), F.W.G. (Northampton), E.W.F. (Liverpool), J.W.D. (Godalming), R.B.L. (London), J. Skelton (Newport), G.N. (Whitehaven), W.F.C. (Castleford), A.D. (Hastings), F.W.B. (Lelant R.S.O.), C.H. (London), R.M.W. (Ealing), R.S. (Ilkley), T.W. (Sheffield), W.B. (Grimsby), L.A.S. (Westminster), C.H. (Westminster), G.H. (Westminster), A.T.B. (Westminster), P.M.C. (Glasgow).

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Bankruptcies.

ASHFORTH, GEO. HY., builder, 79, Scott Road, Pitsmoor, Sheffield. R.O., Nov. 6.

BREW, WM. JNO., plumber and painter, 14, Edward Street, Leek. First meeting, O.R.'s, Macclesfield, Nov. 19, at 11.30. P.E., Town Hall, same, Dec. 1, at 10.30.

BUGG, WM. CHAS., builder, 76, Casewick Road, West Norwood, late Holmlyn, Milton Road, Shakespeare Road, Hanwell. R.O., Nov. 3. First meeting, Bankruptcy Court, Nov. 16. P.E., same place, Dec. 9, at 11.30. Adj., Nov. 5.

CHAMBERS, HY., joiner and builder, 44, Revidge Road, and back Granville Road, Blackburn. R.O., Sept. 10. Adj., same day. (Amended notice.)

CHAPPELL, JOSEPH, Headlands Lane, Geo. Willie Chappell, Wakefield Road, and Walter Chappell, Station Road, Earlsheaton, builders and contractors (trading as J. Chappell and Sons), New Street, Earlsheaton, near Dewsbury. First meeting, O.R.'s, Dewsbury, Nov. 17. P.E., C.C., same, Dec. 1, at 2.

DIX, BENJ., builder, 10, High Street, Saffron Walden. R.O., Nov. 2. Adj., same day.

KEELER, ARTHUR JAS., builder, decorator, and cabinet maker, 47, York Road, Ilford. First meeting, 14, Bedford Row, W.C., Nov. 18, at 12. P.E., Shire Hall, Chelmsford, Dec. 2, at 10.

PARKINSON, SAML., painter, paperhanger, and dealer in fancy goods, 82, Trinity Street, Gainsborough. R.O., Nov. 2. First meeting, O.R.'s, Lincoln, Nov. 19, at 12.15. P.E., Sessions House, Dec. 1, at 3. Adj., Nov. 2.

ROBERTS, DAVID SELWYN, painter and decorator, 13, Queen Street, Neath. First meeting, O.R.'s, Swansea, Nov. 14. P.E., Town Hall, Neath, Nov. 10. R.O., Nov. 2. Adj., same day.

SKINNER, ERNEST YOUNG, surveyor, 95, Gresham Street, E.C. Adjourned P.E., Bankruptcy Court, Nov. 17.

WILSON, WM., painter, plumber, glazier, and horse and 'bus proprietor, 38, King Street, Spennymoor. R.O., Nov. 3. Adj., Nov. 4.

Adjudication Annulled.

JOY, HY. JAS., late builder and cycle dealer, Alma House, corner of Ashley Road, and Granville Road, late Gloucester Cottage, Alexandra Road, Upper Parkstone, Poole. Oct. 26.

Coming Events.

Thursday, November 19.

CONCRETE INSTITUTE.—General Meeting. Mr. Marsh, M.Inst.C.E., on "The Composition of Plain and Reinforced Concrete."

INSTITUTE MEMBERS' CLUB.—Meeting of Executive, in the R.I.B.A. Smoking Room, 5 p.m.

Friday, November 20.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. W. Curtis Green, A.R.I.B.A., on "Students' Studies."

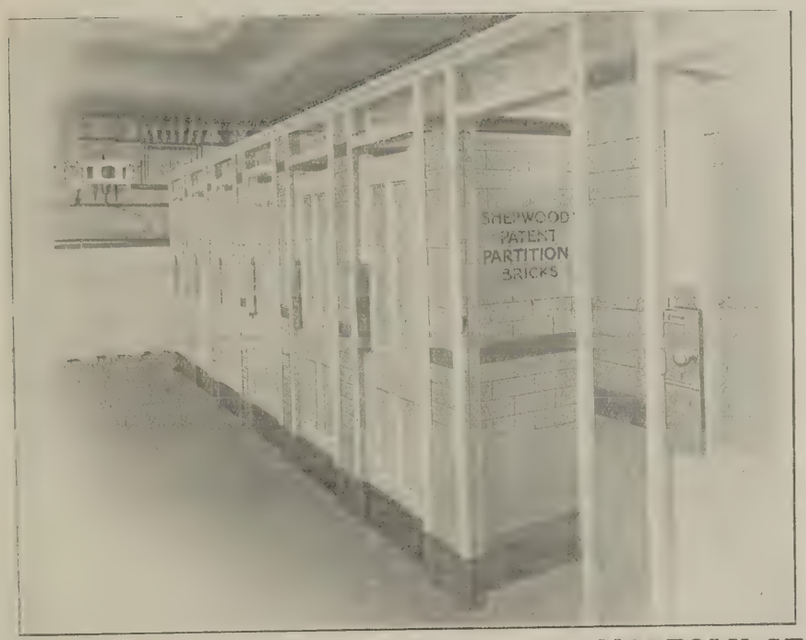
ARCHITECTURAL ASSOCIATION.—Mr. J. B. Fulton, A.R.I.B.A., on "The Church of Santa Sophia," 7.30 p.m.

Monday, November 23.

GLASGOW INSTITUTE OF ARCHITECTS.—Mr. Arnold Mitchell, F.R.I.B.A., on "The Study of Mediaeval Architecture."

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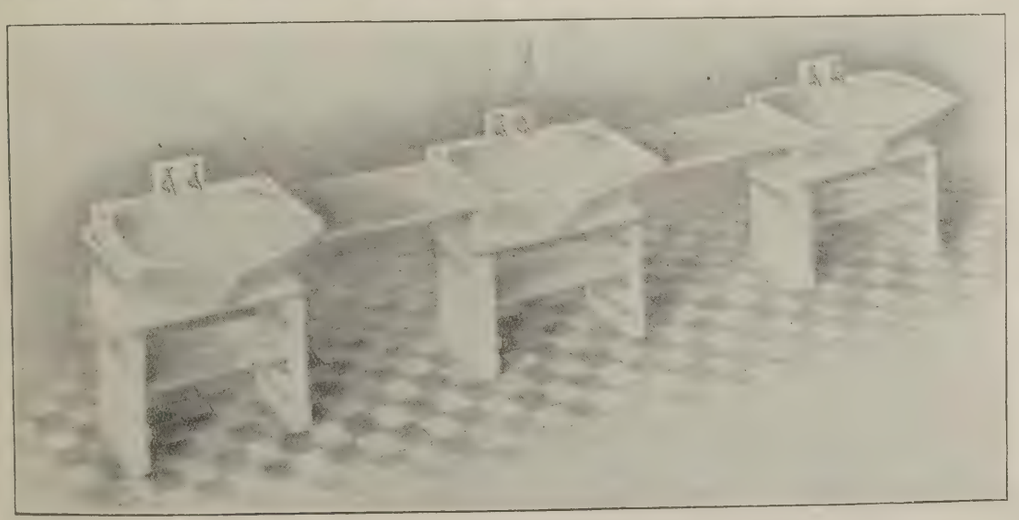
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Publisher's Notices.

Offices: Advertisement and Editorial—Caxton House, Westminster. Counting House and Publishing—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: Advertisement and Editorial—364, Westminster. Counting House and Publishing—2200 Holborn (six lines).

Date of Publication:—The Builders' Journal and Architectural Engineer is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

	s.	d.
At all newsagents and bookstalls - -	8	8
By post in the United Kingdom - -	10	10
By post to Canada - - - - - - -	13	0
By post elsewhere abroad - - - - -	17	4

The Index (with Title Page) for each half-yearly volume is supplied free on application to the Publisher.

Subscribers can have their volumes bound complete with Index, in cloth cases, at a cost of 3/6 each.

Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for Serial Advertisements, Special position etc., sent upon application.

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The above must be prepaid.

Property and Land Sales, Legal Notices, etc., 9d. per line

Advertisements for the above can be received up till 5 o'clock on Monday Evening at

Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, Builders' Journal, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Chiswick.—For erection of a new packing-room and sundry additions to the Royal Standard Laundry, Chiswick Park, W., for Mr. D. Wynter. Messrs. S. J. Reynolds and H. Hicks, architects, Reigate and Broadstairs. Quantities by Mr. J. Kennard, Croydon:—

A. Funnell and Co....	£5,1[illegible]
W. Johnson and Co., Ltd. ...	4,812
D. W. Barker	4,79[illegible]
E. J. Saunders and Co.	4,60[illegible]
G. E. Wallis and Son, Ltd. ...	4,494
Holliday and Greenwood, Ltd.,* Brixton	4,492

*Accepted.

Cinderford.—For proposed new higher elementary school, Cinderford, for Gloucestershire Education Committee:—

E. J. Flewelling	£4,946 0 [illegible]
W. Bowers and Co.	4,909 10 [illegible]
A. S. Cooke	4,902 13 [illegible]
Estcourt and Sons	4,730 0 0
T. Broad, Ltd.	4,669 0 [illegible]
E. W. Wilks and Son	4,568 0 0
J. Long and Sons, Ltd. ...	4,484 0 [illegible]
Walters and Sons	4,474 0 [illegible]
G. Dimery and Sons	4,455 12 1[illegible]
W. Jones	4,399 0 [illegible]
Byard and Sons	4,375 0 0
E. Love	4,307 0 0
W. T. Nicholls	4,294 10 0
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N. Baxter and Sons	4,212 10 3
H. and C. Spackman ...	4,201 3 3
Turford and Southward ...	4,139 0 0
A. J. Colborne	4,099 0 0
W. Crane, Ltd.	3,960 15 0
C. Griffiths,* Lye, near Stourbridge	3,939 1 3

*Accepted.

Eastbourne.—For alterations and additions to No. 1, Church Street, Eastbourne. Mr. W. Chapman Field, borough architect and building surveyor:—

Joseph Martin	£969
Peerless, Dennis and Co.	967
T. Dunlop	927
E. Rolf	908
R. H. Stanbridge	830
Mark Hookham*	793

*Accepted.

Eltham.—For conveniences and shelter at Eltham Park, for the London County Council:—

R. A. Lowe and Co.,* Chislehurst,	
W. Bickerton, Catford, S.E.... ...	£1,039
S. A. Douglass, Woolwich	969
A. N. Cole, Chelsea, S.W.	955
J. G. Jarvis and Sons, Erith, Kent	898
Lole and Co., Chelsea, S.W.	879
G. H. Gunning and Sons, Erith, Kent	820
Spencer, Santo and Co., Ltd.	797
C. R. Price, Bishopsgate Street Without, E.C.	797
G. E. Wallis and Sons, Ltd., Maidstone	792
George Jennings, Ltd.	760
B. E. Nightingale	755
W. Pollock, West Park	750
Kent	698

* Recommended for acceptance.

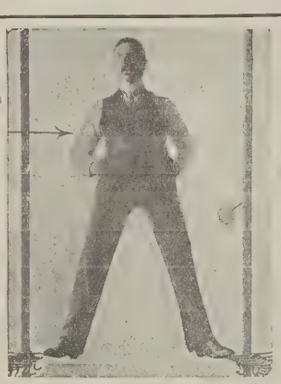
Norwich.—For the erection of a secondary school, with alterations to existing buildings, at Eaton Road. Mr. C. J. Brown, architect and surveyor, Cathedral Offices, The Close, Norwich:—

G. E. Hawes and Son	£26,000
W. J. Hannant	25,400
J. Youngs and Son	25,370
T. H. Yelf	25,183
J. Cracknell...	24,898
F. Bennett	24,600
T. Gill...	24,589
Spencer, Santo	24,312
C. Roper	24,300
J. Hurn and Son,* Surrey Street, Norwich	24,174

*Accepted.

(*Tenders continued on page viii.*)

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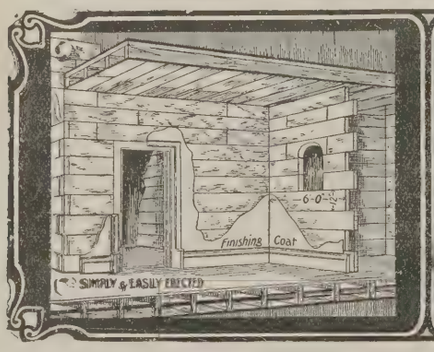


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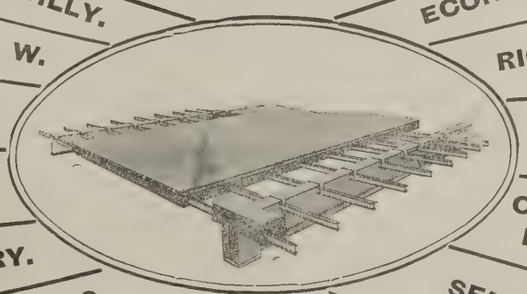
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A.W.E.

London.—For enlargement of school and erection of manual training centre, Mansfield Road, St. Pancras, for the London County Council:—

J. Parsons, Waterloo Road	9,051 0 0
A. E. Symes, Stratford	8,983 0 0
C. P. Roberts and Co., Highbury	8,917 15 0
L. Whitehead and Co., Ltd., Clapham Road	8,910 0 0
G. Godson and Sons, Kilburn Lane	8,794 0 0
T. D. Leng, Czar Street Works, Deptford	8,716 0 0
Treasure and Son, Upper Holloway	8,602 0 0
F. and T. Thorne, Isle of Dogs	8,599 0 0
W. Johnson and Co., Ltd., Wandsworth Common	8,594 0 0
J. Chessum and Sons, 7a, South Place	8,590 14 4
E. Lawrance and Sons, City Road	8,561 0 0
J. and M. Patrick,* Wandsworth	8,412 0 0
W. Akers and Co., Ltd., South Norwood	8,067 0 0

Architect's (Education) estimate, £8,917.

*Recommended for acceptance.

London.—For new school, Dingle Lane, Poplar, for the London County Council:—

J. Appleby and Sons, Southwark Park	14,933 0 0
W. Johnson and Co., Ltd., Wandsworth Common	14,876 0 0
C. Wall., Ltd., Lloyd's Avenue	14,788 11 9
A. E. Symes, Stratford	14,631 0 0
J. and M. Patrick, Wandsworth	14,488 0 0
Perry and Co., Bow	14,116 0 0
G. Godson and Sons, Kilburn Lane	14,004 0 0
Patman and Fotheringham, Ltd., Islington	13,763 0 0
Treasure and Son, Ltd., Upper Holloway	13,718 0 0
T. D. Leng, Deptford	13,592 0 0
McCormick and Sons, Essex Road	13,542 0 0
E. Lawrance and Sons, City Road	13,461 0 0
Kirk and Randall, Woolwich	13,230 0 0
J. and C. Bowyer,* Ltd., Upper Norwood	12,948 0 0
G. Parker, Peckham	£17,907 19 8

Architect's (Education) estimate, £13,696.

*Recommended for acceptance.

London.—For enlargement of the Gloucester Road School, Camberwell, for the London County Council:—

G. Parker, Peckham	£2,013 15 0
W. Downs, Walworth	1,943 0 0
E. Triggs, Clapham	1,786 0 0
J. Garrett and Son, Balham	1,716 0 0
Galbraith Brothers, Camberwell Green	1,705 9 10
W. Akers and Co., Ltd., South Norwood	1,675 0 0
Holliday and Greenwood, Ltd., Brixton	1,666 0 0
J. Smith and Sons, Ltd., South Norwood	1,631 0 0
W. Smith and Son, Harleyford Road	1,625 0 0
J. and C. Bowyer, Ltd.,* Upper Norwood	1,549 0 0

Architect's (Education) estimate, £1,740.

*Recommended for acceptance.

London.—For erection of special school, Carter Street, Mile End, for the London County Council:

Brand, Pettitt and Co., Tottenham	£3,795 0 0
Perry and Co., Bow	3,562 0 0
H. Kent, Hither Green	3,505 0 0
Stevens and Sons, Yonge Park	3,456 0 0
Staines and Son, 61, Great Eastern Street	3,388 0 0
J. Chessum and Son, 7a, South Place	3,302 17 3
A. E. Symes, Stratford	3,236 0 0
Kirk and Randall, Woolwich	3,195 0 0
F. and T. Thorne,* Isle of Dogs	3,111 0 0

Architect's (Education) estimate, £3,292.

*Recommended for acceptance.

London.—For erection of special school, Farrance Street, Limehouse, for the London County Council:—

J. Garrett and Son, Balham	£7,236 0 0
W. Johnson and Co., Ltd., Wandsworth Common	7,108 0 0
W. Harris, North Woolwich	7,062 0 0
C. Wall, Ltd., Lloyd's Avenue	6,870 15 1
J. and M. Patrick, Wandsworth	6,806 0 0
W. Downs, Walworth Road	6,793 0 0
G. Munday and Sons, Trinity Square	6,732 13 8
J. Grover and Son, New North Road	6,731 0 0
Patman and Fotheringham, Ltd., Islington	6,723 0 0
Perry and Co., Bow	6,582 0 0
J. Appleby and Sons, Southwark Park	6,752 0 0
F. and T. Thorne, Isle of Dogs	6,523 0 0
A. E. Symes, Stratford	6,407 0 0
Holliday and Greenwood, Ltd., Brixton	6,349 0 0
Treasure and Son, Ltd., Upper Holloway	6,315 0 0
Kirk and Randall, Woolwich	6,297 0 0
G. E. Wallis and Sons, Ltd., Street	6,274 0 0
E. Lawrance and Sons, City Road	6,272 0 0
T. D. Leng,* Deptford	6,257 0 0

Architect's (Education) Estomate, £6,345.

*Recommended for acceptance.

London, E.C.—Accepted for construction of subways for pedestrians from Blackfriars Bridge to Queen Victoria Street, for the Court of Common Council:—

Perry and Co. ... £9,867

Prestwood (Bucks).—For erection of four cottages, Prestwood, for Mr. A. Groom. Messrs. Hooper and Ash, architects, High Wycombe:—

Sears	£850
Brown and Clark	768
G. Parsons	750
J. B. Copeland,* High Wycombe	675

*Accepted.

Sunderland.—Accepted for erection of a hall for the Dean Bank and Ferryhill Literary and Social Institute. Mr. John H. Nicholls, architect, 18, Fawcett Street, Sunderland.

R. Stafford and Son, Rudland Terrace, £2,190.

Wembley.—For the erection of a police station at Wembley. Mr. J. Dixon Butler, F.R.I.B.A., surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

Tennant and Co.	£6,032
Messom and Son	5,735
G. and J. Waterman	5,660
E. Potterton	5,540
Willmott and Sons	5,477
W. J. Dickens	5,476
Holloway Bros., Ltd.	5,392
Godson and Son	5,239
Grover and Son	5,219
Fassnidge and Son	5,200
H. Haynes	5,151

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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Nov. 19-30. SANDHURST, Kent.—Erection of a new council school to accommodate 200 children at Sandhurst, Kent, for the Kent education committee. Plans and specification, prepared by Wilfrid H. Robinson, and conditions of contract, may be inspected at the offices of the committee, on or after Nov. 19, between 10 a.m. and 4 p.m. (Saturdays excepted). Persons desiring to tender and receive bills of quantities must send names, accompanied by deposit of £1, to the secretary, by noon on Nov. 19. Tenders, on the form supplied, must be enclosed in a sealed envelope, endorsed "Sandhurst Tender," and delivered by noon on Nov. 30, to Fras. W. Crook, secretary, Caxton House, Westminster, S.W.

Nov. 20. BANCHORY (Scotland).—Erection of a fire engine station at Banchory. Plan and specifications may be seen, and tenders should be lodged by Nov. 20, at the office of J. Merson, town clerk, High Street, Banchory.

Nov. 20. READING.—Erection of new buildings (limited to Berkshire builders), for the Berkshire education committee. Builders are requested to forward applications by Nov. 20, to The Education Secretary, The Forbury, Reading.

Nov. 21. ROGATE.—Erection of a detached dwelling-house at Fyning Common, within two miles of Rogate Station. Persons desirous of tendering are requested to apply to the architect, W. R. Howell, A.R.I.B.A., of 5, York Buildings, Adelphi, W.C., by Nov. 21.

Nov. 21. TRESADDERNE, Ruan Major.—Erection of a wain house at Tresadderne, in the parish of Ruan Major, in the occupation of S. H. Rowe, for the Right Hon. Viscount Falmouth. Persons desirous of tendering can inspect plans, conditions, and specification at the Farm House at Tresadderne. Tenders should be sent by Nov. 21, to George Gow, Tregothnan office, Truro.

Nov. 21. FROME (Somerset).—Additions and alterations at the Frome Milk Street council school for the county education committee. Plans and specification can be seen at the schools or at the offices of A. J. Pictor, Bruton, from whom any further information can be obtained. Sealed tenders, endorsed "Tenders, Frome Milk Street Council School," must be delivered at the county education office, Weston-super-Mare, by noon on Nov. 21.

Nov. 22. SEVEN SISTERS.—Erection of 16 dwelling-houses on Ynysdawly estate, Seven Sisters. Plans and specifications may be seen at Ynysdawly Farm. Endorsed tenders to be sent by Nov. 22, to John Williams, Stillau Gwynion, Seven Sisters, Neath.

Nov. 23. OVENDEN.—Execution of masons', joiners', concretors', asphalters', slaters', plumbers', painters', and steel and ironwork, in additions to works at Ovenden. Plans and specifications may be seen, and bills of quantities obtained, up to Nov. 23, of Joseph F. Walsh, F.S.I., and Graham Nicholas, F.R.I.B.A., architects, Museum Chambers, Halifax.

Nov. 23. YSTRADGYNLAIS.—Erection of an intermediate school at Ystradgynlais to accommodate 120 children, for the governors. Plans and specification may be seen and bills of quantities obtained at the offices of the architect, J. Cook Rees, Parade Chambers, Neath, on payment of £1 1s. Tenders to be sent, endorsed "Tender for Intermediate School," by Nov. 23, to L. J. Kempthorne, Duffryn Chambers, Neath.

Nov. 23. PENTREBACH (Wales).—Erection of shop premises at Taibach Lane, Pentrebach. Plans and specification may be seen at the office of T. Edmund Rees, architect and surveyor, Gernant, The Walk, Merthyr Tydfil. Sealed and endorsed tenders to be sent to G. King, 31, Bridge Street, Troedyrhiw, by Nov. 23.

Nov. 23-Dec. 3. ROWLEY REGIS.—Erection of a public elementary council school, for 310 boys at Doulton Road, The Knowle, Rowley Regis, for the U.D.C. £1 1s. for bills of quantities and form of tender must be sent to the secretary by Nov. 23. Plans, specification, and conditions will be open for inspection at the offices between 10 a.m. and 4 p.m. (Saturdays 10 a.m. to 1 p.m.), on and from Nov. 26, or can be seen with the architects, Pritchard and Pritchard, of Kidderminster. Tenders, duly endorsed, must be delivered by 10 a.m. on Dec. 9, to Daniel Wright, secretary to the committee, council offices, Old Hill, Staffordshire.

Nov. 24. LONDON.—Erection of dressing sheds at Hackney Marsh, for the L.C.C., to be built of wood framing, with concrete floors and tar paving, and covered with corrugated iron. Drawing and specification (without bills of quantities), form of tender, and other particulars at the architect's department, 19, Charing Cross Road, W.C., upon payment to the cashier, county hall, Spring Gardens, S.W., of 10s. Full particulars obtainable at 19, Charing Cross Road, before payment of fee. Tenders to be delivered marked "Hackney Marsh Dressing-Sheds," by Nov. 24, to G. L. Gomme, clerk of the L.C.C., County Hall, Spring Gardens, S.W. Fair wages clause.

Nov. 25. TWYNYNRODYN (Wales).—Erection of 15 or more houses at Twynynrodyn, for the Caemarydwn Building Club. Plans and specification may be seen at the office of O. P. Bevan, architect and surveyor, Express Chambers, Merthyr Tydfil. Tenders, endorsed "Building Club Houses," to be sent to the secretary, C. L. Stewart, accountant, Millbourne Chambers, Merthyr Tydfil, by Nov. 25.

Nov. 26. HEREFORD.—Erection and completion of a mortuary chapel, at the cemetery, Westfaling Street, Hereford, for the town council. Copies of the specification, with general conditions, bill of quantities, and form of tender, can be obtained of John Parker, city surveyor, Hereford, upon payment of one guinea per copy. Tenders, sealed and endorsed "Tender for Mortuary Chapel," addressed to the chairman of the "Cemetery Committee," must be in the hands of Joseph Carless, town clerk, town hall, Hereford, by 6 p.m. on Nov. 26.

Nov. 26. THACKLEY.—Erection of a small farmhouse at Thackley, for the corporation of Bradford. Plans and specifications can be seen at the sewage works engineer's office, Esholt Hall, Shipley. Sealed tenders, endorsed "Tender for Cragg Farmhouse," to be sent by noon on Nov. 26, to Frederick Stevens, town clerk, town hall, Bradford. Fair wages clause.

Nov. 26. HOYLAKE.—Erection of a higher elementary school at Hoylake, for the administrative sub-committee for education, Hoylake, and West Kirby district. Plans may be seen and quantities obtained at the offices of the architect, Edmund Ware, 20, Exchange Street East, Liverpool, on deposit of £3 3s. Sealed tenders, addressed to "The Chairman of the Building Sub-Committee," and endorsed "Tender for Hoylake Higher Elementary School," to be delivered by 5 p.m. on Nov. 26, to John H. Grundy, clerk to the administrative sub-committee, district council offices, Hoylake.

Nov. 27. MERTHYR TYDFIL.—Erection of an additional pavilion, together with other work, at the Mardy isolation hospital, Merthyr Tydfil, for the council. Plans may be inspected and specification and bill of quantities obtained upon deposit of two guineas, on application to the borough engineer, town hall, Merthyr Tydfil. Sealed tenders, endorsed "Mardy Hospital Pavilion," must be delivered by Nov. 27, to T. Aneuryn Rees, town clerk, town hall, Merthyr Tydfil.

Nov. 28. LEYTON.—Extension of the town hall, Leyton, for the U.D.C. Quantities, conditions, and form of tender may be obtained on written application to William Jacques, A.R.I.B.A., 2, Fen Court, Fenchurch Street, E.C., accompanied by deposit of a £5 Bank of England note. Sealed tenders, in envelopes supplied, must be delivered by hand at a meeting of the council to be held early in December. Sureties required. Fair wages clause.

Nov. 28. EAST GRINSTEAD.—4. Erection of an engine-house, etc., for the U.D.C. Plans and specification may be seen and forms of tender, etc., obtained of W. E. Wollam, engineer and surveyor, to the council, council offices, London Road, East Grinstead, during office hours, on deposit of postal order, £1. Tenders, endorsed, on form supplied, to be sent by Nov. 28, to E. P. Whitley Hughes, clerk to the council. Tender accepted subject to sanction of the L.G.B. (See also "Iron and Steel" and "Engineering.")

Nov. 30. GREENHITHE.—Erection of 20 cottages at Greenhithe. Plans and specifications will be forwarded upon written application, enclosing a deposit of £2, to H. Stevens, secretary, the Dartford and District Co-operative Building Society, 122, East Hill, Dartford. Tenders to be delivered by Nov. 30. Cheques should be made payable to Henry Stevens.

Nov. 30. KIRKBY-IN-CLEVELAND.—Erection of house, stables, etc., at Kirkby-in-Cleveland, for S. Dunning. Plans, specifications, and further particulars on application to S. Dunning, Oxford Street, West Hartlepool. Sealed and endorsed tenders to be delivered by Nov. 30.

Nov. 30. ABERFAN (Wales).—Erection of 47 houses and formation of new roads and drainage work in connection therewith, at Aberfan, for the Aberfan Building Syndicate. Drawings and specification can be seen at the office of T. Edmund Rees, architect and surveyor, Gernant, The Walk, Merthyr Tydfil. Sealed and endorsed tenders to be sent to W. Rees Edmunds, solicitor, High Street, Merthyr Tydfil, by Nov. 30.

Dec. 3. LONDON.—Erection of the British Museum extension buildings, second contract (superstructure), for the commissioners of H.M. works and public buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to J. J. Burnet, A.R.S.A., 2, Montague Place, W.C. Bills of quantities and forms of tender may be obtained at Storey's Gate, on payment of one guinea. Tenders must be delivered before noon on Dec. 3, to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for British Museum Extension, Second Contract."

Dec. 10. GOLDER'S GREEN.—Erection of a new church at Golder's Green (parish of All Saints' Child's Hill, N.W.). Bills of quantities obtainable from architects, Wills and Anderson, 24, Bloomsbury Square, W.C., after Nov. 20. Deposit £1. Sealed tenders to be delivered by Dec. 10.

No date. GLASGOW.—Erection of a brick villa residence, on the north-east boundaries of Glasgow. Copies of architect's plans, and specifications to be had from A. W. Johnston, 288, Springburn Road, Glasgow.

No date. HULL.—Erection of new premises, Holderness Road, Hull. Contractors desirous of tendering are invited to send their names to Arthur Easton, architect, 7, Land-of-Green-Ginger, Hull, when bills of quantities and other particulars will be furnished.

ENGINEERING.

Nov. 19. DARLINGTON.—Supplying and fixing at the new water tower, Harrogate Hill, an electrically driven centrifugal pump, for the corporation. Plans, specification and form of tender may be obtained on application at the office of George Winter, borough surveyor and waterworks engineer, town hall, on deposit of a cheque for £2 2s. Tenders endorsed "Tender for Pump," must be delivered by noon on Nov. 19, to Hy. G. Steavenson, town clerk.

Nov. 23. NEWTON ABBOT.—Construction of a concrete storage reservoir, pumps and engines for lifting water to same, and providing, jointing and laying about 6,700 yds. lineal of 4 in. and 3 in. cast-iron water mains, with valves, washouts, fire hydrants and other work in connection therewith, for the R.D.C. Drawings and specification can be seen at the office of the engineer, S. Dobell, Queen Street Chambers, Exeter. Copies of the quantities and form of tender may be obtained from the engineer upon payment of three guineas. Tenders, endorsed "Dawlish West Water Supply," to be delivered by Nov. 23, to Frederick Horner, clerk, council offices, Newton Abbot.

Nov. 23. BRISTOL.—Reconstruction and maintenance for twelve months after completion, of the plate girder bridge carrying the Bath road over the river Avon, including the removal of the portions to be renewed, for the docks committee of the council. Specification, schedule, form of tender, and form of contract, and copies of the contract drawings can be obtained from W. W. Squire, engineer, engineer's office, Cumberland Road, Bristol, on production of a receipt showing that a deposit of £5 has been paid to the secretary. Tenders must be enclosed in a sealed envelope, endorsed "Tender for Reconstruction of Bath Bridge," addressed to the secretary of the docks committee, docks office, 19, Queen Square, Bristol, and must be delivered before 10 a.m. on Nov. 23.

Nov. 24. HITCHIN.—A. Supply, delivery, and erection of a steel tank of 98,000 gallons capacity and girder floor, and supply, delivery, and laying about 1,300 yds. of 9 in., 6 in., and 4 in. cast iron water mains, with sluice and reflux valves and hydrants. B. Construction of a brick water tower, 42 ft. high, brick and concrete service reservoir of 300,000 gallons capacity, and valve chambers. C. Supply, delivery and laying about 2,000 yds. of 12 in. cast iron syphon main, about 700 yds. of 9 in. cast iron pumping main, and about 2,700 yds. of 12 in., 9 in., 8 in., 6 in., 4 in., and 3 in. distributing main and junctions throughout Hitchin, with sluice valves, hydrants, etc., all for the U.D.C. Drawings, specifications, conditions of contract, and forms of tender may be seen at the office of the clerk. Bills of quantities for Contract "B" only can be obtained on payment of one guinea, which will not be returned. Copies of forms of tender for contracts "A" and "C" on application. Sealed tenders, endorsed "Hitchin Water Works, Contract A. B. or C," as the case may be, to be delivered by 10 a.m. on Nov. 24, to Wm. Onslow Times, clerk to the council, U.D.C. offices, town hall, Hitchin, Hertfordshire. Sureties required.

Nov. 28. EAST GRINSTEAD.—2. Supplying and erecting two sets gas engines and pumps; also 2,600 yds. of laying pumping main (1,600 yds.), and sewer (800 yds.), for the U.D.C. Plans and specifications may be seen, and forms of tender, etc., obtained of W. E. Wollam, engineer to the council, council offices, London Road, East Grinstead, during office hours on deposit of postal order for £1. Tenders, on form supplied, endorsed as the case may be, to be sent by Nov. 28 to E. P. Whitley Hughes, clerk to the council. Tender accepted subject to sanction of the L.G.B. (See also "Building" and "Iron and Steel.")

Dec. 30. LINCOLN.—Supply and erection of two complete sets of steam pumping machinery at the proposed Elkesley pumping station, some 2½ miles from Chester House Station (Notts.), G.C. railway, for the corporation. Each set of machinery to comprise one triple expansion surface condensing receiver engine, actuating two deep borehole pumps, and high-lift pump, and to deliver 3,600,000 gallons of water in 24 hours against a total head of 724 ft., also for three Lancashire steam boilers, superheaters, economisers, feed pumps, etc. Specifications and forms of tender may be obtained at the office of Neil McK. Barron, waterworks engineer, Lincoln, upon payment of £5 5s. Sealed tenders, endorsed "Contract No. 3, Elkesley Scheme," to be delivered by Dec. 30, to W. T. Page, deputy town clerk, Bank Street, Lincoln.

Dec. 31. LINCOLN.—Supplying two complete sets of steam pumping machinery at the proposed Elkesley pumping station, for the Corporation, some 2½ miles from Checkerhouse station (Notts.), G.C. Railway. Specifications, etc., may be obtained at the office of the engineer, Neil McK. Barron, waterworks engineer, Lincoln, upon payment of £5 5s.

IRON AND STEEL.

Nov. 23. EASTRY.—Supplying engineers' fittings for the period ending June 28, 1909, for the union. Particulars, with form of tender, can be obtained on application to the master, union workhouse. Tenders to be sent to the guardians, union workhouse, Eastry, S.O., Kent, by Nov. 23. (See also "Painting").

Nov. 23. DUNDEE. — Supplying 350 tons or thereby, of 12 in. cast iron pipes, with the necessary special castings, etc., for the water commissioners. Specification and form of tender may be obtained on application to George Baxter, engineer and manager, water engineer's office, 93, Commercial Street, Dundee. Offers, marked "Tender for Pipes," should be lodged with Wm. H. Blyth Martin, clerk of the commissioners, City Chambers, Dundee, by noon on Nov. 23.

Nov. 23. TAUNTON.—Supply and erection of a wrought-iron fence with stays, standards, etc., complete around the piece of garden land adjoining the play-ground of North Town boys' school, for the Corporation. Height, 4 feet, with two gates each 3 feet 6 inches wide; length, 190 feet, or thereabouts (inclusive of gates). Tenders marked "Tenders for fence at North Town Schools" should be sent by noon on November 23rd, to Geo. H. Kite, town clerk.

Nov. 24. LONDON (for India).—Supplying 1, spans, deck; 2, spans, pony, etc.; 3, rails and fishplates; 4, bearing plates; 5, coachscrews; 6, spikes, dog, for the Secretary of State for India in Council. Conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W. Tenders are to be delivered at that office by two p.m. on Nov. 24.

Nov. 27. COWES, I.W.—Supplying about 1,500 yards lineal of 4 in. cast iron spigot and socket pipes, also certain valves and hydrants, for the U.D.C. Specification and further particulars may be obtained from John W. Webster, surveyor and water engineer to the council. Sealed tenders, endorsed "Tender for C.I. Pipes," or "Valves, etc.," as the case may be, to be delivered by 4 p.m., on November 27th, to H. C. Damant, clerk, High Street, Cowes, I.W.

Nov. 27. CHELMSFORD.—Supplying and laying about 2,266 yds. of 3 in. cast iron water pipes and other material and work in connection therewith, in Woodham Ferris, Essex, for the R.D.C. General conditions, specification, bill of quantities, and form of tender may be obtained from the engineer, on deposit of £1. Plans may be seen on application to the engineer. Sealed tenders, endorsed "Pipe Laying," are to be delivered by 10 a.m. on Nov. 27, to James Dewhirst, A.M.I.M.E., engineer, Bank Chambers, Chelmsford.

Nov. 28. EAST GRINSTEAD.—1. Supplying 5 in. cast iron socket pipes (about (1,600 yds.), for the U.D.C. Plans and specification may be seen, and form of tender and other particulars obtained from W. E. Wollam, engineer and surveyor to the council, council offices, London Road, East Grinstead, during office hours, on depositing postal order £1. Tenders, on the prescribed form must be sent endorsed "North End Drainage, Contract No. 1," by Nov. 28, to E. P. Whitley Hughes, clerk to the council. Tender accepted subject to sanction of the L.G.B. Sureties required. (See also "Building" and "Engineering.")

PAINTING.

Nov. 21. GLASGOW.—Cleaning and painter work required at Belvidere and Ruchill hospitals, for the corporation. Specifications and forms of offer may be had at the office of public works, city chambers, 64, Cochrane Street. Sealed offers, marked outside "Offer for Painter Work ..... Hospital," must be lodged before Nov. 21, with A. W. Myles, town clerk, City Chambers, Glasgow.

Nov. 23. EASTRY.—Supplying painter's materials for the period ending June 28, 1909, for the union. Particulars, with form of tender, can be obtained on application to the master, union workhouse. Tenders to be sent to the guardians, union workhouse, Eastry, S.O., Kent, by Nov. 23. (See also "Iron and Steel").

Nov. 23. SALFORD.—Painting several schools during the Christmas holidays, for the corporation. Specification may be obtained from the director of education, education office, Salford. Tenders endorsed "Painting Schools," must be delivered by noon on Nov. 23, to L. C. Evans, town clerk, town hall, Salford.

Nov. 24. MANCHESTER.—Painting the exteriors of the corporation dwellings in Chester Street, Pott Street, and Oldham Road (No. 1 block), for the sanitary committee. Specifications may be obtained at the office of the city architect, town hall. Sealed tenders, enclosed in official envelope, to be delivered at the above office by 9 a.m. on Nov. 24.

No date. BLABY.—Painting corrugated iron roofs of the hospital, for Blaby and Wigston joint hospital committee. Also separate tender for painting sides and woodwork to the same buildings. Further particulars may be obtained from Dr. Anderson, South Wigston, or at the hospital.

PLUMBING & SANITARY

Nov. 19. LEEDS.—Execution of sewerage works, at Gledhow Valley, Street Lane, Lidgett Lane, for the corporation. Drawings may be seen, and forms of tender with copies of documents obtained on application to W. T. Lancashire, city engineer, municipal buildings, Leeds, on deposit of £3 3s. Tenders, on the official form, enclosed in a sealed cover, endorsed "Sewerage Works," addressed to the town clerk, town hall, Leeds, by 10 a.m. on Nov. 19.

Nov. 20. BEDFORD.—Carrying out works of drainage at the workhouse, for the guardians. Plans can be inspected at the union offices, 115, High Street, Bedford, and at the workhouse. Further particulars can be obtained from Henry Young, architect and surveyor, Bedford. Tenders are invited from residents within the district only.

Nov. 20. CHIPPENHAM.—Providing and laying about 255 yds. of 3 in. internal diameter cast iron socket pipes, and fixing sluice valve chamber hydrants, for the R.D.C. Specification, form of tender can be seen, and full particulars obtained of E. Balchin, C.E., Lowden Avenue, Chippenham. Sealed tenders, endorsed "Tender for Excavation of Watermain, Ladyfield Estate," to be lodged by Nov. 20, with Edmund M. Awdry, clerk to the council, Chippenham.

Nov. 20. MANCHESTER.—Sewering, draining, paving, etc., Lakin Street, Moston; Railton Terrace, Moston; Wordsworth Avenue, Cheetham; passage behind Carlton Street and Halliwell Lane, Cheetham; and passage behind Bury New Road, and adjoining Bedford Street, Cheetham, for the corporation. Forms of tender may be obtained on application to the paving, etc., department (surveyors' office), and must be returned to the chief clerk, paving, etc., department, town hall, Manchester, before 10 a.m. on Nov. 20.

Nov. 20. OAKHAM.—Construction of about 1,500 lineal yards of 9 in. diameter stoneware pipe sewer, with junctions, manholes, lampholes, ventilators, and other works in connection therewith, for the R.D.C. Plans, sections, and specifications, may be seen on application to the clerk; or Charles W. Maudsley, civil engineer, South Street, Oakham (from whom the bills of quantities and other information may be obtained), between 10 a.m. and 4 p.m. (Thursdays, 10 to 1). Sealed tenders, endorsed "Oakham Sewerage," and directed to the R.D.C., are to be delivered by 4 p.m. on Nov. 20, to W. Batts, clerk to the council, Oakham.

Nov. 20. WHARFEDALE.—Supplying about 2,900 lineal yards of earthenware pipe sewers, 15in. and 9in. in diameter, with manholes, etc., also for the necessary works in the construction of settling tanks, pumping station, rising main, etc., for the R.D.C. Drawings and specification may be seen and forms of tender, with quantities, obtained at the offices of the engineer, H. A. Johnson, M.Inst.C.E., 15, Exchange, Bradford, on deposit of £2 2s. Sealed tenders, endorsed "Tender for Middleton Sewerage," to be sent by 10 a.m. on November 20th, to E. C. Newstead, clerk, Otley.

Nov. 23. CHELTENHAM.—Construction of a new brick and concrete outfall sewer about two miles in length, for the corporation. Upon a deposit of £3, conditions of contract, specification, bills of quantities and form of tender may be obtained from J. S. Pickering, M.Inst.C.E., borough engineer, municipal offices, Cheltenham, to whom endorsed tenders are to be delivered by 9 a.m. on Nov. 23.

Nov. 24. LEEK.—Works of sewerage at Ball Green, Norton-in-the-Moors, for the R.D.C. Plan and specification may be seen with J. Morris Shaw, clerk, union offices, Leek. Sealed tenders, endorsed "Ball Green Sewerage," to be delivered by Nov. 24, to W. Shufflebotham, Russell Street, Leek, from whom any further information may be obtained.

Nov. 24. LEEK (Staffs.).—Execution of sewerage at Ball Green, Norton-in-the Moors, for the Leek R.D.C. Plan and specification may be seen at the union offices, Russell Street, Leek. Sealed tenders, endorsed "Ball Green Sewerage," to be delivered by Nov. 24, to W. Shufflebotham, Russell Street, Leek, from whom further information may be obtained.

Nov. 24. LEYTON.—Construction of 5ft., 4ft., and 3ft. brick culvert from the sewage disposal works to the junction of High-Road, Leyton, and Sidmouth Road, a distance of about 660 yards, for the U.D.C. Plans may be seen, and specification, quantities, form of tender, and other particulars obtained on application to William Dawson, M.I.C.E., surveyor, town hall, Leyton, between 10 a.m. and 4 p.m., 10 and 12 on Saturdays. Sealed tenders, endorsed "Tender for Main Sewer," must be delivered by hand, at the meeting of the council, to be held on November 24th, at 7 p.m. Sureties will be required.

Nov. 24. CANNING TOWN, E.—Construction of underground convenience, Beckton Road, Canning Town, E., for the corporation of West Ham. Plans and specification may be seen, and form of tender, bills of quantities, and further particulars obtained, at the office of John G. Morley, borough engineer, town hall, West Ham, E., upon payment of one pound. Tenders to be delivered by 4 p.m. on Nov. 24, to Fred. E. Hilleary, town clerk, town hall, West Ham, E., in the envelope supplied by registered post. The contractor will be required to enter into a bond with one surety, for performance of contract. Fair wages clause.

Nov. 25. PETERBOROUGH.—Providing and laying about 500 yds. of 5 in., 1,150 yds. of 4 in., and 3,400 yds. of 3 in. cast-iron pipes, with all necessary valves, within the parish of Peterborough Without, for the R.D.C. General conditions, specifications, plans, and quantities may be seen at the office of the clerk between 10 a.m. and 4 p.m., any week-day until Nov. 21. Copies of the quantities may be obtained on deposit of £1 1s. Tenders to be delivered by 10 a.m. on Nov. 25, to J. W. Buckle, clerk, Priestgate, Peterborough.

Nov. 26. HAVANT.—New drainage works, etc., to premises at Havant, for Kinnell and Hartley, in accordance with plans and specification to be seen with the surveyor. Sealed tenders, endorsed "Tender for Drainage Works," to be delivered by 4 p.m. on Nov. 26, to A. E. Stallard, F.S.I., surveyor, West Street, Havant.

Nov. 26. OTLEY.—Construction of a 15 in. storm overflow sewer, including the necessary manholes, lampholes, etc., for the U.D.C. Specifications and general conditions may be seen and quantities obtained on payment of one guinea at the engineer and surveyor's office, council offices, Otley. Sealed tenders to be sent to the council offices, Otley, addressed to the chairman of the sanitary committee, by noon on Nov. 26.

Nov. 27. ACTON.—Construction of ½ mile of large main sewer, and various works connected therewith, for the U.D.C. Instructions for tender and form of tender, with the form of contract and schedules, can be obtained, and drawings inspected, at the office of Alex. Binnie and Sons, 9, Great George Street, Westminster, on payment of £2. Tenders must be received at the offices of the clerk to the Acton U.D.C., 242, High Street, Acton, by Nov. 27.

Nov. 27. AMESBURY (Wilts.).—Construction of a new system of drainage, at the workhouse, Amesbury, Wilts., for the R.D.C. Plans, specifications, and general conditions can be inspected at the office of the engineer, W. H. Stanley, A.M.I.C.E., Market House Chambers, Trowbridge. Bill of quantities can be obtained on receipt of one guinea. Sealed tenders, endorsed "Tender for Workhouse Drainage," to be delivered to R. A. Wilson, clerk, 12, Bridge Street, Salisbury, by noon on Nov. 27.

Nov. 30. WILLESBOROUGH (Kent).—Works of drainage at the workhouse, Willesborough, for the guardians of East Ashford union. Plan and specification can be seen at the workhouse. Bills of quantities will be supplied on deposit of £1. Sealed and endorsed tenders to be sent to the chairman of the guardians at the workhouse, by 9 a.m. on Nov. 30.

Nov. 30. AUSTWICK.—Re-building the latrines at Austwick school, and connecting the same with the main drainage. Tenders to be sent by Nov. 30. Plans and specifications may be seen with James Capstick, The Nook, Austwick.

Nov. 30. KNARESBOROUGH.—Laying 665 yds. of main sewer, from Lead Hall Lane to Stonerings, in the parish of Pannal, for the R.D.C. Plans may be seen at the office of the surveyor, W. Lupton, 14, Bower Road, Harrogate, between 9 and 10 a.m. until Nov. 21. Specification and quantities may be obtained at the above address on payment of half-a-guinea. Tenders to be sent endorsed "Tender for Pannal Sewer," by Nov. 30, to James Smith, clerk to the council, Poor Law and D.C. offices, Knaresbro'.

Dec. 1. GRAVESEND.—Construction of surface water sewers within the borough, for the corporation. Plans, specifications and conditions may be seen at, and bills of quantities and forms of tender obtained from, the borough surveyor's office, town hall, Gravesend, during office hours. Tenders, sealed and marked "Tender for Surface Water Sewers," must be delivered to H. H. Brown, town clerk, 147, Windmill Street, by 5 p.m. on Dec. 1. Tender accepted subject to sanction of L.G.B.

Dec. 2. BRIDGE, near Canterbury.—Construction of sewers, manholes, etc., in Harbledown, near Canterbury, for the D.C. Plans, sections and specifications can be seen, and full particulars obtained at the office of the engineer, A. Bromley, Radnor Chambers, Folkestone, and Cathedral Precincts, Canterbury. Bills of quantities can be obtained upon deposit of £2 2s. Sealed tenders, endorsed "Tender for Harbledown Drainage," to be delivered by Dec. 2, to T. Louis Collard, clerk to the Bridge D.C., Bridge, near Canterbury.

Dec. 2. ROCHDALE.—Construction of about 560 lineal yds. of 2 ft. by 3 ft. and 1 ft. 8 in. by 2 ft. 6 in. brick sewers, and about 720 lineal yds. of earthenware pipe sewers from 21 in. to 12 in. diam., together with manholes, lampholes, valve chambers, and other work appurtenant, for the corporation. Plans, etc., may be seen and copies of the specification, quantities, and form of tender obtained on deposit of two guineas at the office of S. S. Platt, borough surveyor, town hall, Rochdale. Tenders, endorsed "Contract No. 296," to be delivered by noon on Dec. 2, to W. H. Hickson, town clerk, town hall, Rochdale.

ROADS AND CARTAGE.

Nov. 19. BOURNEMOUTH.—Execution of road making and sewering on the Charminster Park estate, for the corporation. Full particulars, forms of tender, specification, and schedule can be obtained of F. W. Lacey, M.Inst.C.E., borough engineer and surveyor, municipal offices, Bournemouth, at whose office drawings can be seen, on deposit of £1 1s. Tenders to be sent in envelopes furnished to the town clerk, Geo. Wm. Bailey, before 10 a.m. on Nov. 19.

Nov. 19. DEAL.—Supplying 450 tons of clean blue Guernsey granite, broken to a 2 in. gauge, and 80 tons of blue Guernsey ½ in. granite, and 20 tons of blue Guernsey ¼ in siftings; also an alternative tender for 450 tons of unbroken blue Guernsey granite in convenient sizes for handling, for the Corporation. Specification and forms of tender to be had from Thos. C. Golder, borough engineer and surveyor, 23, Queen Street, Deal. Sealed tenders, endorsed "Granite Tender," to be sent to the borough engineer by November 19. The contractor to find surety in £40 for the performance of contract. Small samples to be sent with the tender.

Nov. 21. FELLING.—Forming and making good a street at Felling, for the U.D.C. Plans and specifications may be seen at the office of the surveyor between 9.30 and 10.30. Sealed tenders, endorsed "Tender for Street," must reach Ralph Hall, clerk of the council, council buildings, Felling, by Nov. 21.

Nov. 21. FORMBY.—Making up Wicks Lane, from Freshfield Road to the L. and Y. Railway, with tar-macadam, for the U.D.C. Form of quantities and tender may be had on application to the clerk, on receipt of 10s. 6d. Plans and general conditions of tender and specification may be seen with the surveyor, A. W. Pattison. Tenders, endorsed "Wicks Lane Improvement," to be delivered by Nov. 21, to E. H. Bond, clerk to the council, council offices, Formby.

Nov. 21. TEDDINGTON.—Making up King Edward's Grove and Princes Road (part of) Teddington, under the Private Street Works Act, 1892, for the U.D.C. 430 lineal yds. 12 in. by 6 in. straight Norwegian granite kerb and laying; 1,366 lineal yds. Tees Scoriae sett channel and laying; 5,453 sup. yds., roadway formation; 3,135 sup. yds., laying tar paving. Plans and specifications may be seen, bills of quantities and form of tender obtained, on deposit of £2 2s., and application to M. Hainsworth, surveyor, council offices, Teddington. Sealed tenders, endorsed "Private Street Improvements," must be delivered by noon on Nov. 21, to G. H. Salmons, clerk to the council, council offices, Teddington.

Nov. 23. SEVENOAKS.—Supplying 400 yds., more or less, of granite or quartzite broken to a gauge of 2 in., for the U.D.C. Forms of tender, with specification and conditions, may be obtained of Samuel Towlson, A.M.I.C.E., surveyor to the council, Argyle Road, Sevenoaks, to whom a sample of the granite or quartzite, must be delivered, free of cost, by Nov. 23. Sealed tenders, endorsed "Tender for Granite," or "Quartzite," to be delivered by Nov. 23, to Herbert J. Thompson, clerk to the council, U.D.C. offices, Sevenoaks.

Nov. 23. BROADSTAIRS.—Supplying and laying 1,255 superficial yards or thereabouts of limestone tar paving, at Stone Road, within the district, for the Broadstairs and St. Peter's U.D.C., in accordance with plan and specification prepared by the town surveyor, Howard Hurd, C.E., which can be seen at his office, and particulars and form of tender obtained. Tenders, endorsed "Tender for Tar Paving," to be delivered at the office of Lionel A. Skinner, clerk, council offices, Broadstairs, by noon on November 23. The contractor will be required to enter into a bond, with two sureties, for the performance of contract.

Nov. 23. DERBY.—Making up and completing the carriageways and footways of the following private streets, for the corporation:—Almond Street (part), and Stanton Street (part). Plans and specifications may be seen and bills of quantities and further particulars obtained on application to John Ward, borough surveyor, Babington Lane, Derby. Tenders, endorsed "Tenders for Completion of Private Streets," to be sent by 9 a.m. on Nov. 23, to G. Trevelyan Lee, town clerk, town clerk's office, 15, Tenant Street, Derby.

Nov. 23. HESTON AND ISLEWORTH.—Execution of the following works, for the U.D.C.:—1, Making-up Gordon Avenue, St. Margarets; 2, Hospital Road, Hounslow. Plans, sections, and specifications may be seen, and bills of quantities and form of tender obtained, from J. G. Carey, engineer and surveyor to the council, council house, Hounslow, on payment of one guinea. Sealed tenders, on form provided, endorsed "Private Street Works, Gordon Avenue," or as the case may be, must be delivered by noon on November 23, to H. J. Baker, clerk to the council, council house, Hounslow.

Nov. 24. BOOTLE.—Supplying granite paving materials, for the corporation. Forms of tender may be obtained at the office of B. J. Wolfenden, A.M.I.C.E., borough engineer, town hall. Tenders to be sent, endorsed "Tender for Granite Paving Materials," by 10 a.m. on Nov. 24, to J. Henry Farmer, town clerk, town clerk's office.

Nov. 24. LEATHERHEAD.—Making up Magazine Place, for the U.D.C. Plan may be seen, and specification, schedule of prices, and form of tender obtained from the office of J. E. Smales, surveyor, council offices, Leatherhead, upon deposit of one guinea. Sealed tenders, endorsed "Tenders for Making up Magazine Place," must be delivered to the clerk, council offices, by 5 p.m. on Nov. 24.

Nov. 24. SOUTHAMPTON.—Laying asphalte paving in the roadway of the Strand, for the corporation. Plan and specification may be inspected and form of tender obtained at the borough engineer's office upon production of the borough treasurer's receipt for £1 1s. Tenders on prescribed form, endorsed "Tender for Paving Strand," must be delivered before 2 p.m. on Nov. 24, to R. R. Linthorne, town clerk, town clerk's office, municipal offices, Southampton. Every tender must be accompanied by the borough treasurer's receipt for £10 (Bank of England note).

Nov. 25. HAMMERSMITH.—Making-up and paving Emlyn Road (part of), for the corporation. Plans and specification may be seen and forms of tender obtained on application to H. Mair, borough surveyor. Sealed tenders, endorsed "Tender for Paving Work," must be delivered by 6 p.m. on Nov. 25, to H. Thompson, town clerk, town hall, Broadway, Hammersmith, W.

Nov. 25. WOOD GREEN.—Making-up the following private streets, for the U.D.C.:—(1) Dunbar Road (Section I.); (2) Ampthill Road; (3) passageway at rear of Nos. 103-133, High Road; (4) Alexandra Park Road (Section III.); and (5) Woodside Road (Section III.), all within the urban district. Plans, sections, and specifications may be seen, and bills of quantities obtained, on application to the surveyor, town hall, Wood Green, upon deposit of one guinea, with the clerk. Sealed tenders (upon forms supplied to be delivered by 5 p.m. on November 25th, to Mm. P. Harding, clerk of the council, town hall, Wood Green. The contractor will be required to enter into a contract for the execution of works, and a bond (with two approved sureties) for its due performance; also to employ local labour as far as practicable. Fair wages clause.

Nov. 26. BIRMINGHAM.—Supplying road material, broken and unbroken, delivered at railway stations and wharves in the county, for the Warwickshire C.C. Sealed tenders on forms obtainable from the county surveyor, addressed "Tenders for Road Material," must be delivered by Nov. 26, to John Willmot, county surveyor, Birmingham.

Nov. 26. OTLEY.—Sewering, levelling, paving, kerbing, channelling, flagging, and macadamising Manor Street, for the U.D.C. Specifications and general conditions may be seen and quantities obtained on payment of one guinea at the engineer and surveyor's office, council offices, Otley. Sealed tenders to be sent to the council offices, Otley, addressed to the chairman of the highways committee, by noon on Nov. 26.

Nov. 30. PENGE.—Execution of private street works in Cottingham and Torr Roads, within the district, for the U.D.C. Plans and specifications may be seen, and copies of bills of quantities with forms of tender obtained, on application to Herbert William Longdin, surveyor, town hall, Anerley, S.E., on payment of two guineas. Sealed tenders, accompanied by priced quantities, endorsed "Tender for Roadmaking," to be delivered by noon on Nov. 30, to C. W. Dommett, clerk to the council, town hall, Anerley, S.E.

MISCELLANEOUS.

Nov. 23. GRAVESEND.—Redecorations at King Street schools, for the education committee. Specifications to be seen at the office of the borough surveyor, town hall. Tenders to be delivered by Nov. 23.

Nov. 24. YSTRAD RHONDDA.—General repairs, to be done at observation block, discharging block, mortuary, administrative block, two pavilions, etc., of the isolation hospital, Ystrad Rhondda, for the U.D.C. Plans, etc., may be seen, and tender forms obtained, at the office of the architect, W. D. Morgan, 194, Ystrad Road, Pentre, upon the production of a receipt from the accountant of the council for deposit of £1 1s.

No date. USWORTH.—Concreting engine house foundations. Persons desirous of tendering should apply for particulars to the engineer, Usworth Colliery.

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ARCHITECT and Surveyor's junior assistant desires engagement; probationer R.I.B.A.; good draughtsman; 4½ yrs.' general exp; moderate salary.—F. G. C., 46, Franklin Road, Gillingham, Kent. 4641

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BUILDER'S Assistant desires situation; age 23; thorough office routine; can take charge; experienced in estimating; quantities; accounts; p.c. invoices; good draughtsman; moderate salary.—F. Webber, Cranfurd Rise, Maidenhead. 4701

BUILDER'S general foreman desires re-engagement; just finished large schools; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable. First-class testimonials.—W. R., 85, Grove Lane, Handsworth, Birmingham. 4702

BUILDER'S Assistant disengaged, 21 years' experience; office routine, plans, specifications, quantities, supervision, measuring up, levelling, and surveying; good references; abstainer.—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4717

BUILDER'S foreman, with good London experience of all trades, seeks position of trust; estate or business firm; correspondence invited.—Box 4716, BUILDERS' JOURNAL Office.

CLERK of Works, 16 years' experience, supervision and management of important buildings in London and country, well up in details, special knowledge of ecclesiastical buildings. — T. B., Box 4603, BUILDERS' JOURNAL Office.

CARPENTER and Joiner (age 32) wants job. Bench, fixing, alterations, or jobbing. Could take charge if required. Good references. Life abstainer.—Pearson, 53, Hartham Road, Isleworth, W. 4681

DOMESTIC Engineer, young, energetic, thoroughly practical, seeks sit as estimating or working foreman, used to taking charge; large heating and sanitary, installation; good refs.—Box 4707, BUILDERS' JOURNAL Office.

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER, general, wants permanent appointment, official or private staff; thorough all-round experience; electrical, plumbing, smith, married, 34; good testimonials.—86, Bathurst Gardens, Willesden. 4704

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

GENERAL Foreman shortly disengaged, just finishing large job; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable; first-class testimonials.—W. R., New Council Schools, Biddulph Moor, Congleton. 4621

HIGH-CLASS decorator, manager, seeks re-engagement; estimator for all classes of best work; abroad if necessary; excellent testimonials; moderate salary.—Apply Forbes, 7, Eldon Street, York. 4677

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER (Reg. by Exam.), well up in hot water and heating systems, capable of taking entire charge; 6 years' ref.; age 38.—H. P., 11, New Buildings, Hampstead, London. 4676

PLUMBER (aged 30); gas and hot water fitter; well up all branches, new or jobbing; wages mod. Town or country.—11, Glaskin Road, Hackney. 4690

QUANTITY Surveyor, London, first-class experience, and qualifications, wishes to arrange with architects or others for preparation of bills of quantities, adjustment of variations, etc.—Box 4675, BUILDERS' JOURNAL Office.

QUANTITY Surveyors.—A builder wishes to place his son (18) in above office; has had some experience. No premium, but can introduce business.—Apply H., Ashford House, Wimbledon Common. 4686

QUANTITY Surveyor, Member Q.S.A., 32, eight years' practical building experience, eight years' office practice, desires post as senior or managing assistant.—Box 4610, BUILDERS' JOURNAL Office.

SLATE MERCHANTS AND BUILDERS' MERCHANTS.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

STONEWORK wanted (piecework).—Stone dressings, Bath stone fronts to villas, etc.—Apply A. Powell, mason, 15, Elm Lodge Avenue, Reading. 4667

TO Builders.—Situation as improver wanted by young man just out of his time; technical student; neat draughtsman; assist with quantities, supervision, etc.; abstainer. — Box 4662, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

TRAVELLER.—Architect desires post as representative to good firm. — Address Box 4497, BUILDERS' JOURNAL Office.

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ARCHITECTURAL Draughtsman, thoroughly capable and practical, for setting out marble and granite; only those with previous similar practice need apply; strictly confidential.—J. W. S., 64, Kennington Oval, S.E. 4712

CARPENTER and joiner wanted in provinces; good all-round and able to work saw bench, planer, and moulding machine; gas engine; constancy to suitable man; state wages, etc. — Box 4706, BUILDERS' JOURNAL Office.

MARBLE.—Smart salesman required, with thorough knowledge of the wholesale marble trade; good opening and permanent post for right man.—Apply Salesman, Box 4671, BUILDERS JOURNAL Office.

TYPIST and shorthand writer wanted, one used to builder's or architect's office; state age, experience and salary required, to Box 4697, BUILDERS' JOURNAL Office.

WELL educated youth, to learn routine of architect's office; some knowledge of shorthand and typing desirable; commencing salary.—E. Crosse and Co., 11, Bermondsey Square, S.E. 4713

November 25, 1908. Volume 28. No. 720.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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The Sense of Taste in Art.

Mr. Felix Clay's paper—recently delivered before the Architectural Association and reported in the last issue of this journal—reminds us of a time-honoured and much discussed controversial question inseparably connected with his interesting subject, "The Origin of the Sense of Taste." We allude to the *causes* which resulted in the artistic supremacy of the ancient Greeks and enabled them to produce those marvellous temples, public monuments, and other works, some of which are still appropriate object-lessons of the refined and elevated taste and genius and public spirit of a people whose achievements in the world of art have probably very rarely been equalled and certainly never surpassed in excellence. Why, to put it briefly, were the minds of the inhabitants of Greece so susceptible to beauty in its highest aspect—ideal beauty as it is, not inaptly, called—that their selection of what was most suitable for imitation ultimately caused them to reject the mechanical and conventional art of other nations, hitherto almost exclusively employed for monumental or religious objects, and led to the great development of architecture and sculpture which, in their hands, became splendid illustrations either of elevated thought or of the physical perfection of the noblest work of nature? Valuable as are the artistic remains still left to us by time, of other and more ancient nations, it was by the Greek mind alone that the full æsthetic significance of the art of design was first recognised and appreciated. Consider the immense period of time covered by the age when the Greeks were content to produce sculpture in which, as in Egyptian and other art, all movement and individuality were excluded. Then regard the advances made in the successive periods of Greek art (1) 900—700 B.C. (2) 700—480 B.C. (3) 480—400 B.C.—the latter period being the age of the great early masters of sculpture—Myron, Phidias, and Polycleitus. It was not until the sixth century that the genius of the Greeks, then entirely liberated from the fetters of tradition, passed beyond the limitations of art within which, up to that time, all nations had been content, and inaugurated, in each and all of its varying phases of conception, composition, and execution, that universal cult of beauty with which the art of Greece will be for ever associated. Why, unlike other nations, were the Greeks thus enabled, in the golden age of their national existence, to set aside tradition and convention and thus enable the productions of the architect and sculptor to be raised to the level of the fine arts? Various reasons have been assigned by many writers—some of whom have endeavoured to account for the artistic superiority of the Greeks by attributing it (1) to their climate, (2) to the conditions of their national government, or (3) to the fine physical development of the people. But, as Professor Westmacott long ago pointed out, "none of these influences existed universally in any of the localities where sculpture was most successfully practised, and neither of them singly was sufficient to produce the effect attributed to it." The love of beauty could not have been inherent in the nation, because sculpture, among the ancient settlers in Greece, did not differ, to any appreciable extent, from that of other countries in which the art was practised. As to (1) climatic influence, Attica, which was more especially renowned for fostering the fine arts, had a soil of great inequality, part being very fertile, part bare and barren. Nor can the form of government (2) account in any way for the excellence and extent of the art products of ancient Greece, because, in the cities in which art chiefly flourished, viz., Athens, Corinth, and Sicyon, both the political and social conditions of the people were widely divergent, and with regard to (3), whilst the Athenians were certainly distinguished for the surpassing excellence and beauty of their sculpture, yet with regard to their personal comeliness they were not a whit superior to the inhabitants of other parts of Greece. Indeed, in this connection, it is worthy of remark that Cicero, speaking of the youths he saw in his day at Athens, observes that "but few of them were handsome." It therefore seems to be established, with some certainty, that the causes which were instrumental in enabling the Greeks, as a nation, to excel in the fine arts, are to be looked for elsewhere. But however brought about, there is no doubt the Greeks, during the best period of their art, acquired a sense of the appreciation of the beautiful, and thereby established a principle upon which the work of their sculptors was founded and, in the main, was the chief cause of its excellence. This principle was the recognition of sculpture as an *imitative* art, and resulted in an artistic supremacy which in due course led the Hellenic sculptor to discard the *symbolical* art of his own and other nations and enabled his unerring instinct to select that which was most fit to be imitated, and thus it was that Greek sculpture, at its best, reached the state of perfection with which we are accustomed to associate the plastic art of that nation. The possession by the Greeks of a mysterious intuitive faculty which enabled them to appreciate true beauty, in all its varied aspects, is shown in many ways. For instance, their priests were sometimes selected from among the handsomest youths available for the office, whilst artists were, occasionally, fined or otherwise punished for shocking public sensibility by the representation of such repulsive subjects as the distortion of the human body of any abnormal facial expression at variance with the established canons of beauty. The Gymnasia, or schools of physical training, were largely instrumental in causing all classes of the community to become expert judges of the human form, whilst the inauguration of public games and athletic contests, in which the competitors appeared in a state of nudity, was of great assistance to Greek sculptors in their efforts to acquire an intimate knowledge of the anatomy of the human body, which they were thus able to constantly study under almost every conceivable condition of movement or pose. As might be expected, so perfect a system of art education did not fail to make its influence felt, and the result is apparent in the fine modelling and anatomical correctness of form displayed in the best examples of Grecian sculpture in an age in which architect and sculptor worked hand in hand. As the art of the latter was developed, stage by stage, that of the former was conterminous with it. Both gained by the union, and simultaneously attained that extraordinary excellence which enabled them to maintain their unrivalled superiority through so many epochs of art and constant mutations of style. Undoubtedly the progress and development of Greek art was largely due to the fact that it did not owe its main support to the artistic idiosyncrasies and personal taste of a few rich citizens, but, on the contrary, the more important works of the architect and sculptor were produced to delight an appreciative public, mainly composed of persons who, if they were not artists themselves, were at least keenly alive to the moral and intellectual advantages of the cult of beauty. Thus no sordid personal motives were introduced to limit the artist's choice of subjects, or otherwise

hamper him in the conception and execution of his work. His duty to the public was to produce artistic records of noble actions—to erect stately temples dedicated to the immortal gods—to model and carve representations of divinities, heroes, and public benefactors. The Greek architect or sculptor working amid such ideal conditions and environments, his productions were received by the public with an amount of enthusiastic appreciation which has no parallel in the history of art, and the artists thus wisely encouraged by an art-loving community to a spirit of honourable emulation, were not slow to respond, but inspired by genius and knowledge, gave freely of their best. Hence, the stately memorials of the golden age of Hellenic art were *primarily* due to the wise patronage of a far-sighted people, the result of whose appreciation of beautv is to be seen to this day, in the remains of some of the noblest architectural memorials known to the world.

Figured Marble.

Tinos marble — dark green, with white and violet veining—is undoubtedly a most desirable variety. On the Continent, it is, we are informed, extensively used for furniture tops, as well as for decorative work, while in the United Kingdom and in America it is largely employed for columns and pilasters. Obviously it is, as it deserves to be, very popular; yet the demand for it is not yet so stupendous as a certain consular report has made it appear. By that showing, London, during 1907, imported 69,276 tons of this beautiful stone; New York, 70,359 tons; Hamburg, 222,342 tons; Antwerp, 230,313 tons; Bombay, 297 tons. Tinos marble, however, being as yet too precious to squander on street-paving works, and the boom in palatial poor-houses having incontinently collapsed, it occurred to an esteemed correspondent of ours, who is keenly interested in the subject, to challenge this colossal export. The event shows that he was fully justified of his inquisition. The heretic convicted—or the scapegoat sacrificed—was, of course, the printer, who is alleged to have wrested the scriptures to his own condemnation. Nevertheless, we take leave to suspect the purity of text of the consular manuscript. It is alleged, however, that the printer substituted commas for decimal points in the midst of the figures, thus vastly exaggerating their import——and their export value. This simple but effective expedient need not be brought to the notice of political statisticians; it is probably one of the most familiar recipes in their cookery books. But the culinary process of dealing with raw materials seems to be beneath the dignity of a Consular Report. Precisely why the matter has been introduced to our notice is not quite clear. Perhaps our correspondent is justly proud (we trust that he is not inordinately vain) of his success in establishing his decimal point.

The International Congress of Builders.

The second international congress of the building industry and of public works, which was opened on Monday week, and lasted four days, was apparently as successful as could be expected. The value of such congresses may be assessed by various standards. As to whether a congress is successful in itself can be judged immediately, but its after-effects can only be estimated very roughly. This particular congress seems to have passed the first test very satisfactorily. The speaking was unusually good, the debates gave rise to no unpleasant incident, the visits to works in progress were extremely interesting—especially to the foreign visitors, who, moreover, were specially entertained at *une grande soirée de gala* at the Marigny Theatre—and a grand climax was reached in a brilliant banquet at the Hotel Continental. As to the business transactions, and the possibility of future developments thence arising, we shall perhaps be in a better position to judge from the report for which arrangements have been made with an English visitor to the congress. In the meantime, such accounts as we have read in the French newspapers do not suggest richness of promise. Little, if any, fresh light seems to have been shed on such perennial problems as the pricing of quantities, the limitation of hours of work, the decay of apprenticeship, the improvement of technical education, legislation as to accidents, arbitration in disputes, etc., and no fresh subject seems to have been introduced, and no new principle was enunciated. Still, an international congress has its uses, and our correspondent's impressions are awaited with interest.

Brighton and Margate.

Brighton's ambitious scheme for the erection of an immense casino, kursaal, or winter palace on the front has been abandoned, at all events, temporarily, the promoters having withdrawn in deference to strong local opposition. This fiasco seems rather to encourage than to dismay the promoters of the Margate kursaal scheme, in furtherance of which the corporation has applied for sanction to borrow £16,000 for the purchase of a site. At the Local Government enquiry with regard to this loan, there was but little opposition. It may therefore be assumed that Brighton's failure is regarded as Margate's opportunity, and that we shall yet see a bold—perhaps an over-bold, experiment in palatial pavilions. But, in either case, the gain or loss to architecture properly so-called is not likely to be appreciable. The casino and pavilion style is usually abominable.

The Victoria and Albert Museum.

The report of the Committee of Rearrangement of the Victoria and Albert Museum at South Kensington, published last Saturday as a parliamentary paper, emphasises once more the peculiar difficulties of the architect who is engaged to do work for the Government. The planning of the Museum, it seems, might have been better adapted to the requirements of the Museum, if only Sir Aston Webb had received the advice and assistance that he was entitled to expect from the authorities. Architecturally, the interior, with its long vistas and its dignified courts and galleries, is undoubtedly very fine; but it is now complained that the planning is of such a character as to make it difficult to show certain of the contents to the best advantage. Some of the defects—such as the massing together of the staff offices, so that many of the keepers would find themselves at a very inconvenient distance from their collections—can be and are being, easily remedied; but there are instances in which, it is said, the space could have been much more economically used if the architect had been properly instructed at the outset. But let it be clearly understood that, as a writer in the "Times" has remarked, "Most of the merits of this great and costly building are Sir Aston's own; its faults are those of the department which failed to form a clear idea at the outset of what the functions and organisations were to be, and to instruct their architect accordingly." The authorities, instead of appointing a travelling commission to ascertain the best that was being done in museum planning, appear to have left the architect to his own devices; and in the circumstances, the only wonder is that he has done so well.

Why a Rod?

Why a "rod" of brickwork?—A correspondent of "Notes and Queries" has raised this harassing question. He points out that in England brickwork is measured by the rod, a rod being the amount of brickwork measuring 16½ft. in length, by 16½ft. in height, by 1½ft. in thickness. He adds that the rod is used in Sir Christopher Wren's contracts for the building of Greenwich Hospital so that it has been a long time in use. He wants to know why the rod or perch, which is a land measure, is used for measuring brickwork, and when the use of this method of measuring brickwork was first introduced. Perhaps some of our learned readers can answer these questions; in which, we will confess, there is one point that piques our curiosity. How is it that the querist is able to state so confidently that the rod is a land measure adapted to brickwork? The answer to his questions might conceivably show that the rod is a brick measure, adapted to land.

Apologia for Skyscrapers.

The skyscraper has its apologists, even in England. A writer in the "Spectator" invests them with architectural possibilities. While admitting that "many of the lankest of these buildings are beyond a doubt basely and irretrievably utilitarian," he recognises that "from the beginning there were architects who perceived that skyscrapers were inevitable, and who set to work to design the most scientific and architecturally the most noble buildings which the circumstances permitted." Taste is to undergo a considerable evolution, and the much-abused skyscraper is to be praised as a characteristic product of the American genius. But it is to be a different kind of skyscraper, and is to have "a very distinct majesty of its own. An office building a hundred storeys high is predicted by an enthusiastic American; but they are to present a variegated skyline, no façade rising more than 100ft. above the street, while the height of the towers is apparently to be limitless. As the writer in the "Spectator" puts it—quite poetically—"The dead skyline of the future city will not rise extravagantly high, but above it, like particular peaks upon a chain of mountains, will be towers and domes and pinnacles, through which the sun may shine and the breezes blow. . . . And then, of course, this style of architecture will be imitated all over the wold." New York will not stand alone as "the City of Dreadful Height." Then "it is not beyond the bounds of imagination that light bridges will be thrown across from building to building, say at the middle and high levels. The towns would then be interlaced like the masts of a ship with rigging." Monstrous pretty, indeed!

THE CHURCH OF SANTA SOPHIA, CONSTANTINOPLE.*

By J. B. FULTON, A.R.I.B.A.

Santa Sophia means a concrete representation of Holy Wisdom, an abstraction denoting the All-Wise, or the idea of Christlike wisdom. Many Greek churches are dedicated to it, the most famous being that at Constantinople, built by Justinian V., 532—537 A.D. (5 years, 10 months). Justinian was a great builder, and he spent large sums in buildings. The Church of Santa Sophia (now a mosque) was erected by him.

"The World's Greatest Architect."

Anthemius, the greatest architect the world has ever known, and who about the beginning of Justinian's reign settled in Constantinople, after travelling over the Empire in search of the noble and beautiful, had studied the ancient temples at Ephesus, the Roman cities in Syria, and the noble Parthenon, and had visited the capital of Ancient Rome, and beheld in wonder mixed with sympathy and knowledge the baths of Caracalla, Diocletian, the Pantheon, etc. On his return to Constantinople, the capital of his native country, he designed and built SS. Sergius and Bacchus, the interior of which so impressed the Emperor that he ordered Anthemius to design and build the new church of Santa Sophia, the old church having been destroyed by fire. He desired the genius of the Empire to build something greater than St. John's at Ephesus or SS. Sergius and Bacchus at Constantinople.

The Emperor, thinking not of cost of any kind, pressed on the work, and collected together workmen from every land. Anthemius of Tralles, the most skilled in the builder's art, not only of his own, but of all former times, carried forward the Emperor's zealous intentions, organised the labours of the workmen, and prepared models of the future construction. Associated with him was another architect, named Isidorus, a Milesian by birth, a man of intelligence, and worthy to carry out the plans of the Emperor. Anthemius was asked to design and build a church to surpass all previous works. His brain was fertile, he thought of the severe lines of the Greek temples, and the freer forms of the Romans. His materials, his craftsmen, all had to be considered. The mighty buildings of the Egyptians were familiar to him, the Temple at Jerusalem; but what had impressed him more than all else were the great Roman arches of the Baths and the dome of the Pantheon, and in SS. Sergius and Bacchus we see reflected the glory of these buildings—tradition carried forward, and yet a striving after something original. The priests, the architects, the Emperor, desired to originate new forms, not only in plan, but in details. The Basilica form of building seemed to serve every requirement, not only in the civil, but also in the religious life. As Christians they sought after something nobler, a building inspired by their religion; and so Anthemius argued that a Christian church should be perfect in itself, having a great dome over, vieing in beauty with the blue dome of heaven over the Sea of Marmora, cliffs, flowers, and forests of his beloved land of Asia Minor.

The dedication took place on December 26th, 537, in the eleventh year of Justinian's reign. The church was again consecrated in the fifth year after the fall of the dome, and in the 26th year of Justinian's reign. The church after its repair is described and eulogised by three contemporary authors—Paul the Silentiary, Agathias, and Evagrius.

Modern Opinion of Santa Sophia.

Our own contemporary architectural historians continue to write in the same eulogistic strain as all have done through the ages since its erection.

Professor C. Gourlay, who has personally examined the church, writes: "I consider St. Sophia to be the perfect embodiment of a Christian church."

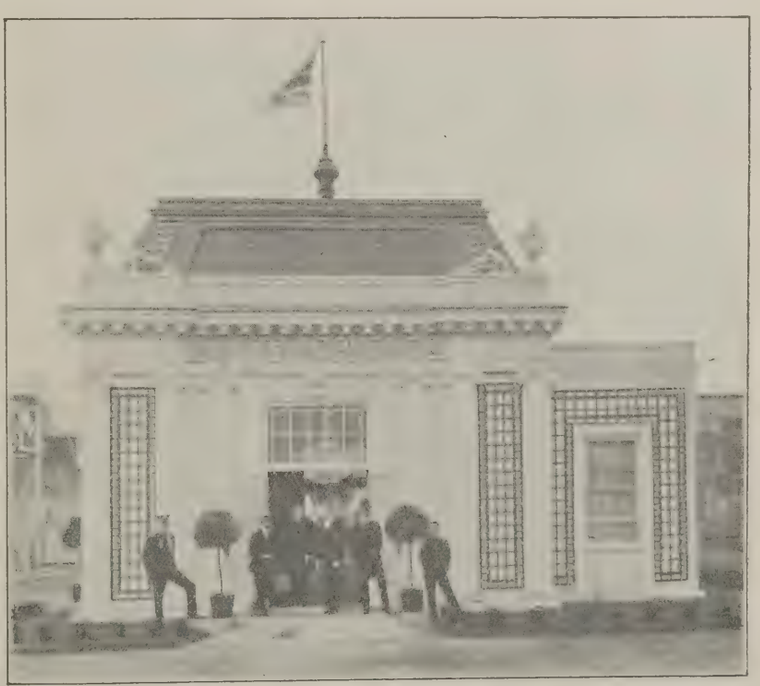
Mr. R. Phené Spiers has personally studied this building, and has told us that "no building in the world produced an effect parallel to that which is obtained on entering the great Mosque of St. Sophia," and that "the great beauty of it was that which was obtained by being able to seize the grandeur gradually by the various proportions of its parts, the whole building being gradually sub-divided." Mr. James Fergusson, in his History of Architecture, writes:—"Turn as we will, and compare it as we may with any other buildings of its class, the verdict seems inevitable that St. Sophia, internally at least, for we may omit the consideration of the exterior as unfinished, is the most perfect and the most beautiful church which has yet been erected by any Christian people." The able studies of Mr. Lethaby and Mr. Swainson are worthy of special study. The authors were in love with their subject, and they have succeeded in conveying an impression of the beauty and the surpassing fascination of St. Sophia. In their preface we read:—"Santa Sophia is the most interesting building in the world's surface. Like Karnak in Egypt, or the Athenian Parthenon, it is one of the four great pinnacles of architecture, but unlike them, this is no ruin, nor does it belong to a past world of constructive ideas, although it preceded by 700 years the fourth culmination of the building art in Chartres, Amiens, etc., and thus must ever stand as the supreme monument of the Christian cycle." Mr. Reginald Blomfield, A.R.A., tells us in his essay on Byzantium, that "The real achievement of the Byzantine Greeks was not in their decorative detail, beautiful though this was, but in their mastery of constructional form, their power of handling great masses of building, a power inherited from the Roman builders, yet transported by the finesse and subtlety of Greek genius into fairyland of poetry. The strength of Rome is there tempered by the intellectual distinction of the Greek. St. Sophia is the culminating point of ancient art, the point at which for once in the history of art the East and West joined hands."

The Church of Santa Sophia having been admired by all through many centuries, the question naturally arises, Why, if this building is so wonderful and so beautiful, has it not been copied and studied, and the composite system of construction carried to even a more complete solution? The answer may be that the churches a few centuries later realised and desired that the symbol of their Faith, the Cross, must be built from the very foundations. The Turks are the only people who have copied and continued the building in the same manner, for example the Mosque of Suleiman I., the Mosque of Ahmed I., and many others said to have been designed and built by the Greeks for their new masters in Constantinople, etc.

The Author's Personal Impressions.

Through the kindness and influence of the Royal Institute of British Architects and our Embassy at Constantinople, I received a permit or Erada from the Sultan to measure, sketch, and photograph any church or mosque in his capital, in the year 1903. For weeks I studied the great church, and made a careful survey of the plan, measured the north aisle, and made many sketches of the interior and exterior. I gradually mastered the construction, and the more I studied the more I

*Abstract of a paper read by Mr. J. B. Fulton, A.R.I.B.A., at the ordinary general meeting of the Architectural Association held on November 20th



PAVILION AT THE FRANCO-BRITISH EXHIBITION. FRANCIS S. SWALES, ARCHITECT.

admired the building; although there may be several faults, on the whole it is sound and logical, especially when you consider the materials.

The Buttresses.

Four great stone pieces or buttresses were built (67ft. 6in. by 25ft. 2in. by 101ft. 8in. apart from N. to S.), and not only did they carry the weight of the cross arches, but also were designed to take the thrust of pendentives supporting dome and cross connecting arches supporting dome. The necessary depth of the buttresses allowed for openings to be left forming the north and south aisles, the thrust of dome also necessitated the buttresses being carried to the height of the base of dome far above the roof of aisles; and therefore forming features in the elevation which are so charming and logical. Four columns on floor level on either side support six columns on gallery level, which carry the weight of wall built under the wall arches of dome on the north and south.

The Aisles.

The aisles have lesser columns supporting a vaulted ceiling forming the gallery floor; columns are again used on the gallery level which support a vaulted ceiling forming the roof. The outer walls are formed by piers taking the thrust of the vaulting; and between the piers the windows fill up the space, so that the wall surface is small comparatively. The windows are all arched, and has marble mullions, with square openings cut out of white marble, forming sash bars to receive glass. A few of the smaller parts are made in wood to open for ventilation. The great arches under the springing of the dome are about four bricks or about 5ft. thick. The depth, including the cornice, is about 6ft. The centre of the arches is about 2½ft. above the springing, so that they are more than semi-circular. In the internal angles formed by them are the four pendentives.

The Dome.

The dome springs from the cornice on 40 piers, about 3 to 5in. broad on the inside, and about 8½ft. deep. They are connected by arches which form windows 4ft. 10in. wide. Inside, the piers form part of the ribs, which have about 6in. projection at the springing, and gradually diminish till they reach the great circle of 37½ft. in diameter. The dome rises 46ft. 9in. above the cornice. The pendentived dome-covered space is bounded on the north and south by the aisles, galleries and what might be termed the wall arches or lunettes; to the east and west great niches are formed, with lesser niches, the latter being called exedra. The niches or semi-domes are so arranged that the thrust of the dome is carried to great piers forming an abutment to the barrel vaults at the east and west ends. At the east end the thrust is further taken by the niche forming the apse, and at the west the narthexes and piers take the thrust, and give the necessary abutment. The great niches are 42ft. 3in. by 101ft. 8in , so that they continue the building east and west 207ft. 9in.

The Semi-domes.

The exedra measure 41ft. 6in. by 21ft. Two columns on floor level support arches and cornice, which curve in plan, forming the niche, and take the thrust and weight of the vaulting in north and south aisles. Two columns on ground floor support six columns at gallery level, and the semi-dome springs from the cornice crowning the niche-formed exedra. This feature, so effective in plan, rises in elevation to such a height so as to allow windows to be inserted. The barrel vaults, 47ft. 6in. by 18ft. in the centre at east and west ends, and the exedra on either side cut into the semi-dome of the great niches about the same height. Five windows break through each of the great semi-domes, giving to the interior a certain doubtful charm. The semi-domes follow the curve of the east and west arches, supporting the dome.

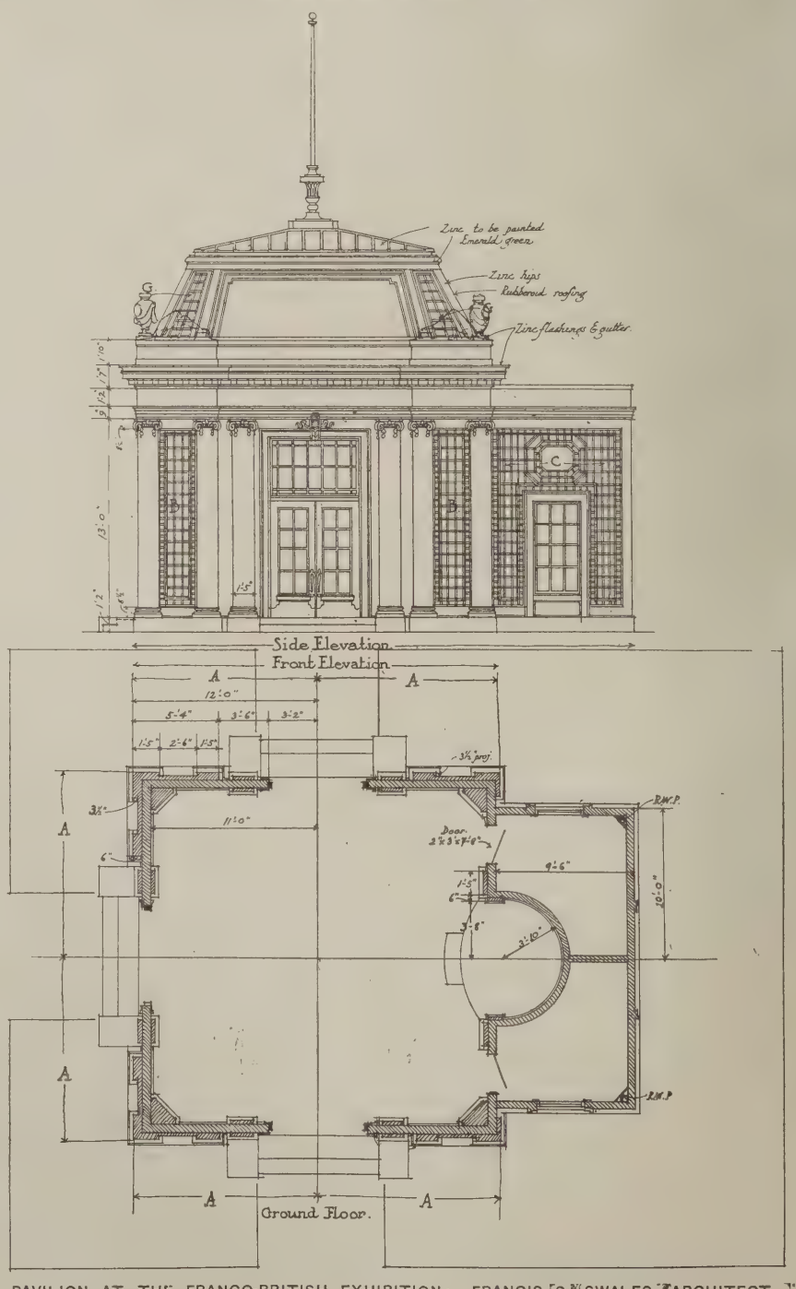
At the east end, the niche forming the sanctuary is lighted by a double tier of three windows, and the semi-domes pierced by five windows. At the west end, three entrance doorways are placed, leading to the church from the narthex, the central one being larger, 12ft. 3in. by 18ft. high.

The Charm of the Interior.

At gallery level, columns support arches, cornice, and mullions forming the great western window. The breadth of the nave between pier walls is 108ft., the length, exclusive of apse, is 244ft. 6in., and the breadth of the interior, including aisles, is 228ft. 10½in.

The great beauty and charm of the interior lies, not only in the constructive features, but also in the power and beauty of great horizontal cornices, placed at the correct relation to height, and broken only on plan. To me this is the secret of Byzantine design, and nowhere has it been used to greater advantage than here in this vast pendentived hall. Standing at any point in the nave, your eye moves from one vista to another in endless variety. The golden vaulting of the aisles and galleries give colour and distance, while all the nearer features carry your eye to the great dome, crowning all. The views of the nave from the aisles and galleries are unsurpassed, the columned low-vaulted richness of the aisles contrasting with the seemingly infinite height of the nave.

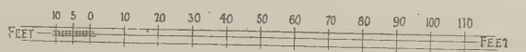
The Great Court at the west end, which



PAVILION AT THE FRANCO-BRITISH EXHIBITION: FRANCIS [illegible] SWALES, ARCHITECT.



SOUTH ELEVATION



EXTENSION OF THE GENERAL POST OFFICE, GLASGOW. W. T. OLDRIEVE, F.R.I.B.A., F.S.I., ARCHITECT. (*See next Page.*)

existed as late as 1873, has disappeared, and there is now little to recall the atrium with its fountain, etc. Three central doors and two side doors lead to the exonarthex. Five doors lead to the narthex, the windows of which are above the roof of the outer narthex.

Above the narthex a gallery is built connecting the north and south galleries; the windows forming a pleasing feature in the elevation.

Some Features of the Decoration.

The decoration of the interior is full of refinement and colour. The walls of nave and aisles are covered with marble plating. Horizontal bands run round at different heights, and the spaces between are filled with single panels and vertical pieces. A feature is made of bands of notched fillets, and the more important panels have sculptured frames. The cornice in the aisles is perhaps the most beautiful Byzantine cornice in existence, and is carved in relief with a frieze of white and red marble inlay. The columns of marble and porphyry are very beautiful, with their sculptured capitals in the Ionic Byzantine order. The spandrils are composed of white and red marble, or compo and green porphyry. The vaulting of the aisles and gallery and all surfaces above the upper cornice of nave are decorated with mosaic.

Fossati's Restoration.

In the year 1847 the Italian architect Fossati restored and decorated the church. Salzenberg, who is said to have been Fossati's assistant, made very complete and careful measurements of the great church, his book undoubtedly being the present authority on this noble building.

The altar, the original church furniture, the relics, the later history, especially the latter, was varied and interesting. Note also the fine bronze doors in the narthex. The weakest points of the building have evidently been the four corners, because they have been thrust about 18in. back from their original position; but everywhere great piers have been built, and, after the Turkish occupation, the four minarets were built in the 16th century.

Discussion.

The chairman, Mr. Walter Cave, called upon Mr. A. E. Henderson, to whose close study of the church Mr. Fulton had made a graceful reference, and whose presence was therefore a matter for congratulation, to propose a vote of thanks to Mr. Fulton.

Mr. A. E. Henderson, in proposing the vote of thanks, dwelt at some length upon the construction of the church of Santa Sophia, and recommended everybody to endeavour to see it. Mr. Fulton had described lucidly its setting out, and the simplicity of its design—the latter a point that was not generally realised. Many lessons were to be learnt from the plan. Reinforced brick, of which the church was chiefly built, possessed an analogy with the reinforced concrete of to-day. The speaker had had the privilege of seeing the church while it was under repair, but had not been permitted to view the semi-dome from the exterior. Through the kindness of the Turks, he (Mr. Henderson) had been allowed to operate from August 19th, 1889, until the end of November. Students, he might observe, were now permitted to use a tape measure. This surely was a valuable opportunity for Britishers. Intending visitors would find it essential to have a man who knew the language, but this he recognised involved an expensive item that few students could afford. He believed, however, that talking was not conducive to consistent work. He advised students to go East, and to study Roman and Grecian work in its purity, not in the Renaissance spirit. He confidently believed that hardly an architect goes to inspect the huge city at Ephesus, in spite of its being a British domain.

Mr. Statham, in seconding the vote of thanks, realised his misfortune in never having seen Santa Sophia. He shared with Mr. Fulton the opinion that it was a most wonderful building. Fergusson, he believed, was wrong in trying to deprive Anthemius of credit for the design. He knew of no other churches in the district that were built with pendentives. It was interesting to read accounts of contemporaries of its wonderful effect upon men's minds when it was new. He did not think the section of the dome was altered after its first fall. It would prove an interesting experiment to try the effect of a flat dome. He knew not whether he was heretical, but he always considered the exterior to be rather a failure, having the appearance of being designed to support the interior.

Mr. Walter Millard was glad that Mr. Statham had alluded to the earlier form of dome, the original dome, in his opinion being a prolongation of pendentives.

Mr. Geoffry Lucas pointed out that, like Wren, Anthemius was fortunate in his opportunity.

Sir Brumwell Thomas hoped that anyone experiencing difficulty in prosecuting a survey of the church would communicate with the Association.

Mr. Mat. Garbutt remarked that the early builders constructed with a total disregard for life, with the result that they were able to produce works of beauty that it was impossible to obtain to-day, when the designer was tied down to engineering considerations.

The chairman (Mr. Walter Cave) said that the drawings shown by Mr. Fulton were a truly remarkable achievement. He added his hearty thanks to the vote already proposed and seconded.

Mr. Fulton, replying to the vote of thanks, mentioned St. John's, Ephesus as being another unmeasured church. Speaking of the domes, he expressed the opinion that their collapse was more attributable to earthquakes than to a lack of scientific knowledge.

The meeting then ended.

A new screen that has been erected in Bangor Cathedral to the memory of the late Lord Penrhyn, is in the Decorated style, from designs by Messrs. J. Oldrid Scott and Son, the architects to the cathedral. It is divided into six bays, in two of which the gateway is formed. From the buttresses arise traceried cusped and carved ogee gablets, and the rood is topped by a richly moulded cornice. The work has been executed in wainscot oak by Messrs. John Thompson and Co., of Peterborough.

EXTENSION OF THE GENERAL POST OFFICE, EDINBURGH.

This extension, which is in the course of erection, is situated at the east side of the present post office, and is a continuation of the block facing south and overlooking the Waverley station. The east elevation faces the Low Calton. The extension is being built to relieve the letter and parcel sorting departments, as well as the storage for the telegraph engineers.

The area of the site is 1,520 sup. yds., and is almost entirely covered by buildings, which consist of seven storeys, and will rise to a general level of 99ft. above the Low Calton Street pavement. Nearly the whole of the basement floor will be utilised as a telegraph engineers' store, the remaining portion of the floor being used as a heating chamber. Two stone staircases rise from this floor, and there will also be two electric lifts running to the floors above. On the Low Calton Street floor there are a covered van-way and loading platform, 85ft. long and 38ft. wide, with entrance and exit to the Low Calton. Next to this, a smaller covered way, 50ft. long and 16ft. wide, with platform, will be used for hand-carts. Immediately over the covered way for hand-carts, and overlooking the loading platform, will be provided a room for the drivers of the vans, with lavatory accommodation. Two staff entrances, one leading to a staircase and the other to an entrance hall where an electric lift will be in use, are also provided at the Low Calton level, giving access to the seven upper floors. The rest of the floor area, consisting of 5,360 sup. ft., will be used as a telegraph engineers' store, with stone staircase at the north-east corner, and the electric lift rising from basement to the first floor in the south-west corner. This floor, which will be almost entirely used as the post-office store, has an area of nearly 9,000 sup. ft. The second floor will be a continuation of the present parcel sorting hall, whereby an extra floor area of 7,810 sup. ft. will be added to the accommodation. A considerable part of the present outside stone is being taken down, so that one huge sorting hall will be formed; whilst on the fourth floor, for letter sorting, the same method is being adopted, giving an extra floor of 9,065 sup. ft. These two large apartments are well lighted by large windows on three sides, and the walls are lined from floor to ceiling with ivory-coloured bricks having the bases and cornices relieved in other colours. The floors will be laid in wood blocks.

Part of the second floor and entresole floors between the second and fourth floors and the fourth and sixth floors, give large accommodation for cloakrooms and lavatories for the staff. On the sixth floor there will be a special service instrument room and telephone rooms, with cloakrooms, etc., for the female telegraphists and telephone operators, also one or two stores. These rooms are also well lighted by windows facing the south, and with additional light from the roof. The seventh floor, which is an entresole floor, will be used as a telegraph store, having a floor area of 1,680 sup. ft.

The elevation to Low Calton, Waverley station, and the return at the Inland Revenue offices, are faced with freestone from Doddington Hill Quarry, Northumberland. This stone has the peculiar effect of looking almost a reddish stone just after being quarried, but after it has been exposed to the weather for a time it will very nearly match the existing stone of the present post office.

The style of the building is regulated by the design of the present building, the south elevation being very similar to that existing. The whole building is built on the latest hygienic and fire-resisting principles, woodwork is reduced to a minimum, and glazed brick is extensively used throughout, while ample stone exit stairs are provided in case of emergency. The heating is to be on the low-pressure hot-water system, and the illuminant electric light.

The building is being erected from designs by Mr. W. T. Oldrieve, F.R.I.B.A. F.S.I., H.M. Principal architect for Scotland, under whose supervision the work is being carried out. Through his courtesy we are enabled to give a drawing showing the principal part of the extension. The shaded part represents the existing building. The contractors for the foundations were Messrs. A. Waddell and Sons, Edinburgh, and for the superstructure Messrs. A. Colville and Co., Edinburgh. The structural steelwork is being executed by Messrs. Alexr. Finlay and Co., of Motherwell. The clerk of works is Mr. James Reid.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 1	POSTER FOR BUILDING EXHIBITION, OLYMPIA, April 17th to May 1st, 1909. Premium £105. Open to Architects and Architectural Students only. Particulars and entry forms from H. Greville Montgomery, M.P., Exhibition Offices, 43, Essex Street, Strand, London.
Dec. 14	§BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50 £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit. £1 1s.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25 and £10. Instructions may be obtained by letter on or before November 5th, to W.T. Postlethwaite, Council Offices, Swinton, Manchester.

** These competitions have been unfavourably reported upon by Correspondents.*

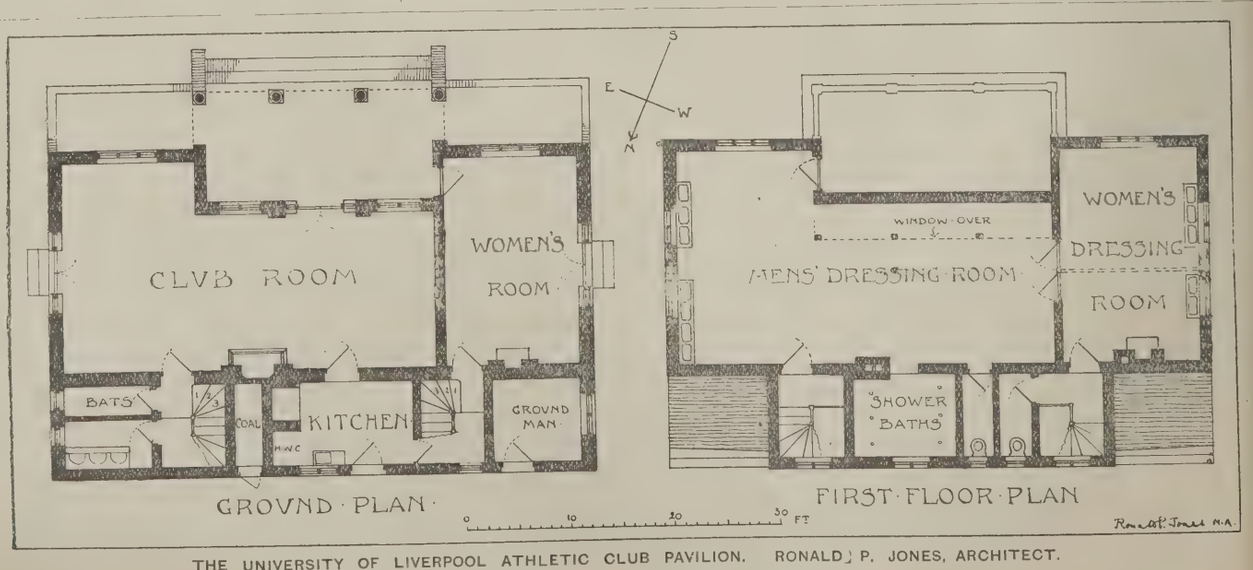
§The Council of the R.I.B.A. advised Members not to compete, but see note below.

Blackpool Library Competition.

The R.I.B.A. has issued a circular in the following terms:—"The Blackpool Corporation having, in response to the representations made by the Institute, removed the most objectionable features in the conditions of this competition, the Council of the Institute now withdraws its previous advice to members to refrain from competing."

Proposed Secondary School for Girls, Brighouse.

The governors, on November 18th, accepted the design of Messrs. Sutcliffe and Sutcliffe, Hebdon Bridge, in this



THE UNIVERSITY OF LIVERPOOL ATHLETIC CLUB PAVILION. RONALD P. JONES, ARCHITECT.



UNIVERSITY OF LIVERPOOL ATHLETIC CLUB PAVILION. RONALD P. JONES, ARCHITECT.

competition. The drawings will be on exhibition during the whole of the present week at the Museum Room, The Rydings, Brighouse. There were fifteen competitors.

ETON MEMORIAL HALL AND LIBRARY.

The buildings that have been erected in memory of Etonians who fell in the South African war, and were opened by the King on November 18th, comprise a new hall and library. The hall, which is 140 ft. by 53 ft., with a height of 44ft., the length being divided into five bays by coupled Corinthian columns, will seat 1,100, and the library accommodates about sixty students and 24,000 books. The designs were selected in a competition in which Mr. Norman Shaw, R.A., as assessor, assigned the first place to Mr. Lawrence K. Hall, F.R.I.B.A., of Westminster, whose plans, after some modification in conjunction with Mr. S. K. Greenslade, A.R.I.B.A., were adopted. The buildings are designed in the style of the English Renaissance of the period of Wren; and the ceilings, of cast fibrous plaster, have been modelled by Mr. Arthur Broadbent, from designs in the spirit of that period by the architect. Externally, Portland stone has been used, in conjunction with a purple grey brick similar to that which seems to have been a favourite with Wren. The general contractors were Messrs. Henry Willcock and Co., of Wolverhampton, and their tender for the "shell" of the buildings amounted to £37,000.

Notes and News.

A statue of the late Canon Fleming is proposed. The suggestion is that it should fill one of the vacant niches of York Minster.

* * *

A grain elevator to be erected at Fort William is to be the largest of its kind, and will have a capacity of 4,000,000 bushels of grain. The contractors are Messrs. James Stewart and Co.

* * *

The Hotel Chatham, in the Rue Volney, Paris, a favourite resort of British and American travellers, has been partly rebuilt and entirely modernised, from plans by M. Decaux. A new wing, which was recently opened, includes a restaurant in which the Louis Seize decorations are by MM. Henri and Emile Rousseau. Every bedroom communicates with a bathroom and is fitted with a telephone. The original hotel was about 300 years old.

* * *

"Greek Buildings represented by Fragments in the British Museum" comes to a close with Part IV., which deals with the Theseum, the Erechtheum, and other works. Prof. W. R. Lethaby (the author) and Mr. Batsford (the publisher) deserve the gratitude of students of architecture the world over for thus rendering more widely accessible, and more completely comprehensible, the priceless fragments of Hellenic architecture contained in the national collection. We hope to have an opportunity of noticing this valuable series at greater length.

UNIVERSITY OF LIVERPOOL ATHLETIC CLUB PAVILION.

In 1907 the University of Liverpool acquired from the Corporation a new ground for the use of the Athletic Club, adjoining Calderstones Park. The pavilion here illustrated was built and presented to the club by its president, the late Mr. C. W. Jones. A club-room and dressing-room are provided for both men and women members, and the first floor plan is so arranged that during the winter months the women's dressing-room is shut off from its staircase and opened to the men's room, being divided by a movable partition, for the use of visiting football teams. The bath-room is fitted with six shower baths; and lavatory basins, with hot and cold water, are fixed in both dressing-rooms. Spectators obtain a view of the cricket pitch from the recessed loggia on the S.E. front, and from the paved terrace on either side of it. Stabling for a horse, and a storing place for nets, mowng machine, etc., are provided in a separate building to the S.W. of the pavilion. The materials are roughcast on the ground floor, and red tiles on the first floor and roofs, the woodwork of the loggia and clock turret being painted white and the rest dark green. The architect was Mr. Ronald P. Jones, M.A., of Stone Buildings, Lincoln's Inn, a former student of the School of Architecture at the University, and the builder was Mr. J. A. Hunt, of Hoddesdon, Herts. Messrs. Geo. Jackson and Sons, Ltd., executed the coat of arms in relief and other special work was carried out by Messrs. Thomas Elsley, Ltd., and the Birmingham Guild of Handicraft.

THE ARCHITECT'S CERTIFICATE: SOME LEGAL ASPECTS*.

By A. M. Brice.

The position of the architect who is empowered to issue certificates indicating that the builder is entitled under a contract to certain advances, or expressing his satisfaction with partly or wholly completed work, is undoubtedly one of some difficulty, and the issue of such certificates has raised, and has been the occasion of deciding, many nice legal propositions.

Consequently, in considering the nature of the architect's certificate, and, in particular, the varying conditions under which it may issue and the varying results which such certificates may produce, it is desirable, first of all, to consider the position of the certifying architect.

And, in the first place, the certifying architect, in being called upon to approve or condemn the work of the contractor, may be required to discharge two distinct and in some measure conflicting duties. On the one hand, he is acting as the avowed agent of the building owner, and, on the other, when issuing a final certificate, he is acting in a quasi-judicial manner between building owner and builder. As agent it is his duty to safeguard the interests of the building owner; as dispenser of the final certificate, it is his duty to act impartially between both building owner and builder. As agent of the building owner there is no privity of contract between him and the builder; consequently, there is no duty owing from him to the builder. As final certifier, he ceases to be the agent of the building owner, and is bound to act fairly and without bias towards both parties. Further, if the contract makes no provision for the submission of a dispute between the parties to an arbitrator, the conclusive certificate of the architect becomes a quasi-judicial function, and he himself becomes quasi-judge and arbitrator.

The position and duty of the architect in each of these distinctive capacities must now be considered, but, before doing this, it will be convenient to summarise briefly the various certificates which in one or the other capacity he might be called upon to issue.

The architect's certificates are readily divisible into two clearly distinguished classes—they are either conclusive and final, or they are non-conclusive and interim.

To the non-conclusive class belong all ordinary progress certificates (though by the terms of the contract each progress certificate may be made conclusive and final, so far as it applies), and in the conclusive class are placed certificates for additions or deducions, for retention moneys, and of final satisfaction, completion, and payment.

The non-conclusive, interim, or progress certificate is given during the progress of the work, and is in respect of the amount of advances held by the architect to be due to the contractor. It usually entitles the contractor to the payment of such advances as may have been agreed upon to be paid in accordance with such certificate.

*Substance of a paper read before the Institute of Builders, on November 11th, by Mr. A. M. Brice, of the Middle Temple and Oxford Circuit, Barrister-at-Law; author of "The Legal Liability of the Architect."

The conclusive certificate for additions or deductions is ordinarily given after the receipt of all claims by the contractor, and is in respect of any additions to or deductions from the contract price. It authorises the payment of such sums as may be found due in that respect.

The conclusive certificate for retention moneys is given either upon or after the completion of the works, and is in respect of the payment of such moneys or some part of such moneys as may have been retained. It authorises the payment of such sum to the contractor.

The conclusive certificate of satisfaction is given either upon or after the completion of the works, and is in respect of the satisfaction of the architect with such completion. It denotes that the work is complete, and that the period of maintenance has begun.

The conclusive final certificate is given either upon or after the termination of the maintenance period, and is in respect of the architect's approval of the maintenance and repair of the works, of the remedying of such defects as may have been discovered, and, in general, of the due performance of all the obligations imposed upon the contractor by the contract. It authorises the payment by the employer of the final balance due to the contractor.

Both classes of certificates, conclusive and non-conclusive, may or may not be conditions precedent to the recovery of payment by the contractor.

A certificate is a condition precedent when either expressly or by implication the contract price is not payable until the certificate is given.

A certificate is not a condition precedent when either expressly or by implication the contract price is payable independently of the certificate.

We now pass on to consider

The Position and Duty of the Certifying Architect as the Agent of the Building Owner.

As agent of the building owner, the architect must not exceed the limits of the authority he derives from the building contract. If he does, his certificate will not be binding either on the owner or the contractor.

In consequence of the architect's position as agent to the building owner, the certificate is simply the expression of the approval of the employer through the architect that certain acts which the contractor has agreed to perform have been so far or so completely performed as to meet with that approval of the employer which the contract requires before partial or final payment can become due or payable.

The duty of the certifying architect in his capacity as the agent of the building owner is comparatively light. It is comprised within the range of such certificates as may be merely ministerial—that is, which do not call upon him for a final opinion dependent on the exercise of judgment and professional skill. The certifying that certain materials have been supplied, that a given amount of work has been done, that something agreed to be delivered has been delivered, that something which the architect had power under the contract to order has been ordered by him and supplied, that the times agreed upon for performance have been complied with—in short, while issuing non-conclusive interim or "progress" certificates is ordinarily discharging a ministerial duty as agent for the building owner (see Tindal, C.J., in Morgan *v.* Birnie (1833) 9 Bing. 672), and so long as he does his duty as that owner's agent—that is, so long as he exercises all proper care, displays all reasonable skill, and acts honestly and bona fide, and within the scope of the authority granted him, he discharges his liability to the building owner. Acting in such a manner, he is under no liability to the builder, between whom and him, as already stated, there is no privity of contract.

Again, if the terms of the contract provide or imply that the decision of the architect shall not be final, he gives even what purports to be a final and conclusive certificate, not in a quasi-judicial, but in a ministerial way. For example in the case of Robins *v.* Goddard [(1905) 1 K.B. 294], the contract contained this clause: "No certificate of the architect shall be considered conclusive evidence as to the sufficiency of any work or materials to which it relates, nor shall it relieve the contractor from the liability to make good all defects." And, in addition to this, an arbitration clause was inserted in the contract. It was held by Lord Justice Stirling that the former clause was not to be confined to making good defects, and that the arbitration clause clearly prevented any certificate of the architect being regarded as final.

In those cases, then, in which an architect gives a certificate which is not to be final or conclusive, and consequently not a condition precedent to payment to the builder or to the builder's relief from further liability, the law infers that the architect is not discharging a quasi-judicial office, that he is not acting as a quasi-arbitrator nor even as a dispute-preventer, but that he is acting as an agent of the employer, with a contractual duty to safegurad the interests of that employer and do his bidding. Thus, in the case when an architect is not authorised by the contract to value, and his certificate is not agreed to be binding on both parties, his certificates are only binding upon the building owner when they are in strict accordance with the contract and with the authority vested in the architect. And even if such certificates are expressed by the contract to be conditions precedent to payment, the building owner is not bound by them if the architect, in giving them, does not comply strictly with the terms of the contract, and act, that is, within the limits of the authority conferred upon him as the building owner's agent. Although as the employer's agent, he may have purported to express the employer's approval, that approval will not bind the employer in such circumstances.

The chief function of the certifying architect when regarded as the agent of the building owner is to issue from time to time, in strict compliance with the contract, non-conclusive interim or progress certificates, which shall acquaint the employer with the amount of the advances he may properly make to the builder.

Non-Conclusive or Progress Certificates.

These progress certificates are not binding or conclusive certificates, and relate generally in an approximate degree to the value of the work or the quantity of the materials dealt with in the certificate. Consequently they cannot be cited as conclusive evidence when the final certificate is to be considered, nor can

they be so cited in a court of law or arbitration in the event of a claim for damages for breach of contract or a claim upon a quantum meruit. A good authority for this is Tharsis Sulphur & Copper Co. *v.* McElroy [(1878) 3 App. Cas. 1040], where Lord Cairns very clearly pointed out the position of such progress certificates. "The certificate," he said, "I look upon as simply a statement of a matter of fact, namely what was the weight and what was the contract price of the materials actually delivered from time to time upon the ground, and the payments made under those certificates were altogether provisional, and subject to adjustment or to re-adjustment at the end of the contract." Lord Hatherley, in the same case, described a progress certificate as "not an exact sum made up by calculation of items and by applying the prices to the quantities of articles supplied under those items It is really nothing but this—it is an account sent in to show that the company are quite safe in making such payment as they may think fit by way of advance, because there is now upon their ground property of such value." Similarly, Lord Blackburn: "They were made out with a view to regulating the advances, and showing how much should be paid on account, not at all as showing how much was to be ultimately paid upon the final account and reckoning."

Progress certificates are not only not conclusive as to the value of the work done or the materials supplied, but they are not conclusive as to the quality of that work or of those materials. This was shown in Cooper *v.* Uttoxeter Burial Board [(1865) 11 Lt. 566], where it was held by Vice-Chancellor Wood that it was competent for an architect who had given progress certificates from time to time to withhold his final certificates on the ground that the work had not been executed in a workmanlike manner. This judgment is all the stronger because at the time the progress certificates were granted it was pointed out to the builder by the architect that the work was not being executed in a workmanlike manner. In that case, too, the contractor unsuccessfully asked to have it declared that the withholding of the final certicate was a fraud on the contractor.

On the other hand, there is no doubt that when a progress certificate has been issued, a debt is created and becomes due and payable— unless, of course, the building contract shall have otherwise provided. For although the contract may be an entire contract, and consequently, in the absence of special provisions, no payment is due until the whole contract is completed, yet as a matter of fact it is almost the invariable custom to insert in the contract a clause or clauses providing for the granting of progress certificates as acknowledgments of value received and as authority for payment on account. Thus, in the case of Pickering and Another *v.* The Ilfracombe Railway Coy. [(1868)L. R. 3 C. P. 235] it was held that the issue of a progress certificate created a debt due which constituted a valuable consideration for an assignment which was subsequently made.

A progress certificate may operate to vest property in a new owner, and generally this is provided for by the contract. It is naturally a question of the construction of the contract in each case at what stage and by what means the property shall pass; and as Lord Blackburn observed in South *v.* Moore [(1886) App. Cac, 350 Cp.; also Reid *v.* Macbeth (1904) App. Cas. 223], it is "a question of fact in each case whether that stage has been reached." Thus in the Banbury and Cheltenham Railway Co. *v.* Daniel [(1885) 54 L. J. Ch. 265], in an agreement between the plaintiff company and the defendant a contractor, for the construction of a railway, it was provided that once a month the company's engineer should certify the amount payable to the contractor in respect of the value of the materials delivered, and that such certificate should be paid by the company seven days after presentation. It was held by Pearson, J., that the property in "materials delivered," upon their being certified for by the engineer, passed to the company, though the materials were not fixed. "The question I have to determine," said Mr. Justice Pearson, "is whether the defendant is now at liberty to take away any of these materials which have been brought upon the company's land for which certificates have been given. In my opinion, he is not entitled to do so. . . . Where the contract is that the materials are to be paid for as they are brought upon the company's premises, the inference is that as they are certified for by the company's engineer they become the property of the company."

Progress certificates are conditions precedent to payment merely by force of the contract between the parties. Such certificates may, of course, be subject to any conditions upon which the parties are agreed. By force of contract, too, it is possible that progress certificates may operate to waive the right of the building owner to recover liquidated damages from the builder on the ground of delay. The case of Laidlaw *v.* Hastings Pier Coy. ["The Times" (1874), November 28, p. 11] illustrates this. In that case it was shown that the engineer had authority to order extras, to grant expansion of time, to give conclusive certificates, and settle all disputes. Accordingly the engineer gave numerous progress certificates entitling the contractor to receive payment for the works and extra works, and the company had paid the contractor on such certificates: and subsequently the engineer gave his final certificate to the contractor, and sent to the company the whole account, with his corrections and deductions, signed and approved by him. Thereupon the company refused payment of the balance due to the contractor, and, on his claim for that balance, counterclaimed, inter alia, for liquidated damages. It was held that the engineer's certificates as to what sums had fallen due were conclusive, and that the company had waived the damages, and no claim for liquidated damages could be sustained.

Progress certificates may occasionally operate as orders in writing for extras; but in order to be effective for this purpose, the certificate would be required to certify more than the whole contract price. Upon this being done, however, a new contract may be implied to pay for the extra work, and this would depend on the fact whether the building owner has contracted to pay on the certificates. Moreover, it would exclude a corporation from its operation as not being a contract under seal.

Secondly. The Position and Duties of the Certifying Architect when acting in a Quasi-Judicial Manner.

While the architect, when acting as the agent of the building owner, has a duty to be partial to that owner's interests, and no contractual duty at all to the builder, directly he is placed in a position by the contract or by the two contracting parties in which he is to be called upon to determine or assess, finally and conclusively, some question of fact between those parties he ceases to be an agent of one party, and becomes a quasi-arbitrator or quasi-judge between the two parties. As such, he is bound to discharge his powers impartially; as Lord Collins has said, he is "clothed with the duty of exercising an impartial judgment" (Chambers *v.* Goldthorpe [(1901) 1 Q. B. 641)].

The fact that he is the agent of the employer does not matter, for it is a fact well known to the contractor; and it is to be assumed that the contractor has taken all probable risks into his consideration before he assents to putting the agent of the employer into the position of a quasi-arbitrator. The building owner has stipulated that his architect, his agent, shall be the person to decide questions of fact— of work and value— or to determine disputes raising out of the contract and the builder in assenting to such a course puts it out of his power to object to the bona-fide certificates and decisions of a quasi-arbitrator thus appointed (Sanger *v.* Gt. Western Railway [(1854 S. H. L. C. 72.] "The architect," said Lord Denman, in Goodyear *v.* Weymouth Corporation [(1865) 35 L. J. C. P. 12] "is to be responsible for deciding between the parties; and if he decides honestly, the parties have no right to complain to anybody."

But it is a condition precedent to the validity of his certificates that he shall act bona-fide in an independent and impartial manner. If it can be shown that the architect, when acting as a quasi-arbitrator, has not been impartial and fair as between the parties, then his certificate can be set aside, Pawley and Turnbull [(1861), 3 Giff., 70]. Further it was held in Kemp *v.* Rose [(1858) 1 Giff. 258; and see Dimes *v.* Grand Junction Canal (1852) 3 H.L.C. 759] that, without any fraud being alleged, the decision of the architect was not binding upon the builder, if there was "the smallest speck" or circumstance calculated to bias his judgment and unknown to the builder. On the other hand, a strong but honest expression of opinion made by an architest in his capacity as building owner's agent does not disqualify him from acting subsequently as a quasi-arbitrator Cross *v.* Leeds Corporation [(1902) Hudson, vol. 11, p. 369, 3rd edn.]. The fact that the architect has interests consequent on his employment as such is known to the builder, and it is presumed in law that the builder knows that the architect receives reward from the building owner for discharging certain duties and for acting as his agent; that it is his duty to do his best for his client; to make good bargains for him; that he has probably gven his employer an estimate of the maximum cost of the work in hand; that it is to his professional interests to keep the cost down to that estimate and to avoid or, if inevitable, to keep down the cost of all mistakes and extras; that he has himself prepared the contract and often determined the nature of his own authority and duty; and that in the course of the work, and while and after acting as quasi-arbitrator, it will be his duty to have constant dealings with either the building owner or the builder in the absence of the other. But Lord Collins

has laid it down that [Cross *v.* Leeds Corporation [(1903), Hudson, vol. 11, 371; and see Jackson *v.* Barry Railway (1893 71 Ch. 478, Ives *v.* Barker (1894) 2 Ch. 478, Eckersley *v.* Mersey Dock and Harbour Board (1894) 2 Q.B. 667], "contractors as well as employers know perfectly well what they are about." And even should the architect express strong opinions on a matter in dispute between the parties, Lord Collins, in the case just quoted, said that contractors "cannot come afterwards and complain of the very thing which they have agreed to, namely, that the person who is now asked to act as arbitrator has expressed, and strongly expressed, an opinion as to a particular contention which they are now setting forth."

(*To be concluded.*)

Our Plates.

The New Cowdenbeath Higher Grade and Mining Schoo'.

For the combined Elementary, Supplementary, Higher Grade, and Mining School, proposed to be erected at Cowdenbeath for the Beath School Board, the plans have been prepared by Mr. William Birrell, architect, Kirkcaldy. The site of the school is on an eminence near the centre of the town belonging to the Stevenson-Beath estate. The building has been designed in the form of a parallelogram, measuring 222ft. by 60ft., with side porches for boys' and girls' entrances, and a one-storey building on the centre front forming the principal entrance, measuring about 80ft. by 28ft.

The front of the school will face north, and is of simple design, with plain piers between the windows, which are surrounded by plain margins, the whole being relieved by pedimented gables at the ends, and parapet above the wall cornice. The main entrance front has been slightly accentuated by columns, and by a large circled pediment over the entrance doorway; while the main wall behind is finished with four large circular windows, giving direct light to the assembly hall. The roofs will be covered with light sea-green slates from Westmorland, while the roof of the centre block, having been carried above the general level of the side wings, and surmounted by an ornamental belfry, gives the building a substantial and balanced appearance that is consistent with a public institution.

Owing to the difficulty and expense of obtaining suitable stone, it is proposed to execute the elevations with red sandstone from Closeburn Quarry, Dumfriesshire.

The main building is of two storeys and a basement, and has corridors 8ft. wide, on each floor, running the whole length of the building. Owing to a considerable fall in the level of the ground, it was deemed advantageous to form a basement under the greater part of the school, and this has been mainly utilised for laboratory work. The accommodation provided consists of a large engineering laboratory, with a commodious testing-room, and store-rooms leading off same, while on the other side of the corridor is provided the drawing office. The remainder of the basement is taken up with large covered playgrounds for use in wet weather, which can be reached from the corridor, together with a playroom and a cookery room. The walls of the playgrounds are lined with enamelled brick, and the playground is fitted with fireplaces for the use of pupils from the country.

On the ground floor is a one-storey building at the front, comprising headmaster's and janitor's rooms, and two class-rooms, each for forty pupils. Leading from this is the assembly hall in the main building, the ceiling of which is arched and carried up to the roof. Access to the various class-rooms, which are mainly facing south, is obtained from the assembly hall, and the corridors leading off some, while on the first floor the corridors have been connected to the assembly hall by means of a balcony. In this part of the building there are two class-rooms, each for forty pupils, and seven class-rooms, each for fifty-two pupils. On this floor also are provided large and well-appointed cloak-rooms for the different grades, and at the ends of the wings is situated the staff room accommodation.

The first floor is entirely devoted to higher-grade students, and comprises four class-rooms for thirty pupils, and one for twenty-four pupils, together with a large art room, wood workshop, chemical and physical laboratories (with preparation, balance, and optical rooms adjoining), a large lecture theatre, and ample storage accommodation. Communication between the different floors of the building is effected by means of a large staircase at each end of the building, arranged in short flights.

The floors throughout will be executed in reinforced concrete, covered on top with wood floorings, and all the beams and columns will be encased in concrete, thus adding to the rigidity of the structure and considerably reducing the fire insurance premium.

It is proposed to light the building by means of electric light, which will be generated by a dynamo and suction gas plant placed in the mining-engineering section of the school. This plant will be capable of lighting the whole building, driving the electric ventilation fans, and at the same time available to the mining students for instructional purposes.

The heating is proposed to be carried out on the low-pressure hot-water (drop) system, and ventilation will be secured by means of fresh-air inlet gratings at the windows, and two large extract fans on the roof drawing the foul air through the ducts leading from the various apartments.

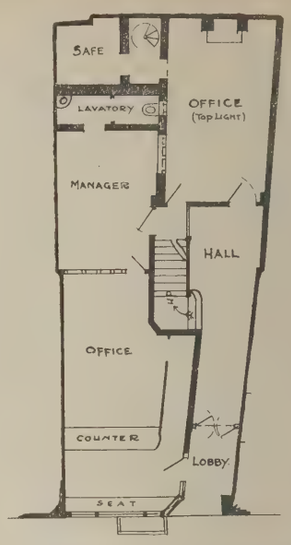
The plans have been approved by the Department. Estimates have been accepted, and the work is to be proceeded with immediately. The total cost is under £20,000.

New Business Premises, No. 4, Wood Hill, Northampton.

This building erected from the plans of Mr. Herbert Norman, whose offices are on the second floor, has recently been completed for Mr. A. E. Phipps, solicitor, who occupies the first floor. The front is carried out in Weldon Stone, with steel casements and leaded lights to the windows. The heating, by low pressure with radiators, was installed by Messrs. Grose, Norman and Co., Northampton. The contractor was Mr. Henry Green, also of Northampton.

Measured Drawings.—No. 1, Gates at Eagle House, Mitcham, Surrey: Measured and Drawn by Joseph Seddon.

It is our intention to give in alternate issues measured drawings of fine architectural details, accompanied by photographic illustrations where necessary to

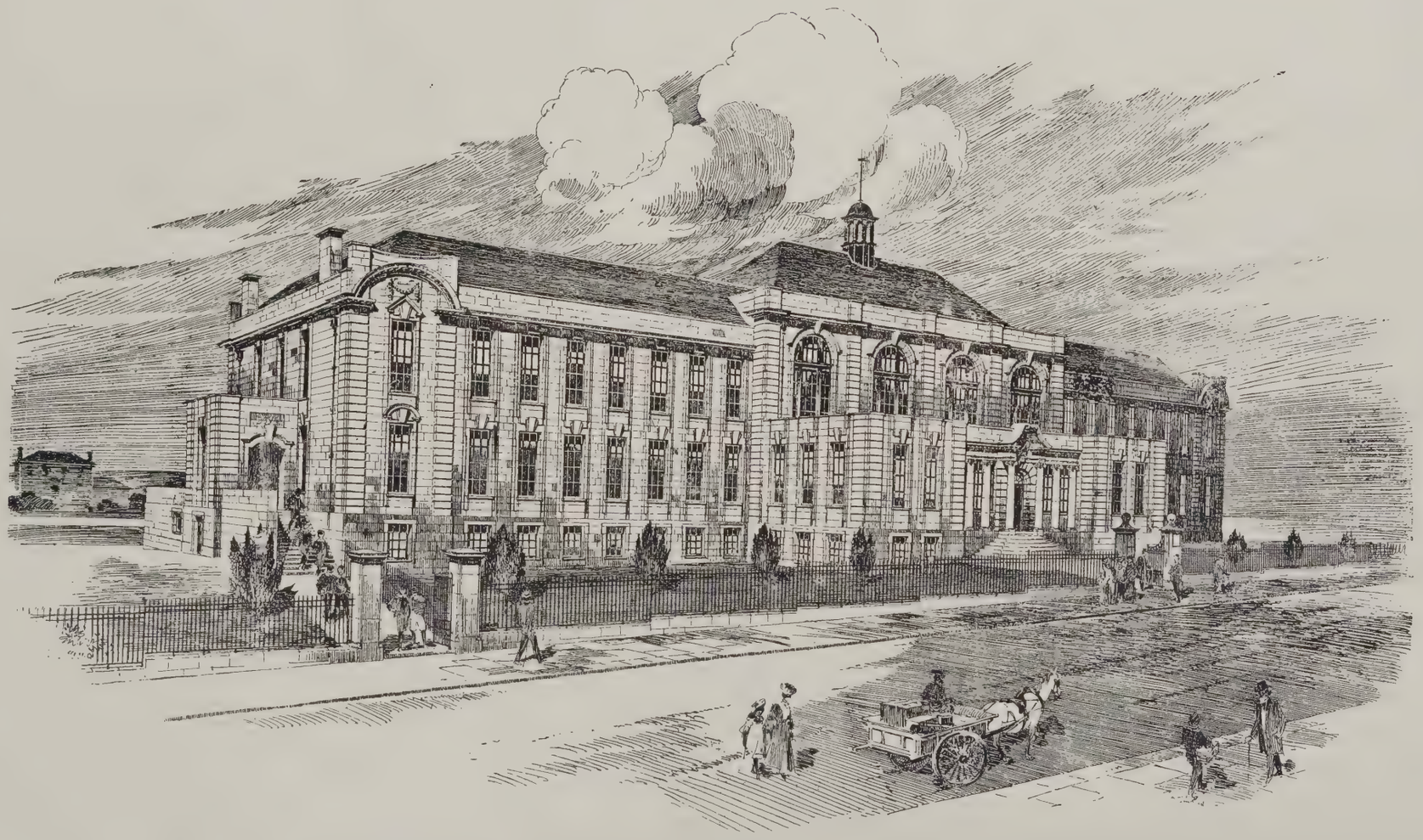


GROUND PLAN, NEW BUSINESS PREMISES, 4, WOOD HILL, NORTHAMPTON. HERBERT NORMAN, ARCHITECT.

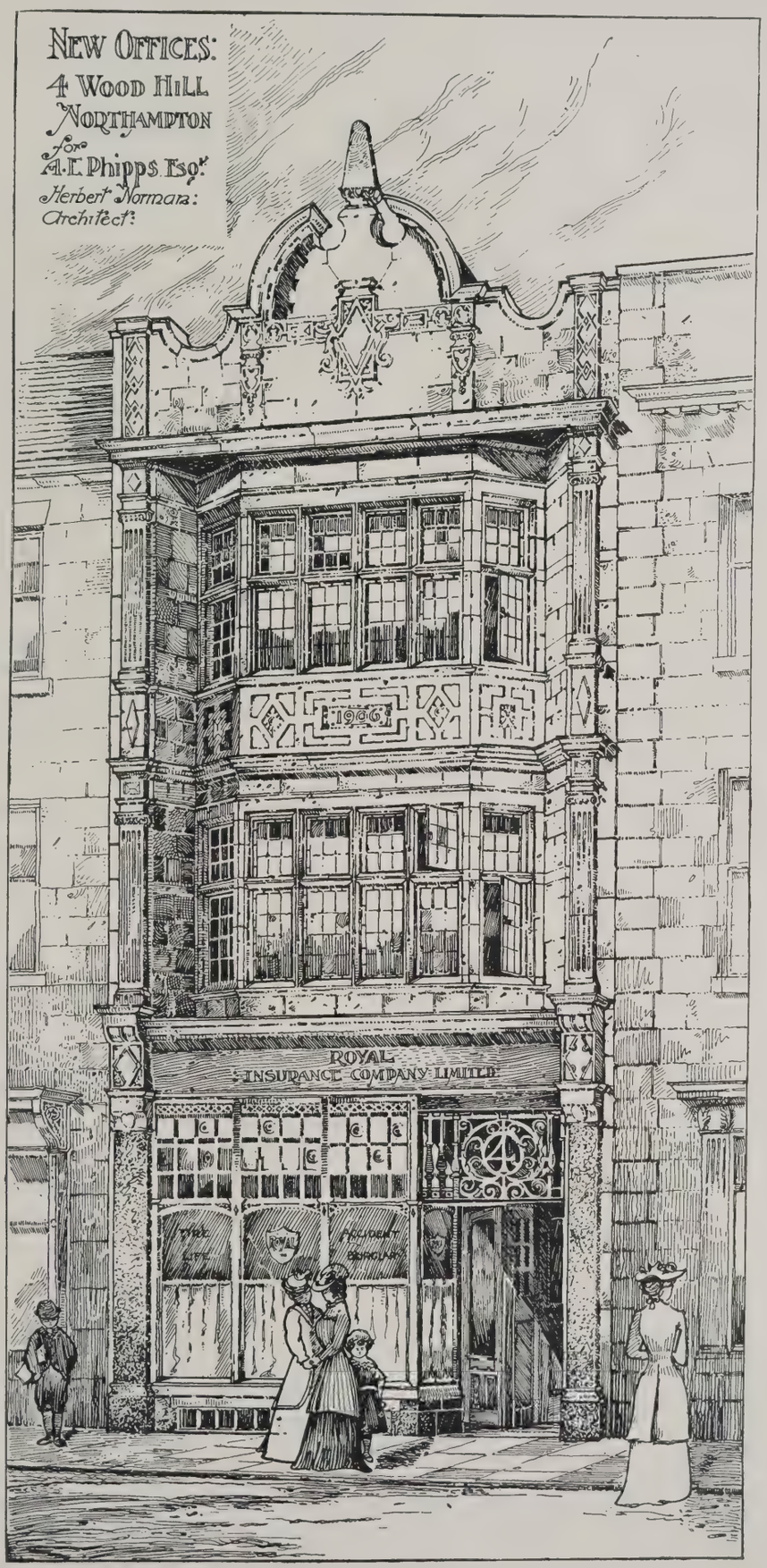
adequately display the work. We believe these will be of considerable value to architects, students, and others, for the purposes of study. Our plate this week is a drawing of the fine seventeenth century gates at Eagle House, Mitcham, and is the first of several details of this house that we propose to publish. Concerning this house, Mr. Seddon has furnished us with the following particulars:

"Local tradition names Sir Christopher Wren as the architect of this house, but it is not improbable that, like many other houses of the later Renaissance, it is founded on Inigo Jones' designs; for Coleshill Eagle House relies for its effect on symmetry, good detail and proportion; the materials of which it is built being of the most ordinary kind. The walls are of yellow stocks with red quoins and plinth; the arches to window openings, string courses, and chimney heads, are in gauged red brickwork, clean and sharp to this day. The hood to entrance and the eaves cornice are of wood. The roof is covered with green slates, with a lead flat and lantern at top, enclosed by a massive wooden balustrade; from here a magnificent prospect is afforded over the country. The ground floor window openings on north and south elevations may have been bricked up in the days of the window tax; there is a straight joint at the reveals. The bottom sash of the staircase window is now removed, and the opening filled with panelling and door to modern building, but the jamb lining and pulleys remain, giving sufficient indication for its restoration on paper. A flight of steps was at one time a prominent feature of the garden elevation, but no trace of it remains, nor anything to show how the symmetry was maintained. Internally the ground, first, and second floors are panelled throughout. The house has fallen somewhat into decay, and like the wrought iron gates, has suffered from ill treatment. The date on the rain-water heads is 1705."

Lord Chatham's retreat at Hampstead, known as North End Place, and formerly as Wildwoods, was offered at auction on November 17th, but had to be withdrawn; the highest bid being £14,000, whereas the property had cost the vendor altogether nearly £27,000.

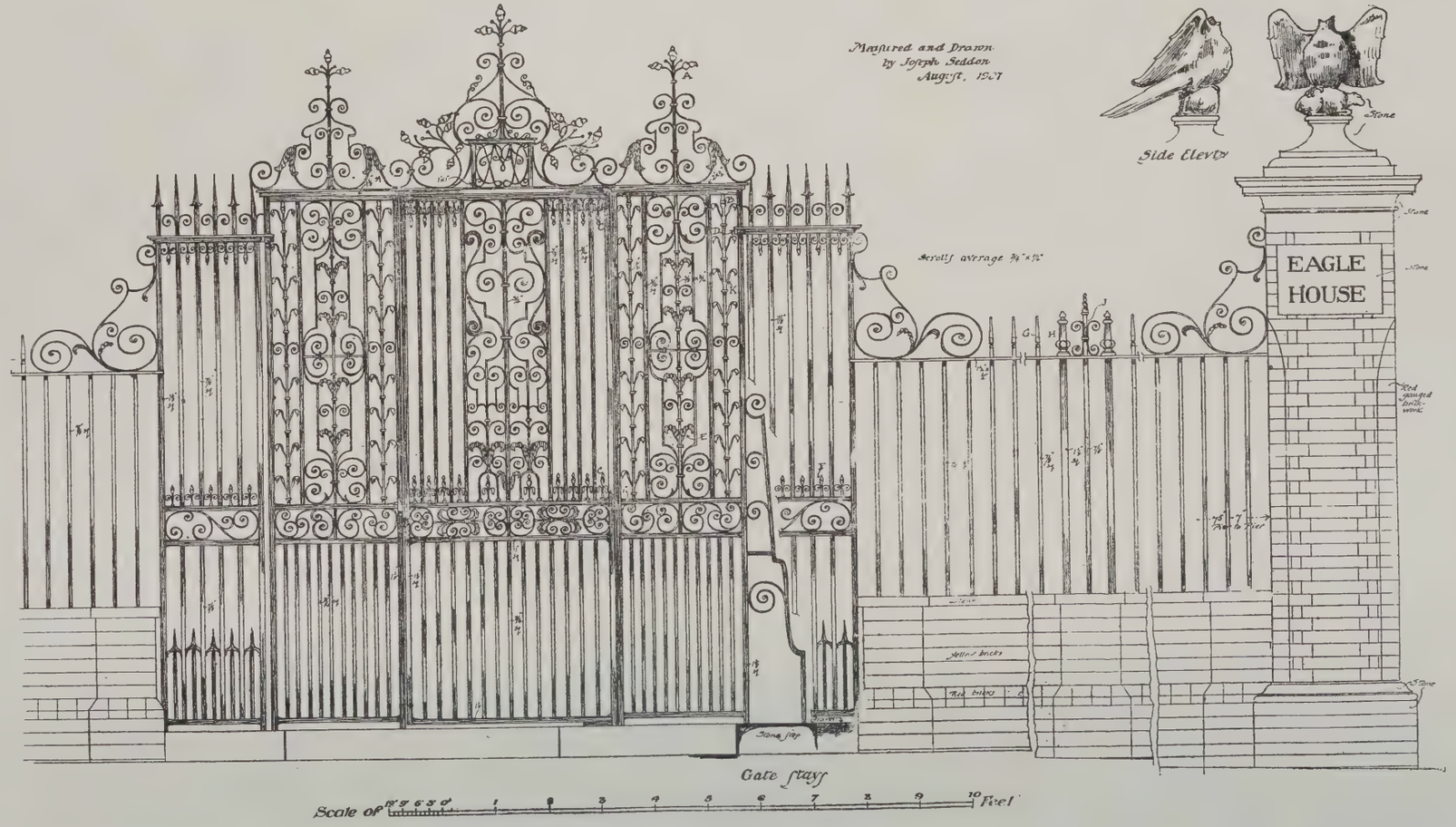


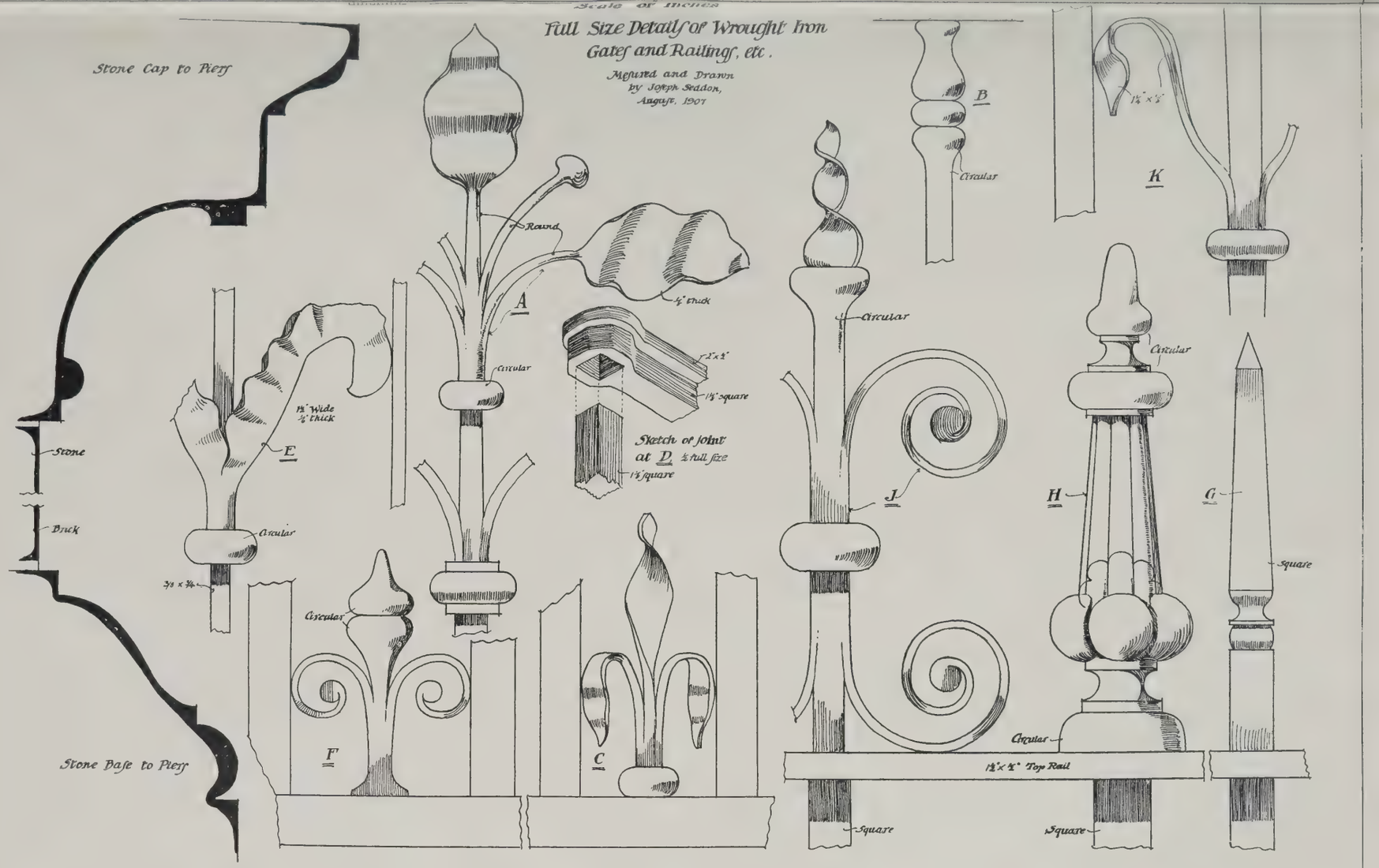
THE COWDENBEATH NEW HIGHER GRADE AND MINING SCHOOL. WILLIAM BIRRELL, ARCHITECT.


NEW OFFICES:
4 WOOD HILL
NORTHAMPTON
For
A.E. Phipps Esq.
Herbert Norman:
Architect:
1906
ROYAL
INSURANCE COMPANY LIMITED
4
FIRE
LIFE
ROYAL
ACCIDENT
BURGLARY

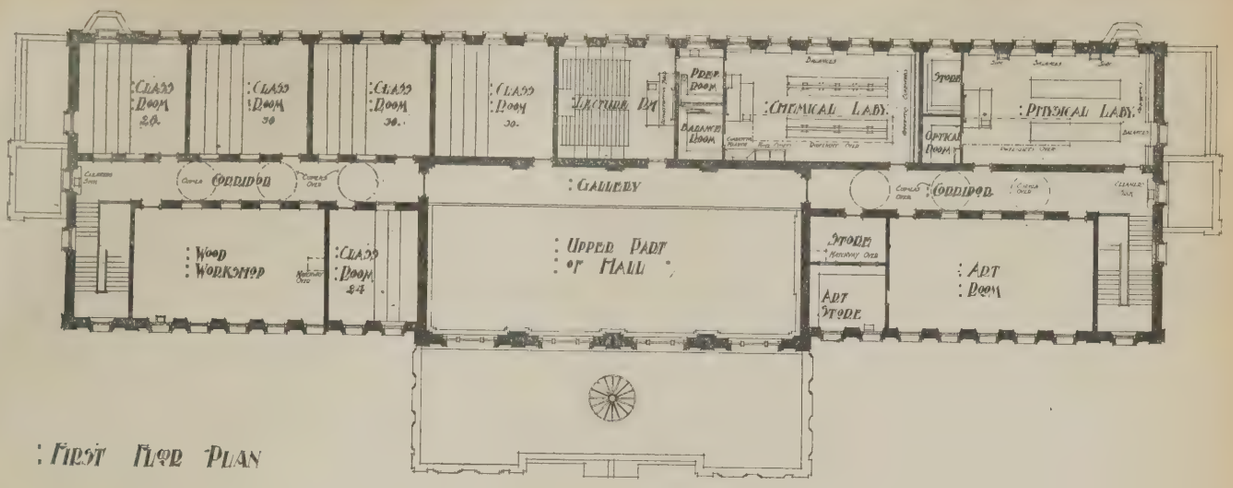
EAGLE HOVSE MITCHAM

DETAIL OF WROVGHT IRON. ENTRANCE GATES AND RAILINGS, &c.

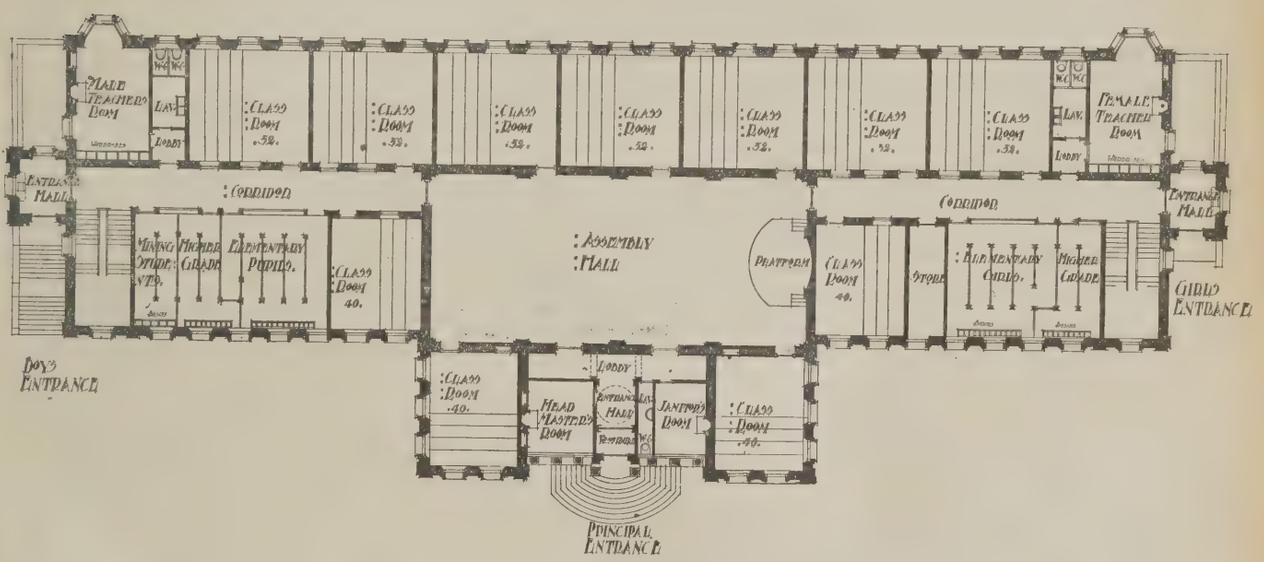




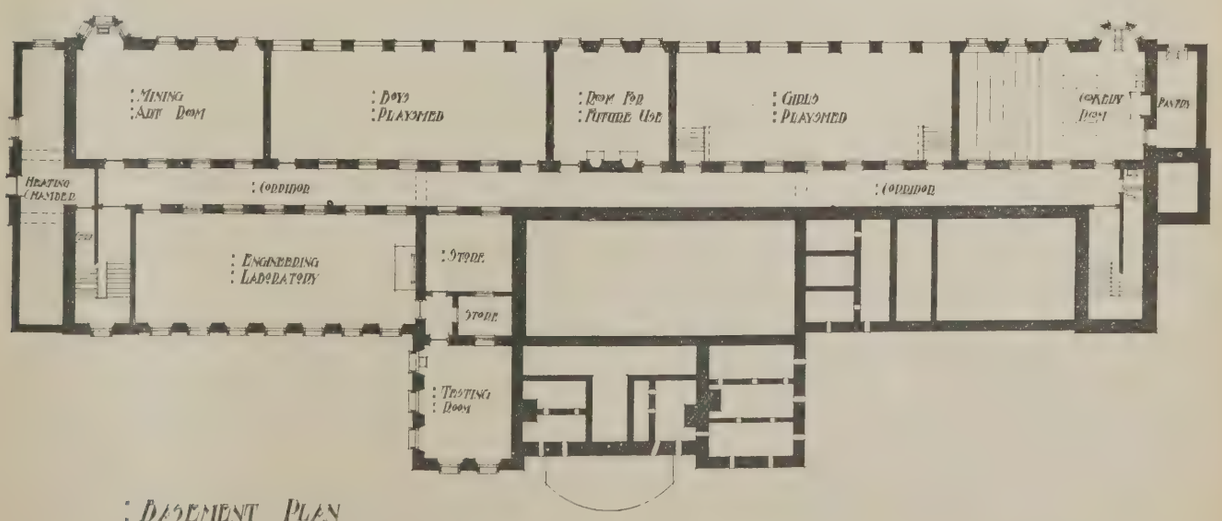
MEASURED DRAWINGS. No. 1. GATES, EAGLE HOUSE, MITCHAM. MEASURED AND DRAWN BY JOSEPH SEDDON.



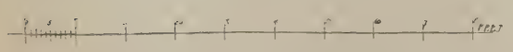
FIRST FLOOR PLAN



GROUND PLAN



BASEMENT PLAN



THE COWDENBEATH NEW HIGHER GRADE AND MINING SCHOOL. WILLIAM BIRRELL, ARCHITECT. [*See Centre Plate.*]

Proposed New Works.

The Local Government Board has decided to hold, or has recently held, as the appended dates respectively indicate, inquiries into proposed expenditure by public bodies as follows:—Water supply, works, and plant, Ystradgynlais R.D.C., £1,530, for Colbren (November 25); Birmingham C.C., £3,525, for a boating pool (November 25); Haslingden B.C., £400 (November 25); sewerage, drainage, sewage disposal works, and plant, Weybridge U.D.C., £3,500 (November 25); Pontardawe R.D.C., £14,000 (November 24); Failsworth U.D.C., £2,512 (November 26); Shoeburyness U.D.C., £250 November 24); Stone R.D.C., £2,700, for Hanford (November 27); Folkestone B.C., £30,000 (December 1); Finchley U.D.C., £6,350 (November 24); street improvements, widenings, new roads, public works, and pleasure grounds, Royton U.D.C., £13,000 (November 27); Great Crosby U.D.C., £2,400 (November 24); Failsworth U.D.C., £5,205 (November 26); Barking Town U.D.C., £500 (November 27); Shoeburyness U.D.C., £1,267 (November 24); Heston and Isleworth U.D.C., £9,298 (November 26); Birmingham C.C., £9,000 (November 25); Haslingden B.C., £4,000 (November 25); Finchley U.D.C., £11,784 (November 24). Various, Luton B.C., depo extension, £2,150 (November 25); Oxford C.C., £5,00, for reconstruction of cattle market (November 24); Shoeburyness U.D.C., £900, for fire station, etc. (November 24).

Amersham.—At the recent monthly meeting of Amersham Rural District Council, the following were among the plans approved:—House, Parkfield Avenue, Chasham Bois, Messrs. B. Stone and Son; additions to house, Pollards Wood, Chalfont St. Giles, Messrs. Jarvis and Richards; house, Parkfield Avenue, Chesham Bois, Mr. H. Belch; house, North Park Road, Chalfont St. Peter, Mr. H. Brown; new drainage, The Firs, Great Missenden, Mr. G. Bailey; house, Penn Road, Penn, Messrs. Burgess and Myers; house, Orche Hill Avenue, Chalfont, Mr. W. T. Walker; dwelling-house, Bull Lane, Chalfont, Messrs. Walker and Hopkins; iron room, Holmer Green, Messrs. T. E. Smith and Co.

Berkshire.—The Berkshire County Council has been recommended by its education committee to apply to the Local Government Board for sanction to the following loans:—A sum of not exceeding £7,920 for the erection of a boys' secondary school at Maidenhead. A sum not exceeding £3,790 for the erection of a Boys' Council School at Wallingford. A sum not exceeding £3,570 for the erection of a council school at Waltham St. Lawrence. A further sum of £500 (in addition to the amount of £886 already sanctioned) for the erection of a manual instruction and cookery centre at Abingdon.

Finchley.—Finchley District Council has received the sanction of the Local Government Board to borrow £5,758, in connection with street improvements.

Hereford.—The Local Government Board has sanctioned the scheme for demolition and re-building works on the Bewell Street area. New roads and sewers on the Barrs Court Land are to be started immediately.

Lancashire.—The Lancashire Education Committee have decided, by 20 votes to 19, to build a training college for 153 female teachers, and to invite other authorities to co-operate in the scheme, which will cost £43,000, of which the Government will provide three-quarters.

London, W.—It is proposed to build a new hospital in Bulstrode Street, London, W., to supersede the present premises of the West End Hospital for Nervous Diseases, in Welbeck Street. In order that the proposed building may be thoroughly up to date, the committee of management have deputed Mr. Ian Malcolm, Dr. Harry Campbell, Dr. T. D. Savill, and Mr. Paul Phipps to form a travelling commission to visit and report on similar institutions on the Continent.

Newbury.—A Local Government Board enquiry was held here on November 17th, respecting an application for a loan of £1,500 for the demolition of the Georgian town-hall. The removal of this building will enable the widening of Mansion House Street.

North Berwick.—At a special meeting of the town council, it was announced that the late Miss Elizabeth Edington, had bequeathed to the town council, in trust, free of legacy duty, £10,000, for the erection of a convalescent home, in or near North Berwick, to be called the Edington Convalescent Home.

Oxford.—The City Council has applied to the Local Government Board for sanction to borrow £5,000 for the reconstruction of the cattle market.

Staines.—At a recent meeting of Staines Rural District Council, the following were among the plans approved:—Mr. W. G. Ratcliffe, a pair of villas in Staines Road, Bedfont; Mr. E. L. Shepard, a bungalow at Reedsfield Road, Bedfont; Mr. H. J. Barrett, three houses in Redmead Road, Harlington; Mr. E. Perrott, a bungalow in Townsend Road, Ashford; Mr. G. W. Passingham, a house at Bath Road, Poyle, Stanwell.

Stirling.—The directors of Stirling Royal Infirmary recommend an extension of that institution to provide twenty-one more beds. The sum required will be about £5,000.

Walsall.—At the last meeting of the streets committee of Walsall Town Council, only four sets of building plans were submitted.

Waterford.—The Viceregal Commission having recommended the construction of a steel bridge, at an estimated cost of £114,500, the Harbour Commissioners have lodged a formal protest against the "enormous outlay," and are pressing for an alternative scheme to be proposed by the various local public bodies who are interested in the matter. A ferro-concrete structure is suggested.

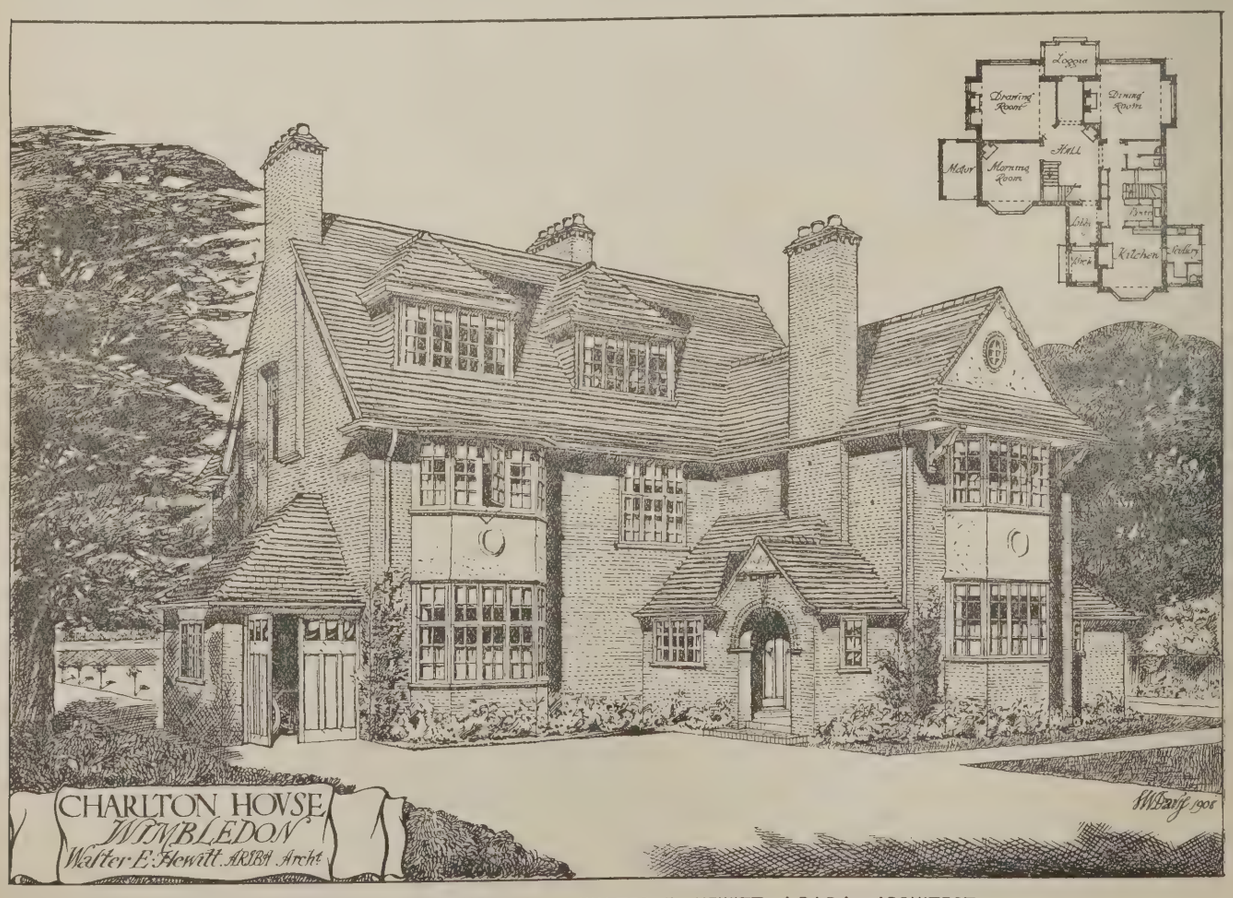
Buildings in Progress.

Harrogate.—A new mission-room for the Grove Park district of Harrogate, of which the foundation stone has just been laid, is to cost, with the land, about £800. The external walls will be constructed of local bricks, covered, from the ground floor upwards, with roughcast, and the roof will be covered with Welsh slates. Mr. Samuel Stead, of Harrogate, is the architect, and Mr. R. Airton, also of Harrogate, the builder.

Langside, near Glasgow.—The foundation stone has just been laid of Battlefield Church, Ledard Road, which is to be built of red sandstone from Corsehill Quarry, Dumfriesshire, and has been designed in early English style by Mr. H. E. Clifford, F.R.I.B.A., of Glasgow. The area and choir will accommodate 514 persons, and the galleries, which are to be supported on steel joists, will seat 328. The total cost of the church, with a hall for 700 persons, is estimated at £6,000.

London.—A start has been made on the works for London's new county hall, on the Surrey side of Westminster Bridge, where the first few piles have been driven into the mud of the foreshore. The contractors for the first portion of the work are Messrs. Price and Reeves, and the contract for the embankment has been let for £62,662.

Rawcliffe.—A new chancel to the parish church of St. James, which has just been dedicated by the Bishop of Beverley, has been built from designs by Mr. Walter H. Brierley, F.S.A., of York; the contractors being Messrs. William Ainley and Co., of Doncaster. The cost, including furnishing, has been about £3,000, which was given by the late Mr. Ralph Creyke, of Rawcliffe Hall.



CHARLTON HOUSE, WIMBLEDON. WALTER E. HEWITT, A.R.I.B.A., ARCHITECT.

This house was recently erected in the Murray Road, Wimbledon Common. The plan was largely influenced by the site being narrow (70 ft. wide), for the accommodation required, and the sunny aspect (S.W.) being in the rear. The external walls are of red brick of varying shades, the headers being of a darker colour; and the roofs are of thick hand-made sandfaced tiles. Mr. A. Leather, of Wandsworth, is the builder.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.
Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Finding Girder Sections.

CRICKHOWELL.— SURVEYOR writes: "Are there any instructions published by means of which, and the tables of sections supplied by the makers, one may quickly arrive at the size and weight of a steel girder required in a particular position?"

The handbooks published by firms such as Dorman, Long and Co., Ltd.; Redpath Brown, Ltd.; and H. J. Skelton and Co., give the safe uniform loads which given sections will carry, and also the weight per foot run; otherwise there is no quick way of arriving at the weight and size of a steel girder required in a given position. The general procedure is to find the maximum bending moment in inch-tons (M). Dividing this by the working stress (seven tons per sq. in. for steel), we get the necessary section modulus, and then, if the girder is of a type built up of joists or channels and plates, we choose a section from the catalogue with a modulus not less than this. If the girder is a plate or bar girder, we proceed as explained in the standard text-books on the subject. Compare the writer's book, "Theory and Design of Structures" (by Ewart S. Andrews, B.Sc.: Chapman and Hall, London; 9s. net), p. 528 onwards. A.

Rights of Adjoining Owners.

SOUTHSEA.—H. writes: (1) A and B are adjoining owners. A room is A's house, on the second floor, is lighted by a window overlooking the roof on B's premises. A is contemplating rebuilding, and in doing so will raise the height of his storeys. Will the right of light (ancient) be vitiated by altering the height of window to suit it to the new conditions? (2) B's roof abuts against and is maintained by the wall of A's house (not a party wall). Will A be justified, after giving B due notice of his intentions, in taking down this wall, and will B be entitled to any compensation for disturbance during the removal and rebuilding of the said wall?"

(1) Yes, the window must remain—substantially at least—in the same position as the ancient light it supersedes. If "A" wishes to make any alteration in the size or position of the windows, he would do well to submit drawings to the owner of the adjoining property (the "servient tenement") for his approval. (2) I am of opinion that "A" will be doing rightly in taking down his wall (after duly giving "B" warning, in order that he may take any precautions against damage), but "A" must take every care that the work is carried out with all due speed, and in such a manner as not to cause unnecessary annoyance or damage to his neighbour. F.S.I.

Village Sanitation.

BIGGLESWADE.—A.R.R. writes: "It is proposed to install a system of scavenging with carts for removing the night soil (in the same way, with modifications, of course, as dust carts collect the rubbish from ash-pits), in a certain village having no sewage system. I understand that the system of scavenging has been started in other villages, and (with how much truth I cannot say) that it constitutes a very considerable annoyance to the inhabitants. I should be glad to have an opinion on this method of village sanitation. Also I should like to know whether there is anything better than the dry earth system, where gardens exist?"

The system of sewage disposal of which you speak has been adopted in many villages and quasi-urban districts, and I have heard good accounts of it. No doubt the makers of the sanitary carts could give you the names of particular places to which they have supplied their apparatus, and you could then make personal enquiries about it. The only village where it is used of which I have any personal knowledge, reports well of the system, but, of course, it entails an addition to the rates for doing work which each occupier (in an ordinary village) can do for himself without expense. There is, in the writer's opinion, nothing better and more healthy than the dry-earth system, whether it is worked with the ordinary bucket or with some such apparatus as Moule's; the greatest mistake we are making in the country nowadays is the multiplication of cesspools for bottling up the sewage until it is foul, and then (and only then) finally disposing of it! Some day our sanitary experts will awaken to the fact that this method is not only illogical, but is abominably insanitary; but at present it is unfortunately "the correct thing." F.S.I.

Ascertaining Stresses in Roof Trusses.

ENFIELD.—O. J. D. writes: "In determining the stresses in the members of a roof truss (wood or steel) by the method of sections (or by taking moments) I find I am unable to distinguish the nature of stress obtained whether tension or compression. Will you kindly explain how this distinction is made?"

To determine, when working by the method of sections, whether any particular bar is a tie or a strut, we proceed as follows: Imagine the side opposite to that about which moments are being taken to be fixed, and suppose that a piece of the bar in question is cut out; then, if the tendency of the forces is to open the cut further, the bar is a tie; but if the tendency is for the cut to close, the bar is a strut. Consider, for example, the somewhat usual truss shown in Fig. 1, and take the bars across the section xx. To get the stress in DC,bc, take the moment of all forces to the right of xx, about the point A, where the other two bars BC and DE meet; then if this is M force in DC $= \frac{M}{Ax} =$ in this case $\frac{1 \times 5}{5} = 1$ ton.

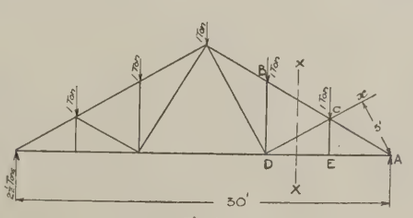


Fig. 1.

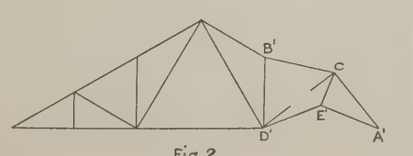
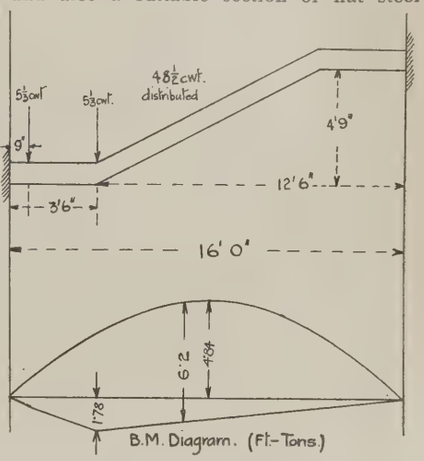


Fig. 2.

Imagine DC to be cut through, then the resultant force to the right is two tons upwards, which *tends* to distort the truss, as shown in Fig. 2, from which it is clear that DC is in tension. If BC were cut through, then the portion DCAE of the truss would tend to rise and pivot about the point D. This would tend to close BC, so that BC is in compression. A.

Stresses in Stair Stringer.

KIRKINTILLOCH.—J. S. writes: "The accompanying sketch shows the elevation of a fire-escape stair stringer, loaded as shown, and in addition the uniformly distributed load which the stringer must be calculated to carry is 48½ cwts. Please give a suitable section of channel steel, and also a suitable section of flat steel



plate, either of which might be used weakening by bolt holes not to be taken into calculation. Please state method employed in making calculation."

The accompanying figure shows the stringer and the loads which it has to carry. The bending moment diagram can be obtained as shown by considering the stringer as a simply-supported beam of span equal to the horizontal projection, and loaded in the given manner. This will not be quite accurate, as the ends are partly fixed; but it errs on the right side, and the fixing will not be sufficiently firm to treat the case as a beam with ends fixed. In addition to the bending-moment, there will be a direct thrust in the stringer which will in this case be negligible. The B.M. diagram then comes as shown, the maximum B.M. being about 6.2ft. tons. Taking a working stress of seven tons per sq. in., the necessary section modulus will be

$$= \frac{\text{BH. in inch tons}}{\text{Stress in tons per sq. in.}} = \frac{6.2 \times 12}{7}$$

$= 10.6$ inch units nearly. A 7in. x 3in. British Standard Channel would do for this, or a flat steel plate 8in. x 1in. The former of these is obtained by consulting the properties of standard sections; the latter from the formula

$$Z = \frac{bh^2}{6} = 10.6$$

where b is the thickness and h the depth of the plate. A.

Stresses in an Arched Roof.

MANCHESTER.—RETLAW writes: "A particular building that has recently come under my observation has an arched ceiling over, as per sketch enclosed, and as there is not sufficient room between

ceiling and roof for a braced truss, the engineers supplying same propose to put in simply a 6in. x 5in. steel joist for a 30ft. span. Is it worked out on the principle of the arch? I shall be glad if you will kindly explain how the problem is solved.

The stresses in the arched roof shown can be worked accurately only by the elastic theory of rigid arches. An approximate solution can be obtained by imagining pin joints to be placed at the crown C and the springings A and B; the stresses are then obtained as follows: On a sector line set down lengths 4,3; 3,2; 2,1; 1,0 to represent the forces, the spaces being numbered as shown, and take any convenient pole P and draw the link polygon A*abde*B. In this case, since the loading is symmetrical, the pole P is best taken on the horizontal line through the point 2. Draw a perpendicular through polygon in D.

Now take a new pole P_1 such that $2P_1 = \frac{2P \times DE}{CD}$, and draw a new link polygon Aa_1 b_1 d_1 e_1 B, which will pass through the point C. Then this link polygon is the line of pressure, and the rays of the sector figure give the thrust. According to the theory of arches, the bending moment at any point of the arch is equal to the thrust multiplied by the vertical distance between the centre line of the arch and the line of pressure. The maximum value of the B.M. is Q x X.

Then the max. stress is $\frac{Q}{A}\left(1+\frac{xd}{k^2}\right)$

Where A is the area of the cross section.
Where k is the radius of gyration about the centroid.
Where d is the distance from the centroid to the extreme fibre.

For a 6in. x 5in. British Standard steel joist A=7.35 sq. in.; k=2.43 in., and d=3 in.; and from the above graphical construction Q=3.7 tons and X=13.2 in.

∴ Max. stress in joist

$$-\frac{3.7}{7.35}\left(1+\frac{13.2\times 3}{2.43^2}\right)=3.9 \text{ tons per sq. in.}$$

This is quite a satisfactory stress, and although we have only used an approximate method, the result will not be far wrong. The above calculation makes no allowance for temperature stresses, which will occur in this case; but such stresses will not for this country come more than two tons per sq. in., so that the total stress will not come more than the allowable value of six tons per sq. in. The querist will find fuller explanation of the method of dealing with a three-pinned arch, and also with rigid arches, in the writer's book on "Theory and Design of Structures" (by Ewart S. Andrews: Chapman and Hall, Ltd.; 9s. net).

A.

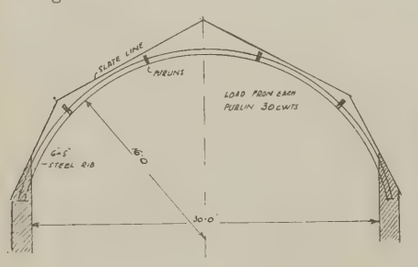


Fig. 1.

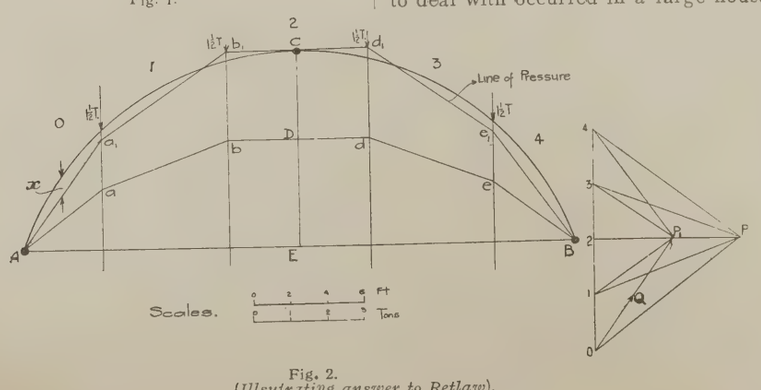


Fig. 2.
(Illsutrxting answer to Retlaw).

Filling up Space between Steel Joists.

CRICKHOWELL.—SURVEYOR writes: Is there much or any gain of carrying strength in filling up with concrete the space between two steel joists, which are bolted together in the ordinary way?

There is some gain in carrying strength in filling up the space between two steel joists with concrete, but no allowance is usually made in designing. A.

Oak Roof Timbers Crumbling.

CRICKHOWELL. — SURVEYOR writes: "What is the best way of dealing with an open oak roof of a church, the timbers of which are crumbling away from worm attack or dry rot? Can this decay be arrested, or must all affected timbers be removed?"

The best way is to remove affected timbers, and provide better ventilation. The decay may be arrested by various processes, although many supposed remedies are of doubtful utility. The querist will find the best description of the various processes in a book by Dr. A. W. Keim, entitled, "Prevention of Dampness in Buildings" (Scott, Greenwood and Co., London). A.

Preventing Dry Rot.

RENFREWSHIRE.—DRY ROT writes: "Dry rot is seen in the first-floor joists of a principal room in a large mansion. The ends of the floor joists and the woodwork of the windows above and below have been attacked. All infected wood or wood showing the slightest trace of the fungus has been removed, but the point of difficulty is this: The fungus has penetrated the joints of the stone wall to a very large extent, and cannot be removed, although the outside of the joints of the stonework have been carefully washed with a solution of corrosive sublimate. What can be done to prevent the fungus attacking the new woodwork which will be put in presently?"

I fear that there is but little doubt that the new woodwork will perish in precisely the same way as the old timbers, unless arrangements are made for altering the circumstances under which it is fixed. Are the timbers ventilated at the ends? Dry rot cannot be remedied, but must be prevented. The worst case I have ever had to deal with occurred in a large house in which a heating apparatus had recently been installed; in that instance, although there had been no dray rot in the building since its erection, fifty years before, the presence of felt under the roof slates prevented ventilation, and the condensation moisture rotted off the feet of all the rafters rapidly. F.S.I.

Objectionable Smells from Oil Engine.

WISBECH.—H. writes: Can you please inform me of some preventive for the objectionable smells of the oil coming from the exhaust from an oil engine? There if, of course, the usual silencer, but still the nuisance is very great.

The unpleasant smell from the exhaust of an oil engine is, of course, caused by the imperfect combustion of the oil, and it may to some extent be mitigated by careful driving and thorough cleansing. Further alleviation has been afforded by placing hay or something of that kind at the outlet of the exhaust pipe, but I fear that there is no real remedy possible—if one has an oil engine, one must have the smell attached to it. I myself was lately greatly annoyed by an engine exhausting at ground level, and I therefore fixed a pipe in a tree, thinking to find a remedy. The only result was that I had the effluvia on the first floor as well as upon the ground floor. F.S.I.

Ingredients of British Asphalt.

HULL.—J. J. writes: "Can you oblige me with a recipe for the manufacture of British—*i.e.*, artificial—asphalt? I am aware that it is a compound of tar, pitch, and sawdust or limestone, but cannot find any exact proportions given in the text books."

I fear you will have some difficulty in finding out the exact quantity of each ingredient; but "British Asphalt," originally known as "Patent British Asphalt," is a mixture of quicklime, pitch, sawdust, and ground iron-slag, heated and laid in a semi-liquid state. F.S.I.

Council Fails to Enforce By-laws.

LONDON W.—ARCHITECT writes: "Has the council of a rural district, which has adopted building by-laws under the Public Heath Acts, the power to approve of plans which are not in accordance with those by-laws? What would be the proper course to pursue to compel them to enforce the same? Is there any clause under which a council may use their discretion whether they will enforce compliance with their by-laws or not?"

The by-laws are all so worded as, *prima facie*, to leave all authority of enforcing, or not enforcing them, in the hands of the local sanitary authority, and, as a matter of fact, these authorities do often pass plans which are not strictly in accordance with their by-laws, or which disregard the rules of the Public Health Acts, as to the line of frontage. If, however, this relaxing of by-laws should cause a hardship to an adjoining owner, he would have a legal remedy against the Rural District Council, and I believe the correct process would be by an application to the High Court for a "mandamus" to compel the sanitary authority to show cause why they were neglecting to enforce the by-laws. It would, of course, be necessary to prove that the hardship was a real one, and not merely a case of unfairness, which in reality no damage to the complainant. If legal action is not desired, an appeal may be addressed to the Local Government Board, but whether with any useful result or not I cannot say. F.S.I.

Correspondence.

To the Editor of THE BUILDERS' JOURNAL.

R.I.B.A. Election of Fellows: Proposed Suspension of By-law 60.

SIR,—At the general meeting at the Institute, on Monday last, the Secretary made the following announcement:—

"The Council hereby give notice, under Bye-law 60, that a Special General Meeting will be held here on Monday, November 30th, at 7.45 p.m., before the Business Meeting, to consider a resolution which they submit to suspend Bye-law No. 9, excepting the first sentence."

As Clause No. 9 was not read out, the full importance of the proposed alteration in the by-law was probably not appreciated by those present.

We are anxious that the members of the Institute should not be taken unawares or by surprise, and we therefore advise them to read the by-law, from which they will see that, if the resolution were passed, all power of demanding a poll for the election of Fellows would cease.

We feel that there is no need to comment upon the reason for this action; but the violation of the principle of the ballot-box seems to us to be most unconstitutional. We leave it for the Associates to take what steps they may deem desirable to protect the distinction which they have gained for themselves by passing the examination.

GEORGE HUBBARD.
ALFRED W. S. CROSS.

Salmon Ladders.

SIR,—Your correspondent who asks a question on this subject on page 390 in your issue of November 18th, will find a collection of models illustrating the various forms of the salmon ladders and their application, in the Frank Buckland Collection at the South Kensington Museum. I know of no literature on the subject. FREDERICK CHATTERTON.

SIR,—*Re* the enquiry in your issue of November 18th about "Salmon Ladders," I think you correspondent might get information from either Mr. P. D. Malloch, New Scott Street, Perth, or of Mr. H. I. Bell, C.E., Athole Street, Perth. I know that both of the above have been connected with the construction of salmon ladders recently in Perthshire and other districts.

Glasgow. JAMES WRIGHT, JUNR.

Architects' Assistants in Egypt.

SIR,—With reference to your remarks relating to the probability of architects' assistants finding work in Egypt, perhaps a note of warning may be of use in preventing disappointments to anyone intending to try their fortune here. At present there is very little work of any importance going forward, and I know of four instances where failure to obtain work has occurred within the last six months, one only being an Englishman. Most of the work is done by Maltese, Italians and Greeks, and these can live on a lower wage than a Britisher, who must expect to spend at least £10 per month in living, with incidental expenses. Assistants should be on their guard against suggested opportunities of success. I find that even men who are regarded as honourable have an unhappy way of creating a false impression in the minds of those applying for positions. This is specially the case with young men, who being less experienced, are more easily handled after having been bound by, in most cases, a very one-sided agreement. The prevailing madness in high quarters for what is miscalled economy is as prevalent here as at home.

Cairo. MUNRO WILSON.

The Status of the Architect.

SIR,—I notice that comparatively few architects have taken advantage of your invitation to state their opinions upon the above subject, probably because they are practically all agreed that there is only one way of dealing with it, viz., by means of a Bill for the statutory examination and registration of architects.

The views of Mr. A. Harry Heron, set out in your current issue, are almost identical with the lines laid down in the Bill which the Society of Architects is promoting in Parliament, and, as was recently pointed out in Mr. Bond's presidential address, no serious alternative to a Registration Bill has been yet put forward for dealing with this queston, though it has been actively before the profession for more than twenty years. I venture to think that if the opinion of every architect could be obtained, it would be found that they are in sympathy with the principle embodied in the Bill. With regard to the suggestion that the R.I.B.A. should be called upon to form some definite plan of action, it is common knowledge that we have always maintained that this is the proper procedure, and, provided that the principle contained in our Bill is untouched, we have intimated our willingness to hand over the Bill to the Royal Institute and to give them the benefit of the work which we have done during the past twenty years.

There is, however, one difficulty which I think has not been touched upon, and that is the want of continuity of policy on the governing body of the Royal Institute in relation to this question. For instance, during one session they will get so far as drafting a Bill, but before anything definite can be done the annual election comes along, the *personnel* of the Council is changed, and new men come in who are antagonistic to the proposal. The Society of Architects, on the other hand, although similarly placed as regards yearly changes on its Council, is, as a body, in agreement on the Registration question, and the new Council continues and extends the work of its predecessor in this respect. We have a large following on the principle involved, apart from our own considerable membership, and the realisation of our object is only a question of time.

In the meantime, failing any other remedy, it is our intention to persevere steadily along the line we have followed for so long.

Yours faithfully,
C. MCARTHUR BUTLER.

R.I.B.A.

At the general meeting held on November 16th, after the minutes had been taken as read, Mr. Alexander Graham, hon. sec., regretfully commented on the great loss the Institute had sustained by the recent deaths of valued members, whose names were announced as follows: Francis Haslam Oldham, elected Fellow 1877; Alfred Darbyshire, elected Fellow 1870, and Vice-President 1902 and 1905; Albert Edward Gough, elected Associate 1873; Leslie William Green, elected Associate 1899, and Fellow 1907; David Gosling, elected Associate 1863, and Fellow 1873; Francis Adams Sprules, elected Associate 1906; Isaac Steane, elected Associate 1879; Louis Henry Isaacs, elected Associate 1858, and Fellow 1874; and Hugh Hutton Stannus, elected Associate in 1880, and Fellow in 1887. To the career of Mr. Stannus he paid an eloquent tribute.

At the conclusion of Mr. J. A. Gotch's paper on "The Development of House Design in the Reigns of Elizabeth and James," of which an abstract was given on page 389 of last week's issue, a vote of thanks to Mr. Gotch was proposed by Mr. E. Guy Dawber, and seconded by Mr. R. Phené Spiers. In the ensuing discussion, Professor Beresford Pite and Mr. Edwin T. Hall were the only speakers.

THE CONCRETE INSTITUTE.

The Concrete Institute held its first general meeting at the Royal United Service Institution, Whitehall, last Thursday evening, Sir Henry Tanner, I.S.O., of H.M. Office of Works (vice-president of the Institution) presiding, and some 200 members and visitors attending. At the commencement of the meeting, Mr. Edwin O. Sachs, F.R.S.Ed., chairman of the Executive, made an announcement as to the progress of the Institute, stating that it now comprises some 320 members, of whom nearly half are members of the Institution of Civil Engineers, and some 25 are distinguished Colonial engineers and architects. He pointed out the vast number of technical inquiries that had already reached the Institute, and that were being referred to standing sub-committees, and he emphasised the necessity for research in matters of concrete and reinforced concrete. He pointed out that £25,000 was being devoted by the American authorities to this subject, and some £20,000 by the German authorities, and he added that it was to be hoped that public funds would also be available for research in this direction in the United Kingdom.

Mr. Chas. F. Marsh, M.Inst.C.E., Metropolitan Water Board, then read a paper upon "The Composition and Uses of Plain and Reinforced Concrete," which was well received, and in which he pointed out some of the principal subjects which require research and further investigation, and in which he argued the necessity of standardisation both in calculations and practice. He dealt at length with the great advance made in the production of Portland cement, and the influence of this advance upon the users of concrete and reinforced concrete. He made a point of reinforced concrete requiring a special architectural rendering, and further indicated the advantage of architects and engineers not binding themselves down too much to special systems of construction.

An animated discussion followed, in which Sir John Cockburn, K.C.M.G., Messrs. Wentworth Shields, M.Inst.C.E., C. S. Meik, M.Inst.C.E., Bertram Blount, F.I.C., H. H. Statham, F.R.I.B.A., H. K. G. Bamber, F.C.S., W. T. Hatch, M.Inst.C.E., and other well-known authorities participated. The paper and discussions were thereupon summarised by Sir Henry Tanner, to whom a vote of thanks for presiding was proposed by Mr. Kirkaldy, A.M.Inst.C.E.

Mr. Charles Spooner, F.R.I.B.A., will shortly be removing from his present offices at 17, Bedford Row, W.C., to 23, Old Buildings, Lincoln's Inn, W.C.

Trade and Craft.

Glass Tiles and Slabs with Incised Ornamentation.

Mr. Gittins Powell, formerly with the firm of Messrs. J. and H. Patteson, of Manchester, has conceived a singularly happy method of tile-decoration, which Messrs. Aug. Brennecke and Co., 68, Finsbury Pavement, E.C., have converted to practice on a commercial scale. Mr. Powell's idea was that the surface of coloured glass tiles might be very effectively decorated by means of the sand-blast, or some similar process. Samples of this method of treatment that have been forwarded to us for examination entirely vindicate the process. In each case, a handsome pattern is formed by abrasion of the glazed surface, the sunk portion being, of course, "ground," or "matt," and thus affording agreeable contrast to the raised and glossy portion, and giving the effect of decoration in relief. The work is remarkably clear and true in its lines, and is obviously as permanent as it is pleasing. It is doubtless very suitable for the adornment of the walls of churches, banks, theatres, restaurants, etc. Architects' own designs can be reproduced; and we are given to understand that the process adds but little to the cost of the tiles. Coloured glass tiles and slabs of any dimensions up to 2ft. square can be treated. These glass tiles and slabs are to be on view at the next Building Trades Exhibition in London.

Fire-resisting Construction.

"Fire-resisting Structures, and their Behaviour in the Great Fire and Earthquake at San Francisco, 1906," is the title of an exceptionally chastely produced pamphlet by Mr. William Ward, chairman of the Granite Silicon Plaster Co., Ltd., 36, King's Road, St. Pancras, London, N.W. A photo-process frontispiece gives a view of the Kohl Building, San Francisco, taken immediately after the great earthquake and fire in April, 1906. This building, constructed with a full steel cage frame resting on reinforced concrete piers and a cantilever foundation, is seen standing serene and four-square amidst the ruins of brick structures. The damage to this building from the earthquake did not exceed £100, and consisted mainly in the loosening of marble wainscoting in the corridors. "The principal damage by fire was in the lower four storeys, and to several rooms on the seventh storey on the north side of the building. In every case the fire started in the respective rooms through the breaking of the glass of the exterior windows from extreme heat, igniting the contents of the rooms, and burning out everything in the way of furniture. That the fire did not spread entirely through the building and destroy it completely, as was the case in other buildings of this character, is undoubtedly due to the fact that there was no exposed woodwork either in the floors or in the finish of the building. The exterior windows were the vulnerable points, and had they been equipped with metal frames and with plate-glass, it is very probable that the building would have escaped all injury." Mr. Ward was in San Francisco during the erection of this building, and naturally took great interest in it, as he is exploiting two very important features in it—the hard plaster (identical in formula with the English granite plaster) used throughout the interior, and the 2in. solid partitions, which are identical with the partition made by the Granite Silicon Plaster Co. in England. He believes that the facts contained in the pamphlet demonstrate clearly that fire-resisting buildings can be erected.

The new telephone exchange for the National Telephone Co., just completed in Altrincham, has been carried out under the supervision of Messrs. Bromley and Watkins, architects, Nottingham. The whole of the constructional steelwork and fire-resisting floors were supplied by Messrs. Homan and Rodgers, Manchester.

Federation News.

BATH ASSOCIATION.
Secretary: E. J. B. Mercer.

The building trade here is in a dormant state, except for the number of relief works purposely put in hand to relieve the distress of the unemployed. Thanks to the action of the joint conference held some short time since between the committee of this association and the various trade secretaries, short time has been adopted by the majority of the master builders, so far as circumstances will allow, as also by the various committees of the City Corporation for the men in their employment—such short time to continue until the end of January; by which means it is hoped employment will be provided for at least an extra ten per cent. of those in need of it.

The slight dispute in the painting trade mentioned some time since has been settled in a manner satisfactory to both parties.

On October 9 the president of this Association, Councillor J. W. Knight, J.P., who is also chairman of one of the most important committees of the Civic Council, was elected Mayor of the City of Bath, with the cordial and best wishes of his fellow citizens. It may be mentioned as something probably unique amongst builders' associations, that Bath has no fewer than eight of its members serving the city on the Civic Council; and we may reasonably hope that their business capacity and practical experience will prove to be of service on the various committees upon which they are appointed to serve.

SOUTH SHIELDS ASSOCIATION.
Secretary: J. G. Robertson.

As proving the great stagnation there is in the building trade in South Shields at present, it may be mentioned that at the last meeting of the Town Improvement Plans Sub-Committee there was not a single plan before the committee—not even one for any minor alteration. This, it may be said, is a unique experience for the Plans Committee, and a gloomy one from the building trade standpoint, both as regards men and masters. It is to be hoped that soon we may have better things than this to report.

The annual meeting of the South Shields Master Builders' Association was held on Monday, Nov. 16, in the Victoria Hall, the president (Councillor J. T. Armstrong) presiding over a large and representative gathering. The secretary reported that the year had fortunately been free from the least friction with the operatives. The association had lost several members through death, but so many new members had been enrolled that the branch was numerically stronger than ever. Trade was very bad in the town—worse than it had been for years—and the outlook was not at all promising or reassuring. Despite that, however, the branch had resolved not to seek a reduction in the wages paid to the operatives, although it was believed that the state of trade warranted it. Therefore it was trusted that the employees would place this to the credit of employers in future dealings. The president also referred to the great value of the BUILDERS' JOURNAL, especially commending the useful information it contained—information, he said, that no up-to-date builder or contractor could afford to be without, and that could not be otherwise obtained. The secretary strongly urged upon all the members the necessity of becoming subscribers to the Journal.

The committee take the opportunity to acknowledge, in the report, their great indebtedness to their representatives on the Northern Counties Federation and also on the Tyne and Blyth Federation.

The hon. treasurer (Mr. A. Ross) presented a satisfactory balance sheet. He congratulated the members on the fact that, despite the heavy extraordinary expenditure that had been incurred during the twelvemonth, the branch was financially in a strong position.

On the motion of Mr J. Moore, seconded by Mr. T. Anderson, Councillor J. T. Armstrong was unanimously re-elected as president of the branch.

In returning thanks for his re-election, the president assured the meeting that all he could do would be done to forward the interests of the association. At the same time he called upon all the members to continue their labours on behalf of the branch, and requested the new members more particularly to take a lively interest in all that appertained to the society's workings.

On the motion of Mr. W. Brown, seconded by Mr. J. Shewan, Mr. T. Anderson was unanimously re-elected senior vice-president. A similar compliment was paid Mr. J. V. Jary, who was unanimously re-elected junior vice-president.

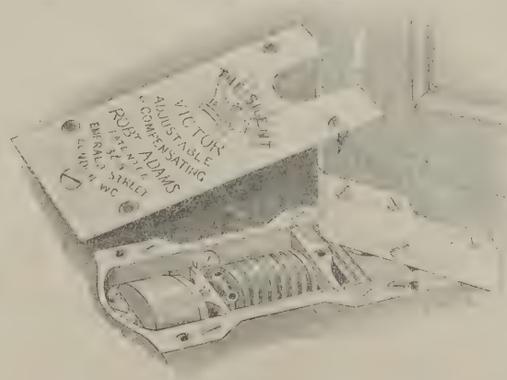
A hearty and unanimous vote recorded the fact of the re-election of Mr. A. Ross as hon. treasurer, on the motion of Councillor J. T. Armstrong, who referred to the branch's deep indebtedness to Mr. Ross as treasurer for the work he had done for the association. The motion was seconded by Mr. J. J. Mays. Messrs. W. Mabley and J. Moore were elected auditors.

A strong and representative working committee for the year was elected, including some of the new members. The president (Councillor J. T. Armstrong), W. J. Robertson, A. Ross and J. V. Jary, were elected our representatives on the Northern Counties Federation.

Errata.—In the report of annual meeting of the Birmingham Master Builders' Association, on p. 401, of last week's issue, it should have been stated that it was Mr. J. B. Whitehouse who moved the election of Mr. F. G. Whittall as president, and the name of the Lord Mayor of Birmingham should have been spelt Kenrick.

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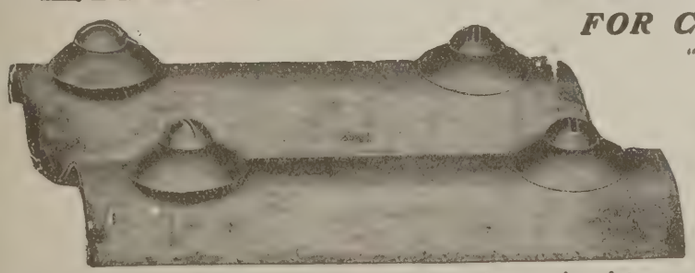
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Telegraphic Address: "Buildable, London."
Telephones: ADVERTISEMENT AND EDITORIAL—364, Westminster. COUNTING HOUSE AND PUBLISHING—2200 Holborn (six lines).
Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.
A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.
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Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Burton-on-Trent.—For erection and completion of proposed new schools in Guild Street, Burton-on-Trent, for the Rev. J. M. Flynn. Mr. Thomas I. McCarthy, architect, Central Chambers, Coalville, near Leicester:—

A. B. Moss, Coalville ...	£2,720	0	0
W Maule and Co., Nottingham	2,705	0	0
G. Kennard	2,571	13	0
G. H. Adams	2,500	0	0
S. Morley and Son, Derby ...	2,495	0	0
S. Lowe and Sons	2,495	0	0
G. Hodges	2,475	0	0
G. Orton, Coalville	2,468	0	0
R. Kershaw,* Princess Street...	2,450	0	0

*Accepted.

Durham. — Accepted for carrying out private street works on Western Hill, for the City Council.
J. McLaren, Gosforth, £1,190.

Great Yarmouth.—For the erection of the Gt. Yarmouth Port and Haven new offices, South Quay. Messrs. Olley and Haward, architects, Gt. Yarmouth:—

Hawes and Son, Norwich ...	£2,596	0	0
Cornish and Gaymer, North Walsham	2,585	0	0
R. Eastoe, Gt. Yarmouth ...	2,434	0	0
T. H. Yelf, Norwich	2,399	10	0
F. Grimble, Gt. Yarmouth ...	2,399	0	0
J. S. Smith, Norwich	2,397	0	0
Moore and Sons, Gt. Yarmouth	2,390	0	0
J. D. Harman, Gt. Yarmouth	2,390	0	0
C. Wiseman, Gt. Yarmouth ...	2,370	0	0
Searles Bros., Norwich	2,342	0	0
Spencer, Santo and Co., Ltd. Gt. Yarmouth	2,330	0	0
Jas. Leggett, Gt. Yarmouth ...	2,303	0	0
Youngs and Son, Norwich ...	2,287	0	0
Carter and Wright,* Gt. Yarmouth	2,277	0	0

*Accepted.

Great Yarmouth.—For the erection of dye-house at Messrs. Grout and Co.'s silk factory, Gt. Yarmouth. Messrs. Olley and Haward, architects:—

J. Bulls	£811	5	0
A. Gunns	772	19	0
Carter and Wright	758	0	0
J. E. Pestell	749	0	0
Spencer, Santo and Co., Ltd....	743	0	0
J. D. Harman	729	0	0
G. Chasteney	717	0	0
R. Eastoe	717	0	0
B. J. Beech	708	19	0
Moore and Son	697	0	0
F. Grimble*	689	0	0

All of Gt. Yarmouth. *Accepted.

Hull.—For erection and completion of art gallery to the public hall, for the Property Committee. Mr. Joseph H. Hirst, city architect:—

Quibell, Son, and Greenwood, Sculcoates Lane	£11,055
J. Peers, Beverley Road	10,963
G. H. Panton,* Anlaby Road ...	10,889

*Accepted.

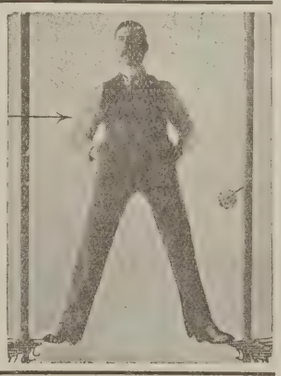
London.—For enlargement, etc., of Barrow Hill Road School, Marylebone, for the London County Council:—

G. S. S. Williams and Son, Thornhill Square	£17,631	0	0
W. King and Son, Vauxhall Bridge	16,630	7	0
Holloway Bros. (London) Ltd.	16,575	0	0
McLaughlin and Harvey, Ltd., 13, Brecknock Road	16,360	7	1
J. and M. Patrick, Wandsworth	16,274	0	0
C. P. Roberts and Co., Highbury	15,888	0	0
G. Godson and Sons, Kilburn Lane	15,860	0	0
Leslie and Co., Ltd., Kensington Square	15,747	0	0
Patman and Fotheringham, Ltd., Islington	15,743	0	0
Ford and Walton, Ltd., Kilburn	15,620	0	0
L. H. and R. Roberts, Islington	15,498	0	0
Treasure and Son, Ltd., Upper Holloway	15,401	0	0
E. Lawrance and Sons, Wharf Road, City Road	15,263	0	0
J. Parsons, 190-192, Waterloo Road	15,134	0	0
G. E. Wallis and Sons,* Ltd., 1, Albemarle Street	14,973	0	0

Architect's estimate, £15,323
*Recommended for acceptance.

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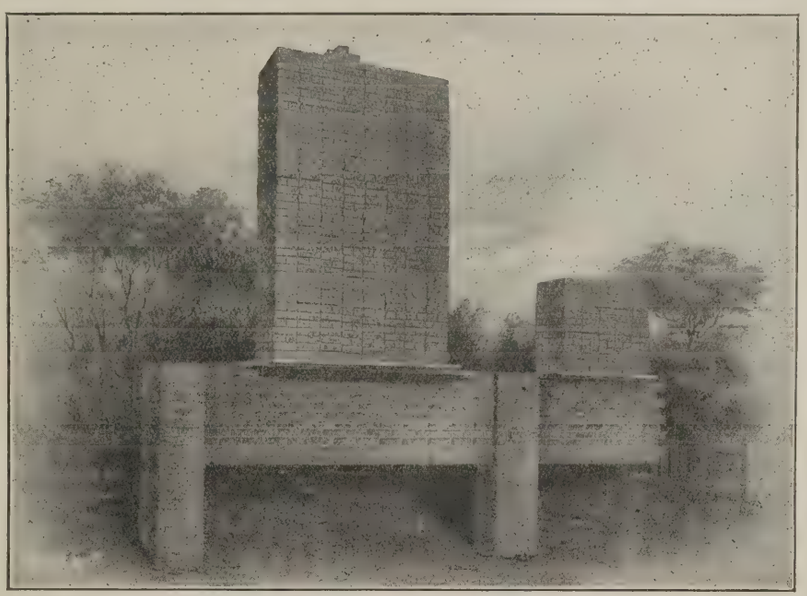
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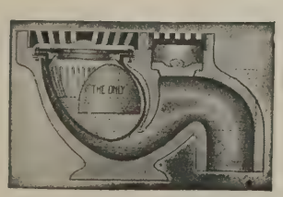
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H. and H. F. Higgs, Herne Hill, S.E.	4,130 0 0
Wm. Johnson and Co., Ltd., Wandsworth Common, S.W.	3,798 0 0
Henry Lovatt, Ltd., Kensington, W.	3,762 4 0
J. Barker and Co., Ltd., Kensington	3,724 0 0
Chas. Wall, Ltd., 4, Lloyd's Avenue, E.C.	3,720 0 0
H. L. Holloway, Deptford, S.E.	3,709 0 0
F. and T. Thorne,* Isle of Dogs, E.	3,660 0 0

Architect's revised estimate, £3,600.

*Recommended for acceptance.

London, S.E.—For erection of a new police station at Carter Street, S.E. Mr. J. Dixon Butler, F.R.I.B.A., surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

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Lorden and Son	14,239
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London, S.W.—For additional stabling and messrooms at the Anglo-American Laundry, Burmester Road, Lower Tooting, S.W., for the Dispatch Laundry Co., Ltd. Messrs. S. J. Reynolds and H. Hicks, architects, Reigate and Broadstairs:—

Josolyne and Young	£2,599
W. and C. Brown	2,366
W. Johnson and Co., Ltd.	2,227
W. Akers and Co., Ltd.	2,167
D. W. Barker	2,165

London, W.—For additions and alterations to the West London Model Laundry, for Mr. J. Thompson. Messrs. S. J. Reynolds and H. Hicks, architects, Reigate and Broadstairs:—

W. Johnson and Co., Ltd.	£1,339
F. G. Minter	1,326
Holliday and Greenwood, Ltd.	1,323
J. Carmichael	1,212
G. E. Wallis and Son, Ltd.	1,199
E. A. Roome and Co.,* Basinghall Street, E.C.	1,163

*Accepted.

London, W.—For new packing-room and sundry additions to the Royal Standard Laundry, Chiswick Park, W., for Mr. D. Wynter. Messrs. S. J. Reynolds and H. Hicks, architects, Reigate and Broadstairs. Quantities by Mr. J. Kennard, Croydon:—

A. Funnell and Co.	£5,100
W. Johnson and Co., Ltd.	4,812
D. W. Barker	4,795
E. J. Saunders and Co.	4,600
G. E. Wallis and Son, Ltd.	4,494
Holliday and Greenwood, Ltd.,* Brixton	4,492

*Accepted.

Lydbrook (Gloucestershire).—For erection of a public elementary school near Ross, for the Gloucestershire Education Committee. Mr. M. H. Medland, architect, 15, Clarence Street, Gloucester. Quantities by Mr. E. A. Pryer, 15, Clarence Street, Gloucester:—

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G. Dimery and Sons	3,656 3 3
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*Accepted.

Norwich.—For erection of a secondary school, with alterations to existing buildings, at Eaton Road. Mr. C. J. Brown, architect, Cathedral, The Close, Norwich:—

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W. J. Hannant	25,400
J. Youngs and Son	25,370
T. H. Yelf	£25,183
J. Cracknell	24,898
F. Bennett	24,600
T. Gill	24,589
Spencer, Santo	24,312
C. Roper	24,300
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St. Mary's (Isle of Scilly).—For erection of a house at St. Mary's, fitted throughout with acetylene gas, for Mr. E. Hopkins, Courtlands, East Molesey. Mr. Herbert Ashman, architect, Rokeley, Coburg Road, Teddington:—

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Walters and Barnett	1,591 6 6
A. Curkeek	1,392 0 0
A. J. Trenem	1,325 0 0
Waring and Gillow	1,200 0 0
J. F. Ellis	1,070 0 0
J. R. Thompson and Sons	975 0 0
J. Woodcock*	975 0 0
J. Downham	925 0 0

*Accepted

Wembley (Middlesex).—For erection of a police-station at Wembley. Mr. J. Dixon Butler, F.R.I.B.A., surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

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Messom and Son	5,735
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Nov. 26. BAILDON.—Erection of a residence at Baildon. Contractors desirous of tendering are requested to forward their applications on or before Nov. 26 to Empsall and Clarkson, architects and surveyors, 7, Exchange, Bradford.

Nov. 26. FARNBOROUGH.—Erection of a new Conservative club in Camp Road, Farnborough. Builders desirous of tendering are requested to forward their names for selection to G. W. Collins, hon. sec., Farnborough and District Conservative Club, Farnborough, Hants., on or before Nov. 26.

Nov. 26. MACHYNLLETH.—Erection of a drill hall at Machynlleth, for the Montgomeryshire Territorial Force Association. Plans and specification may be inspected and all other information obtained on written application to R. W. Davies, architect and surveyor, Dolafon, Carno, Mont., to whom sealed and endorsed tenders are to be delivered on or before Nov. 26.

Nov. 27. HESSLE.—Erection of church and schools at Hessle, near Hull, for the Trustees of the Primitive Methodists. Plans may be seen at the offices of T. Beecroft-Atkinson, architect, Trinity House Lane, Hull, and quantities obtained on deposit of 10s. Tenders to be delivered, endorsed "Church," by noon on Nov. 27.

Nov. 27. NATLAND.—Re-building of Natland Church, near Oxenholme. Contractors desirous of submitting tenders for the above, for whole or separate trades, may see the plans and specification at the church, and at the office of the architects. Bills of quantities may be obtained on application to Wright and Son, surveyors, Lancaster. Tenders to be delivered (under cover) to Austin and Paley, architects, Lancaster, not later than noon Nov. 27.

Nov. 28. CROWBOROUGH.—Erection of a new police station and police residences, in Station Road and North Road, Crowborough. Persons desirous of tendering are requested to send their names and addresses to F. J. Wood, county surveyor, county hall, Lewes, on or before November 28, from whom full particulars can be obtained.

Nov. 28. MOUNTMELLICK.—Execution of the following work in the infirmary of the workhouse, for the board of guardians of Mountmellick union, in accordance with specification, which can be seen on application to R. Goodbody, clerk of the union, boardroom, viz.:—To lay a 4 in. piped sewer from lavatory waste to sewer in yard. To provide and erect a rolled steel joist to replace existing wooden beam in new ward. To enlarge window in women's yard side of ward. To put down a new wooden floor in ward. To put down a new tiled floor in kitchen. To provide and erect a new pump stick in women's yard. To provide and set sewer trap in women's yard. To repair defective plastering on ceiling in new ward. To colour walls in ward. Tenders, endorsed "Tender for alterations in Infirmary," and containing the names and addresses of two solvent sureties willing to join contractor in a bond for the due fulfilment of the contract, will be received by the clerk of the union up to the hour of 11 o'clock a.m. on Nov. 28, and must be sent by post.

Nov. 30. AUSTWICK. — Re-building of the latrines at Austwick School, and connecting the same with the main drainage. Tenders to be sent in by Nov. 30. Plans and specifications may be seen on application to J. Capstick, The Nook, Austwick.

Nov. 30. KIRKBY-IN-CLEVELAND.—Erection of house, stables, etc., at Kirkby-in-Cleveland, for S. Dunning. Plans, specifications, and further particulars on application to S. Dunning, Oxford Street, West Hartlepool. Sealed and endorsed tenders to be delivered by Nov. 30.

Nov. 30. CRUMLIN.—Erection of a new school boundary wall, etc., in Crumlin. Plans and specifications can be seen on application to E. J. Johnson, Crumlin. Sealed tenders, addressed Committee, c/o E. J. Johnson, Crumlin, received not later than Nov. 30.

Nov. 30. CASTLEJORDAN.—Erection of new National schools, at Castlejordan, Ballinabracky, Kinnegad, County Westmeath. The plans and specification can be seen at the office of T. F. M'Namara, architect, 50, Dawson Street, Dublin. Tenders to be posted not later than Nov. 30, addressed to the Very Rev. J. Nulty, P.P., Ballinabracky, Kinnegad, County Westmeath.

Nov. 30. ABERFAN (Wales).—Erection of 47 houses and formation of new roads and drainage work in connection therewith, at Aberfan, for the Aberfan Building Syndicate. Drawings and specification can be seen at the office of T. Edmund Rees, architect and surveyor, Gernant, The Walk, Merthyr Tydfil. Sealed and endorsed tenders to be sent to W. Rees Edmunds, solicitor, High Street, Merthyr Tydfil, by Nov. 30.

Nov. 30. WAKEFIELD.—(1) Erection of partition in boys' school, East Ardsley. (2) Removing gallery in infant department of Wrenthorpe School. (3) Asphalting small portion of playground at Lingwellgate School, Outwood, for the West Riding Education Committee. Tenders must be received in the office of A. Angus, Education Office, Wakefield, on or before Nov. 30. Copies of specifications may be had on application.

Nov. 30. KENSINGTON, W.—Extending the lodge occupied by their North District foreman, situate in Walmer Road, Notting Hill, at the north-eastern corner of Avondale Park, for the Council of the Royal Borough of Kensington, in accordance with a specification which can be inspected at the borough engineer's office, Town Hall, Kensington. Securities required. Tenders, sealed and endorsed "Tender for Extending Lodge," must be delivered at the office of W. C. Leete, town clerk, town hall, Kensington, W., not later than 12 o'clock noon on November 30. Fair wages clause.

Nov. 30. RUTHERGLEN.—Roofing of the new sub-station buildings presently being erected in King Street, Rutherglen, for the Tramways Committee of Corporation of Glasgow. The whole will be let in one contract, and includes iron and steel, joiner, glazier, slater, plumber, and painter works. Offerers must submit with tender a list of the sub-contractors they propose to employ. Plans can be seen and schedule of quantities obtained on application to J. Dalrymple, general manager, 46, Bath Street, and sealed offers, marked outside "Tramways—Tender for Rutherglen Sub-Station," must be lodged with A. W. Myles, town clerk, City Chambers, not later than 10 a.m. on Nov. 30.

Nov. 30. BARNSLEY.—Erection of new school at Elsecar, near Barnsley (builder, joiner, slater, plumber, plasterer, painter); alterations and repairs to Dodworth Green Road provided school, near Barnsley (builder, joiner, slater, plumber, painter, asphalter), for the West Riding C.C. Plans may be seen and bills of quantities obtained on application to J. Vickers-Edwards, county architect, County Hall, Wakefield. A deposit of £1 is required in each case. Deposits must be posted addressed to the West Riding treasurer, County Hall, Wakefield. A separate letter must be sent to the West Riding architect for the quantities. Sealed tenders, properly endorsed, to be forwarded to the county architect, not later than 12 o'clock (noon), Nov. 30.

Dec. 1. BANGOR.—Providing "fire escapes,' for the workhouse and infirmary, for the Bangor and Beaumaris Union. Specifications can be seen at the union offices, Bangor. Tenders must reach R. B. Evans, clerk, union offices, Bangor, not later than Dec. 1.

Dec. 1. PYDLETRENTHIDE.—Restoration and repair of "Providence Cottages," Pydletrenthide, Dorset. Plan and specification can be seen at the European Inn, in the village. Tenders to be sent to M. Sampson, Neacroft, Christchurch, Hants. The highest or any tender will not necessarily be accepted, and persons tendering do so at their own cost. Tenders to be delivered not later than December 1.

Dec. 3. LONDON.—Erection of the British Museum extension buildings, second contract (superstructure), for the commissioners of H.M. works and public buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to J. J. Burnet, A.R.S.A., 2, Montague Place, W.C. Bills of quantities and forms of tender may be obtained at Storey's Gate, on payment of one guinea. Tenders must be delivered before noon on Dec. 3, to the secretary, H.M. office of works, etc., Storey's Gate, London, S.W., and endorsed "Tender for British Museum Extension, Second Contract."

Dec. 5. YORKHILL.—Construction of two goods sheds at West Basin, Yorkhill, for the trustees of the Clyde Navigation. One on East Quay, 436 ft. in length, by 100 ft. in width, and the other on West Quay, 558 ft. in length, by 90 ft. in width. Drawings may be seen and specification, schedule of quantities, and form of tender obtained, on application to W. M. Alston, the trustees' engineer, at 16, Robertson Street, Glasgow. Sealed tenders, marked "Tender for Yorkhill Sheds," to be lodged with T. R. Mackenzie, general manager and secretary, 16, Robertson Street, Glasgow, not later than noon on December 5.

Dec. 7. SUTTON.—Erection of 7 shops on the Chalk Pit House Estate, High Street, Sutton, Surrey. Plans and specification (no quantities) can be seen at the office of H. R. G. S. Smallman, A.R.I.B.A., 8, Queen Street, Cheapside, E.C. Tenders to be delivered before 12 noon on Dec. 7.

Dec. 7. BILLERICAY.—Alterations and additions to the laundry at the workhouse at Billericay, for the guardians of the union. Plans and specification may be seen, and a copy of the bills of quantities and form of tender obtained upon application to R. J. W. Layland, Architect, of Billericay, on payment of £1 1s. Sealed tenders, endorsed "Laundry Alterations," to be delivered to C. E. Lewis, clerk, New Road, Brentwood, not later than Dec. 7. The contractor whose tender is accepted will be required to provide a bond with approved sureties in the sum of £200, or a guarantee policy for that amount.

Dec. 7. RAMMEY MARSH.—Additions and alterations at the Rammey Marsh pumping station, for the Metropolitan Water Board. Forms of tender, conditions of contract, and specification can be obtained at the office of the engineer of the Eastern District, Lea Bridge, Clapton, N.E., on the production of an official receipt for the sum of £5, which sum must first be deposited with the accountant at the board's central office, Savoy Court, Strand, W.C. Such payments and applications can be made on any weekday (except Thursdays and Saturdays), between the hours of 10 a.m. and 4 p.m. Tenders, addressed to the clerk, Metropolitan Water Board, Savoy Court, Strand, W.C., and endorsed "Tender for Additions and Alterations at Rammey Marsh Pumping Station," must be delivered in sealed envelopes at the offices of the Board not later than 10 a.m. on Dec 7.

Dec. 8. LONDON, S.E.—Construction of foundation for a new block at the Chief Station of the Fire Brigade, Southwark Bridge Road, S.E., for the L.C.C. Persons desiring to submit tenders may inspect the drawings and obtain the specifications, bills of quantities, form of tender, and other particulars at the architect's department, Fire Brigade Branch, 3, Warwick House Street, Charing Cross, S.W., upon payment to the cashier of the council of the sum of £5. Tenders must be upon the official forms, and the printed instruction contained therein must be strictly complied with. Fair wages clause. Each tender is to be delivered at the county hall, in a sealed cover, addressed to the clerk of the London County Council, Spring Gardens, S.W., and marked "Tenders for Foundation, etc., for New Block at Chief Station of Fire Brigade." No tender will be received after 11 a.m. on Dec. 8.

Dec. 8. BAILDON.—Erection of Wesleyan Sunday School, Baildon. The plans may be seen and quantities obtained at the offices of T. C. Hope and Son, architects, 23, Bank Street, Bradford, up to Dec. 8, when the tenders are to be delivered.

Dec. 9. HOLLINGWOOD.—Erection and completion of a tramway depot at Hollingwood, for the Oldham Tramways Committee. Plans and specifications can be seen and quantities and form of tender obtained at the borough surveyor's office, on payment of £1 1s. Sealed tenders, endorsed "Tramway Depot," and addressed to the chairman of the Tramways Committee, to be delivered on or before Dec. 9, to J. H. Hallsworth, town clerk, borough surveyor's office, town hall, Oldham.

Dec. 9. LONDON, S.W.—Erection of working-class dwellings, upon a site in Grove Cottages, Manor Street, Chelsea, for the Metropolitan Borough in accordance with drawings and specifications prepared by Wills and Anderson, 24, Bloomsbury Square, W.C. Drawings, specifications, and conditions of contract may be seen at the town hall, King's Road, on and after Dec. 1, where bills of quantities may be obtained upon payment of a deposit of £1 1s. Tenders to be delivered in sealed envelopes, endorsed "Tender for Working-Class Dwellings," at the town hall, King's Road, Chelsea, not later than noon on Dec. 9.

Dec. 10. GOLDER'S GREEN.—Erection of a new church at Golder's Green (parish of All Saints' Child's Hill, N.W.). Bills of quantities obtainable from architects, Wills and Anderson, 24, Bloomsbury Square, W.C., after Nov. 20. Deposit £1. Sealed tenders to be delivered by Dec. 10.

Dec. 12. PENDEN.—Erection and completion of proposed Council school at Penden, near St. Just, for the Cornwall education committee, according to plans and specification, which may be seen by appointment at the school or at the office of S. Hill, architect to the committee, Green Lane, Redruth, from whom all particulars relating to the work may be obtained. Forms, upon which all tenders are to be made, may be had from the architect, or at the school. Sealed endorsed tenders are to be sent to F. R. Pascoe, secretary, education office, Truro, on or before Dec. 12.

No date. BLAENAU.—Alterations and additions to Blaenau, near Dolgelly, for T. Edwards. The plans, specification and further particulars may be obtained on application to Deakin and Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

ENGINEERING.

Nov. 26. LUTON.—Supply, delivery and erection of a cooling tower at the Electricity Works, for the Corporation. Also for the supply and delivery of about 250ft. of 15in. cast-iron piping. Further particulars may be obtained from W. H. Cooke, electrical engineer, St. Mary's Road, Luton, and tenders must reach him not later than 6 p.m. on Nov. 26.

Nov. 28. EAST GRINSTEAD.—2. Supplying and erecting two sets gas engines and pumps; also 3, laying pumping main (1,600 yds.), and sewer (850 yds.), for the U.D.C. Plans and specifications may be seen, and forms of tender, etc., obtained of W. E. Wollam, engineer to the council, council offices, London Road, East Grinstead, during office hours on deposit of postal order for £1. Tenders, on form supplied, endorsed as the case may be, to be sent by Nov. 28 to E. P. Whitley Hughes, clerk to the council. Tender accepted subject to sanction of the L.G.B. (See also "Building" and "Iron and Steel.")

Nov. 28. CARDIFF.—Provision of a two-cylinder vertical steam engine for the Cardiff Workhouse, in accordance with specification prepared by S. W. Allen, M.I.M.E., and conditions of contract annexed to the form of tender, to be obtained from A. J. Harris, Clerk, Union Offices, Queen's Chambers, Cardiff, and returned not later than 10 a.m. on Nov. 28.

Nov. 30. BALGOWAN.—(1) Building a reservoir tank of a capacity of about 60,000 gallons at Balgowan, Perthshire; and (2) for laying 1,860 yds. or thereby of steel water pipe from the site of the tank to Balgowan House. Offers must reach Tods, Murray, and Jamieson, W.S., 66, Queen Street, Edinburgh, by Nov. 30. Copies of specifications and forms of tender may be had from the above, and the plans may be examined in the hands of W. Coupar, New Row, Balgowan, adjacent to the site of the works.

Nov. 30. WOODNESBOROUGH.—Extension of the waterworks at Woodnesborough, Kent, for the corporation of the Sandwich Borough. Contract No. 1.—For supplying and fixing a suction gas plant and gas engine to drive pumping machinery. No. 2.—For supplying and fixing a set of three throw-deep well pumps, 8 in. diameter and 24 in. stroke, with the necessary gearing. No. 3.—For the construction of an engine house and gas producer plant house and coal store. No. 4.—For the construction of a service reservoir of concrete and brickwork to hold 140,000 gallons. No. 5.—For the laying of a 9 in. cast-iron pumping main 725 yds. long and short lengths of smaller main and the fixing of sluice valves. No. 6.—For the supply and delivery of about 725 yds. of 9in cast-iron main and 17 yds. of 7 in. cast-iron main. Pipes must be vertically cast; no tenders for pipes cast at an angle or horizontally will be considered. Copies of all or any of the specifications may be obtained, and plans seen at the offices of the town clerk, Sandwich, or at the offices of Anson and Shenton, engineers, 28, Victoria Street, Westminster, S.W., on payment of a cheque of £5. Tenders, marked "Waterworks Tender," must be received by E. C. Byrne, town clerk, Sandwich, Kent, before mid-day on Nov. 30.

Dec. 5. CRICCIETH.—Construction of tanks and other works, and providing and laying about 10,029 lin. yds. of 6 in. cast-iron pipes, 1,587 lin. yds. of 5 in. cast-iron pipes, 2,205 lin. yds. of 4 in. cast-iron pipes, and 609 lin. yds. of 3 in. cast-iron pipes, for the U.D.C. Plans and specifications may be seen at the town hall, Criccieth, or at the offices of E. Evans, A.M.I.C.E., engineer, 8, Castle Street, Carnarvon. Bill of quantities may be obtained from the engineer, on payment of £2 2s. Tenders, addressed to T. Jones, solicitor, Portmadoc, and endorsed "Tender for Waterworks," to be delivered not later than 12 noon on Dec. 5.

Dec. 7. LONDON, W.—Supply of Lancashire boilers and appurtenant works at the Hammersmith pumping station, for the Metropolitan Water Board. Forms of tender, conditions of contract, and specification can be obtained at the office of the engineer of the Western District, 41, Commercial Road, Pimlico, S.W., on the production of an official receipt for the sum of £10, which sum must first be deposited with the accountant at the Board's central offices, Savoy Court, Strand, W.C. Such payments and applications can be made on any weekday (except Thursdays and Saturdays) between the hours of 10 a.m. and 4 p.m. Tenders, addressed to the clerk, Metropolitan Water Board, Savoy Court, Strand, W.C., and endorsed "Tender for Lancashire Boilers, etc., Hammersmith Pumping Station," must be delivered in sealed envelope at the offices of the Board, not later than 10 a.m. on Dec. 7.

Dec. 11. SHEFFIELD.—Supplying and erecting complete an automatic or electric railway, telpherage or wire ropeway for conveying and tipping boiler refuse on the tip adjoining the power station, Club Mill Lane, Neepsend, Sheffield, for the Electric Light Committee. Full particulars, plan of site, general conditions of contract, and general conditions of tender may be obtained on receipt of a deposit for £1. Any person or firm sending in a tender will be required to add a schedule to such tender, stating the names of the various classes of labour which he or they intends or intend to employ, together with the place where such labour will be employed and the rates of wages, hours of labour and conditions of employment to be paid and observed in respect of each class of labour, all of which, as shown in such schedule, shall comply with the City Council's form of clauses respecting wages, hours, and conditions of labour, and prohibition against assigning or sub-letting. Tenders, endorsed "Contract No. 55," to be delivered at the offices of S. E. Fedden, general manager and engineer, Corporation Electric Supply Department, Commercial Street, Sheffield, not later than 10 o'clock a.m on Dec. 11.

Dec. 12. HARDWICK.—Sinking of two shafts about 225 fathoms each in depth and 21 ft. finished diameter on the Hardwick Estate, about 2 miles south of Horden Colliery, County Durham. Copies of the specification may be obtained from, and tenders must be addressed to, the Horden Collieries, Ltd., Castle Eden, Co. Durham, not later than Dec. 12. The lowest or any tender will not necessarily be accepted, and a deposit of £4 will be required from intending contractors.

IRON AND STEEL.

Nov. 26. BURNLEY.—Supply of steelwork required in the extension of storeroom at the Burnley Union Workhouse, for the guardians. Form of specification may be obtained from Keighley, architects, Nicholas Street, Burnley. Last day for receiving tenders Nov. 26, before 12 noon.

Nov. 28. CARDIFF.—Provision of two galvanised steel tanks, for the guardians of the Cardiff Union, in accordance with specification prepared by S. W. Allen, M.I.M.E., and conditions of contract annexed to the form of tender, to be obtained from A. J. Harris, clerk, Union Offices, Queen's Chambers, Cardiff, and returned not later than 10 a.m. on Nov. 28.

Nov. 28. BIRMINGHAM.—Supply of cast-iron pipes, special castings, etc., for the year 1909, for the Water Committee. Forms of specification, giving particulars as to the probable number of pipes of various sizes which will be required, can be obtained on application to E. A. Lees, secretary, 44, Broad Street, Birmingham. Tenders must be made out on the forms supplied, and must reach the secretary at latest by 12 noon on Nov. 28. Fair wages clause.

Nov. 30. HANDSWORTH.—Making and erecting about 3,000 yds of wrought-iron unclimbable fencing, etc., to be erected at the Leveretts Cemetery, Camp Lane, Handsworth, for the U.D.C. Conditions of contract, and drawings may be seen, and specification, bills of quantities, and form of tender obtained on application to H. Richardson, A.M.I.C.E., surveyor to the Council. Contractors will be required to deposit a cheque value £1 1s., for specification, bills of quantities, etc. All particulars may be obtained on application to the surveyor. Sealed tenders, endorsed "Fencing," to be delivered at the office of the surveyor, Council House, Handsworth, Birmingham, on or before noon on Nov. 30. Fair wages clause.

Dec. 1. LONDON, E.C.—Supply of: 1, cast-iron pot sleepers; 2, rails and fishplates, for the directors of the Bombay, Baroda, and Central India Ry. Tenders must be made on forms, copies of which, with specifications, can be obtained at the offices of W. V. Constable, secretary, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C., on payment of 21s. each (which will not be returned). Tenders must be received by Dec. 1.

Dec. 1. MERTHYR TYDFIL.—Supply and erection of the necessary steel work superstructure, consisting of steel troughing 27 ft. long by 12 ft 6 in. wide, with parapets to carry Hill's Plymouth Co.'s sidings over a proposed footpath near Pentrebach Station, Taff Vale Railway. Plans may be seen and particulars obtained upon application to the borough engineer, town hall, Merthyr Tydfil. Sealed tenders, endorsed "Pentrebach Subway," must reach T. A. Rees, town clerk, town hall, Merthyr Tydfil, not later than December 1.

Dec. 3. GLASGOW.—Construction of a steel footbridge over the Glasgow, Barrhead, and Kilmarnock Railway at Prince's Square, Strathbungo, for the Glasgow Corporation. Specifications and forms of offer may be had on application at the office of public works, City Chambers, Cochrane Street. Sealed offers, marked outside "Tender for Steel Footbridge," must be lodged with A. W. Myles, town clerk, City Chambers, Glasgow, not later than 10 a.m. on Dec. 3.

PAINTING.

Nov. 28. MANCHESTER.—General repairs and painting at various public urinals, for the sanitary committee. Specification and form of tender may be obtained on application at the city surveyor's office, town hall, Manchester, on payment to the city treasurer of £1 1s. All cheques or postal orders are to be made payable to the order of the corporation of Manchester. Tenders, enclosed in the official envelope and addressed "The Chairman of the Lavatories Sub-Committee," are to be delivered at the city surveyor's office not later than 12 o'clock noon on Nov. 28.

Dec. 1. BRIGHTON.—Painting and renovating the interior of the Chapel at the Workhouse, Elm Grove, Brighton, for the Guardians of the Poor. Copy of specification, conditions of contract, and form of tender may be obtained at the Guardians' Clerk's Office, Princes Street, Brighton. Sealed tenders endorsed "Tender for Painting and Renovating Workhouse Chapel" are to be addressed to B. Burfield, clerk to the Guardians, Parochial Offices, Princes Street, and delivered at his office on or before Dec. 1, by ten o'clock in the forenoon.

Dec. 1. LONDON, W.—Painting works in separate contracts at the offices, workhouse, and casual wards, for the Guardians of the Poor of the parish of Paddington. A copy of the specification and form of tender will be forwarded by E. H. Sim, architect, of Mowbray House, 14, Norfolk Street, Strand, W.C., on receipt of a cheque for £1. The contractors will be required to employ Paddington residents of twelve months' standing who are recommended by the Paddington Distress Committee or the Paddington Employment Exchange, unless the Board of Guardians shall give permission to the contrary. Sealed tenders, endorsed "Tender for Painting," must be delivered at the offices of the Guardians before 5 o'clock on Dec. 1.

Dec. 5. NOTTINGHAM.—Painting of two triple-expansion pumping engines, girders, pipes, and floor plates, etc., at Boughton pumping station, Ollerton, near Newark, for the Water Committee. Also, for painting the interior and exterior of Castle Works, Nottingham. Specifications and forms of tender may be obtained from F. W. Davies, water engineer, St. Peter's Church Side, Nottingham, on payment of a deposit of £1 for each contract. Sealed tenders, properly endorsed, to be delivered to J. A. H. Green, town clerk, Guildhall, not later than noon on Dec. 8 Fair wages clause.

PLUMBING & SANITARY

Nov. 27. NEWHILLS.—Executing about 2,570 yds. of drainage on the Home Farm of Sheddocksley, Newhills. J. Carnie, the tenant, will point out the ground and show specifications, and Chalmers, advocates, 18, Golden Square, Aberdeen, will receive offers up to Nov. 27.

Nov. 28. THORNTON.—Sewering of church and Occupation Roads, Thornton, for the U.D.C. Sealed tenders, endorsed "Sewering," to be addressed to the chairman of the Sanitary Committee, and to reach H. Fenton, surveyor, Council Offices, Thornton-le-Fylde, not later than Nov. 28. Further particulars may be obtained on application to the surveyor.

Nov. 29. LLANGADOCK.—Providing a water supply and renewing the drainage system at Abermarlais Park, Llangadock, in accordance with plans and specification prepared by the North-Eastern Sanitary Inspection Association, and which can be seen at Abermarlais. Tenders to be sent in to D. T. M. Jones, solicitor, Llandovery, by Nov. 29.

Nov. 30. LONDON, W.—Re-constructing the sewer in Brompton Square, Brompton Road, for the council of the Royal Borough of Kensington, in accordance with the plan and specification which can be inspected at the borough engineer's office, town hall, Kensington. Fair wages clause. Securities required. The contractor will be required to hold the council indemnified against all accidents, losses or damages arising in the execution of the contract, including all liability under the Workmen's Compensation Act, 1906, or any Act amending the same, and in connection with such indemnity will be required to take out a policy of insurance and to pay the premium thereon. Tenders, sealed and endorsed "Re-construction of a Sewer in Brompton Square," must be delivered at the office of W C. Leete, town clerk, town hall, Kensington, W., not later than 12 o'clock noon on Nov. 30.

Nov. 30. ROMFORD.—Construction of the following, for the R.D.C. (1) About 894 yds. of 9 in. stoneware pipe sewer in Slewins Lane, and 108 yds. of 6 in. sewer in Brentwood Road, Hornchurch. (2) About 358 yds. of 12 in. cast iron and stoneware pipe sewer in North-West Hornchurch. Contractors will be required to employ workmen who reside in the area comprised by the Romford R. and U. Districts only (foremen not included). Full particulars may be seen and form of tender obtained upon application to W. J. Grant, surveyor, Victoria Chambers, Romford. Sealed tenders to reach W. Smith, clerk, 13, North Street, Romford, not later than Nov. 30, endorsed "Tender for Sewerage Works, Hornchurch."

Dec. 4. CWMFELIN.—Construction of sewerage and sewage purification works at Cwmfelin, in the parish of Llangynwyd Middle, for the Penybont R.D.C. (Bridgend).—Contract No. 1 includes the construction of screening and detritus chambers, bacterial tanks, and continuous percolating filters, and the following sewers, with manholes, etc.:—Supplying and laying about 883 yds. of 9 in. stoneware pipes. Supplying and laying about 570 yds. of 6 in. stoneware pipes. Laying about 117 yds. of 9 in. cast iron pipes. Laying about 30 yds. of 6 in. cast iron pipes. Contract No. 2 includes the supply of cast and wrought iron work, manhole covers, ventilating columns, pipes, joists, valves and screens, etc. Plans can be seen and specification, quantities and forms of tender (which alone must be used) can be obtained from W. J. Davies, surveyor, Felin Fach, Tondu, upon payment of £1 1s. Sealed tenders, endorsed "Cwmfelin Sewerage," to be received by R. H. Cox, clerk, Union offices, Bridgend, not later than Dec. 4.

Dec. 10. WALSALL.—Laying and jointing of about 1,092 yds. of 12 in. and 1,486 yds. of 9 in. stoneware pipe sewers, in deep tunnel and open cutting; the construction of manholes and lamp-holes, screening and distributing chambers, septic tank, and the laying out of irrigation area, including carriers, sludge lagoons, and other works, incidental thereto, for the R.D.C. Plans may be seen, and copies of the specifications, bills of quantities, and form of tender obtained, at the office of W. P. Young, surveyor and engineer to the council, District Council Offices, Rushall, Walsall, on payment of a deposit of £5. Sealed tenders, endorsed "Streetly Sewerage," to be delivered to me at the office above named, not later than 12 o'clock noon on Dec. 10. Securities if required.

Dec. 10. UCKFIELD.—Construction of sewerage and sewage disposal works for the village of Buxted, for the U.D.C. The works comprise about 1,700 yds. of stoneware pipe sewers, from 6in. to 8in., all necessary manholes, flushing arrangements, ventilation, etc., a small pumping plant, with about 250 yds. of 4in. rising main, sewage and storm-water disposal works, tanks, percolating filter, and irrigation works, etc., in accordance with plans and specification, which have been prepared by J. Taylor, the surveyor to the Council. The drawings and specification may be seen at the office of the surveyor, Henley House, Uckfield, from whom copies of the bills of quantities, schedules of prices and forms of tender may be obtained on payment of the sum of £2 2s. Sealed tenders, endorsed "Buxted Sewerage Works," must be delivered at the office of F. Holman, clerk, 86, High Street, Lewes, on or before noon, Dec. 10. Tenders will not be considered unless they are on the form above referred to, with the quantities and schedules properly filled in.

ROADS AND CARTAGE.

Nov. 26. HARROGATE.—Private street works required in the back road at the rear of Nos. 1 to 37, College Road, for the corporation. The specification may be seen, and quantities obtained, of F. Bagshaw, borough engineer and surveyor. Tenders must be submitted not later than 9 a.m. on Nov. 26.

Nov. 28. THORNABY-ON-TEES. — Forming, draining, paving, curbing, flagging, and channelling of Roseberry View (part of) and Hannah Street (part of), for the corporation of the Borough of Thornaby-on-Tees. Plans and specification may be seen and copies of the bills of quantities obtained at the borough engineer's office, town hall. Tenders, on proper forms only, which will be supplied, and sealed and endorsed "Tenders for New Street," must be delivered at the Town Clerk's office, town hall, not later than 10 a.m. on Nov. 28.

Nov. 30. LONDON, N.—Constructing new roads at Muswell Hill, N. Plans, sections, and details can be seen, and a copy of the specification obtained, upon personal application to Vigers and Co., 4, Frederick's Place, Old Jewry, E.C. A deposit of 5s. will have to be made for each copy of the specification taken. Tenders to be delivered to C. J Hayter, 84, Temple Chambers, Temple Avenue, E.C., before 12 o'clock on Nov. 30.

Nov. 30. ROMFORD.—Kerbing, channelling, paving, and other incidental works in London Road, for the U.D.C., within their district. The plan may be seen, and specification, quantities and forms of tender obtained on application to H. T. Ridge, council offices, Market Place, Romford, on deposit of £2. Sealed tenders, endorsed "Tender for Street Works," must be delivered at the office of C. T. King, clerk, Romford, not later than 4 o'clock on Nov. 30 Securities required.

Nov. 30. WOMBWELL.—Supply during the year ending Dec. 31, 1909, of the following materials for the U.D.C.: 300 tons granite, 300 tons whinstone, 300 tons blue rock or limestone, 600 tons best dross or slag, 20 tons best Portland cement. Further particulars and forms of tender may be obtained from J. W. Harrison, surveyor to the Council. Samples of the materials tendered for will be required with all tenders. Tenders must be delivered to P. M. Walker, clerk to the Council, Town Hall, Wombwell, sealed and marked "Tender for Road Materials," not later than Nov. 30, at 12 o'clock noon.

Nov. 30. SLAITHWAITE.—Re-paving of portions of Britannia Road and Carr Lane, Slaithwaite, being the roadways over and approaches to Slaithwaite Bridge, within the urban district of Slaithwaite, for the West Riding C.C. General conditions, specification, and bill of quantities may be obtained from F. G. Carpenter, West Riding surveyor, County Hall, Wakefield. A deposit of £1 will be required. Cheques, etc., to be sent to the "West Riding Treasurer," County Hall, Wakefield. Sealed tenders, duly endorsed, to be delivered at the surveyor's office, not later than Nov. 30.

Dec. 1. LONDON, S.W.—Roadwork and plate-laying required for the electrification on the underground conduit system of traction of existing tramways, from the Britannia, Camden Town, via Chalk Farm Road, Ferdinand Street, Malden Crescent, Malden Road, Southampton Road, Fleet Road, Agincourt Road, and Constantine Road, to the Hampstead terminus, for the L.C.C. Full particulars, and also information as to the conditions to be observed by tenderers are given in the "London County Council Gazette," of Nov. 23. Tenders must be upon the official forms, to be obtained from M. Fitzmaurice, C.M.G., chief engineer of the council, at the County Hall, Spring Gardens, S.W., upon payment to the cashier of the council of the sum of £5 for the specification, etc. Full particulars of the work may be obtained on application at the County Hall before the payment of the fee for the specification, etc. No tender will be received after 11 a.m. on Dec. 1.

Dec. 3. SOUTHEND-ON-SEA.—Making up of Eastwood Lane (Section 2) in the Borough. Plans, sections and specification may be seen, and bill of quantities and form of tender obtained, on deposit of cheque for £1 1s., upon application to E. J. Elford, M.I.M.E., borough surveyor. Sealed tenders, endorsed "Eastwood Lane," to be delivered at the office of W. H. Snow, town clerk, Town Clerk's Office, Southend-on-Sea, before twelve o'clock noon on Dec. 3. No tender will be considered unless made on the prescribed form.

Dec. 3. SOUTHEND-ON-SEA.—Making up and improvement of Royal Hill in the Borough. Plans, sections and specification may be seen, and bill of quantities and form of tender obtained, on deposit of cheque for £1 1s., upon application to E. J. Elford, M.I.M.E., borough surveyor. Sealed tenders, endorsed "Royal Hill Improvement," to be delivered at the office of W. H. Snow, town clerk, Town Clerk's Office, Southend-on-Sea, before twelve o'clock noon on Dec. 3. No tender will be considered unless made on the prescribed form.

Dec. 5. CLEETHORPES.—About 800 tons of tar macadam, to be delivered at Cleethorpes Station, for the Cleethorpes-with-Trunscoo U.D.C. Tarred slag or granite macadam is preferred, and samples of materials, tarred and untarred, are to be submitted with tender. As the Council have decided that, in future, all streets are to be coated with tar macadam, they are anxious to obtain the best material, and they reserve to themselves the right to take the 800 tons from one or more firms for purposes of comparison as to wearing properties. Further particulars may be obtained from, and samples sent to, E. Rushton, engineer and surveyor, Council House, Cleethorpes. Tenders to be addressed to the Chairman of the Highways Committee, Council House, Cleethorpes, on or before Dec. 5, and endorsed "Tender for Tar Macadam."

Dec. 7. LONDON, S.W.—Making up and paving of the following new streets, viz.:—A. That part of Franciscan Road, Tooting, which lies between No. 102, Franciscan Road (inclusive) and the North Eastern boundary of No. 148, Franciscan Road, described as "Franciscan Road (3)." B. That part of Franciscan Road, Tooting, which lies between the North-Eastern boundary of No. 148, Franciscan Road, and No. 168, Franciscan Road (inclusive), described as "Franciscan Road (4)." C. That part of Effort Street, Tooting, which lies between Recovery Street and Hoyle Road. The specifications and drawings may be seen, and forms of tender obtained at the borough engineer's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between the hours of 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in separate sealed envelopes, and endorsed "Tender for Paving ——," must be delivered at the council house, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose, not later than 4 o'clock in the afternoon of Dec. 7. Securities if required. Fair wages clause.

Dec. 12. MAIDSTONE.—Supplying between April 1, 1909, and March 31, 1910, 65,000 tons (more or less) of broken road stones, such as:—1, Rhenish basalt; 2, Guernsey, Jersey, or Alderney granites; 3, Glee Hill basalt; 4, Leicestershire granite; 5, Penlee, St. Keverne, or other Cornish granites; 6, Penmaenmawr or other North Wales granites; 7, quartzite; 8, Norway granite; 9, quenast or lessines; 10, or other equally durable material. Also the following local materials:—3,000 yds. (more or less) of Sevenoaks rock, unbroken; 20,000 yds. (more or less) of surface-picked or grubbed flints; 2,000 yds. of Kent rag. Specifications and forms of tender can be obtained upon application to the county surveyor, Maidstone. Sealed tenders, endorsed "Tender for Road Metalling," must be sent to W. B. Prosser, clerk to the Council, Sessions House, Maidstone (upon the prescribed form) not later than 12 noon on December 12

MISCELLANEOUS.

Nov. 26. LONDON, E.C.—Supply of cast-iron tank pipes, etc., water cranes, jim crows, galvanised ridge capping, miscellaneous articles and materials, brass hinges, bolts, etc., for the Directors of the Great Indian Peninsula Railway Co Specifications and forms of tender may be obtained at the office of J. I. Berry, secretary, Company's Offices, 48, Copthall Avenue, London, E.C., on payment of the fee for the specification, which payment will not be returned. Tenders must be delivered in sealed envelopes, addressed to the secretary, marked "Tender for Cast Iron Tank, Plates, etc.," or as the case may be, not later than 11 o'clock a.m. on Nov. 26.

Dec. 3. GATESHEAD.—Supply during the six or twelve months from Jan. 1, of the following, for the Directors of the North-Eastern Ry.:—1, bar iron; 2, iron plates; 3, steel plates; 4, iron sheets and hoop iron; 5, steel sheets; 5a, corrugated iron sheets; 6, steel angles; 7, mild steel bars; 7a, special steel bars; 10, metal castings for engines; 11, metal castings (permanent way); 12, malleable castings (permanent way); 13, steel castings (permanent way); 14, steel fish plates; 17, cast-iron socket pipes; 17b, electric conduits and fittings; 18, rainwater goods; 19, steel and files; 21, steel tubes for locomotives; 22, brass and copper tubes for locomotives; 23, copper pipes; 24, copper (bolt); 28, lead (pipe and sheet); 29, white and red lead; 31, oils (paraffin and for gas making); 32, glass (sheet and plate); 40, iron washers; 41, nails; 42, screws (brass and iron); 45, hinges (brass and iron); 48 iron bolts and nuts and twisted spikes; 49, bolts, nuts and rivets; 50, cement (best Portland); 51, concrete and artificial stone flags; 52, flags; 53, stone; 54, whinstone; 55, limestone; 56, slag; 57, lime; 58, sanitary drain pipes; 59, common drain pipes; 60, chimney pots; 61, oak trenails. Forms of tender, specification, and conditions may be obtained on application to E. H. Clark, Stores, Gateshead, and tenders must be sent in to R. F. Dunnell, secretary at York, sealed and marked "Tender for Stores," not later than 9 a.m. on December 3.

Dec. 9. DOVER.—Supply of timber, bricks, lime, etc., iron and steel, steam, water and gas tubing and fittings, asbestos packing, etc., electrical sundries, paints, etc., paint oils, spirits, tar, etc., lead, glass, etc., oilman's stores, Portland cement, during the ensuing 15 months commencing Jan. 1, for the Harbour Board. Schedules and conditions of contract may be had on application at the office of M. Mowll, register of Dover Harbour, Castle Street, Dover, on payment of 2s. 6d. for each complete set of the whole of the schedules. Sealed tenders, marked "Tender for Materials," to be sent to his office on or before Dec. 9.

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ARCHITECTS', builders', estate agents', assistant, 19, working drawings, colouring, etc.; energetic draughtsman, assist in office work; good references from architect.—F., c/o C. J. Williams, 89, Shrubland Street, Leamington Spa. 4708

ARCHITECT'S Assistant (23), student R.I.B.A., 5½ years' experience, working drawings, details, levelling, surveying, drainage, specifications, knowledge of quantities; excellent references; salary moderate.—Bernard A. Dyer, St. Peter Street, Hereford. 4723

A COMPETENT Architectural Assistant (22) seeks appointment; excellent testimonials and hon. certificates. Open to take place with surveyor, estate agent, sanitary engineer, etc. Salary, 30s.—Apply Box No. 4688, BUILDERS' JOURNAL Office.

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ARCHITECTURAL Improver, or junior assistant (21), excellent knowledge in good design, very neat and clever draughtsman; assist quantities, surveying, perspectives; moderate salary; specimens.—Box 4635, BUILDERS' JOURNAL Office.

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ARCHITECT and Surveyor's Assistant (24); 8 years' London exp.; working drawings, specifications, superintendence, prizeman and medallist, testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4669

ARCHITECT and surveyor's junr. assistant; 5½ years' experience; working and detail drawings; levelling, perspectives, specifications; assist quantities; excellent testimonials; moderate salary.—Box 4546, BUILDERS' JOURNAL Office.

ARCHITECT and Surveyor's junior assistant desires engagement; probationer R.I.B.A.; good draughtsman; 4½ yrs.' general exp; moderate salary.—F. G. C., 46, Franklin Road, Gillingham, Kent. 4641

ARCHITECT'S and Surveyor's Assistant, 15 years' good practical experience; excellent draughtsman, designer, and colourist; working drawings, details, specifications, surveying, levelling, and general routine; excellent references; moderate salary.—A. R., 1, Ivy Villas, Cheam, Surrey. 4698

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AS Clerk, cashier, depot manager, or any position of trust, 11 years' experience, builder's and coal merchant's trade; age 25; good penman; also reference; moderate salary.—Box 4659, BUILDERS' JOURNAL Office.

BUILDER'S or surveyor's assistant (20), 4 years with quantity surveyor; quantities, estimating, correspondence, plans, tracings, measuring up, levelling, etc.—H. Priddle, 4, Sumatra Road, West Hampstead, N.W. 4705

BUILDER'S general foreman, advertiser seeks engagement; 16 years' service as above with first-class London firm on important and various works; good references.—Address H., 150, Effra Road, Wimbledon, S.W. 4703

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BUILDER'S general foreman desires re-engagement; just finished large schools; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable. First-class testimonials.—W. R., 85, Grove Lane, Handsworth, Birmingham. 4702

BUILDER'S Assistant disengaged, 21 years' experience; office routine, plans, specifications, quantities, supervision, measuring up, levelling, and surveying; good references; abstainer.—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4717

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CLERK of Works, just finishing large schools, wants situation, 15 years' experience; expert timber, good all trades; plans, surveying, levelling, etc., etc. Country estate preferred.—Caswell, New Council Schools, Biddulph, Staffs. 4720

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FIREPROOF Engineers and Concrete Specialists. Advertiser, connected with above trades for 10 years, and whose name is well known in connection with same, desires position as manager, traveller, or head clerk; first-class book-keeper; aged 33; very moderate salary.—P. W. Potter, 73, Penshurst Road, Thornton Heath. 4719

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

HIGH-CLASS decorator, manager, seeks re-engagement; estimator for all classes of best work; abroad if necessary; excellent testimonials; moderate salary.—Apply Forbes, 7, Eldon Street, York. 4677

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

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CARPENTER and joiner wanted in provinces; good all-round and able to work saw bench, planer, and moulding machine; gas engine; constancy to suitable man; state wages, etc. — Box 4706, BUILDERS' JOURNAL Office.

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December 2, 1908. Volume 28. No. 721.

THE BUILDERS' JOURNAL
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Caxton House, Westminster.

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Concerning Polychromatic Sculpture.

The practice of colouring sculpture was not a development, or refinement, brought about by progress made in the plastic art. On the contrary, the custom was established long before, for instance, Hellenic sculpture reached the zenith of its powers. Indeed, the use of colour to enhance the effect of sculptural representations is observable in many of the crude specimens of decorative enrichment and carving produced in the early days of most nations; and in the more barbarous ages of Greek art it was a common custom to paint or stain the statues of the national divinities. But the fact that among pioneers of ancient civilisations such as the Egyptians and Assyrians painting was largely symbolical, and the various colours they applied to their sculpture, therefore, conveyed a meaning which was, in all probability, clearly understood by the people at large, must not be forgotten. Thus, polychromy was not, as some writers have stated, first introduced by the Greeks, nor was it by any means exclusively employed by Hellenic artists, although there is no doubt it was extensively used in the best period of Greek sculpture. Professor Westmacott, who has dealt at some length with the whole question of polychromy in his well-known handbook of sculpture, says with regard to its use among the greatest sculptors of Greece, "If the arguments that can be adduced shall show, first, that where polychromy was employed it was either simply copied from other nations with whom the Greeks had come in contact; or that it was prescribed as a mode of hieratic or religious expression in statues and sculptured compositions that were to be placed in temples, or otherwise required for sacred purposes, and therefore it had a traditional standing; but that it was not employed generally by the best sculptors in works in which they were free to exercise their own unbiassed judgment, it will be consistent to believe that in the progress of sculpture, from a mere rude manufacture of idols to its perfection as an art which aimed at imitating *form* only in its most beautiful and simple aspect, colour was not considered essential, or even desirable; and that when it was employed it was exceptionally and, for some particular and especial reason, usually connected with architectural or merely decorative objects. The accumulation of rich accessories, and the profuse mixture of materials—ivory, gold, precious stones, and inlaying and painting—in the Olympian Jupiter, the Minerva of the Parthenon, and similar compositions, become, then, perfectly intelligible; and such works, though exhibiting also the most admirable art, will be considered rather in the light of splendid offerings to the honoured local deities, than as specimens of a rule which guided the sculptors of the greatest era of the art in their ordinary practice." It must therefore be taken into account that these works were essentially *religious* sculpture, and, as such, were no doubt treated in many respects according to a prescribed formula. There is no doubt that colour, although it may well have been used in connection with sculpture to inspire, or awaken, some special feeling of reverence for the carved representation which was thus adorned, was never intended to increase the *natural* aspect of the effigy. In support of this statement, it may be pointed out that in the instances in which colour has been applied over a thin undercoat of stucco it is, in the case of large statues, invariably of one uniform tint, although many small terra-cotta statuettes, reliefs, and vases have been discovered carefully decorated with paint of various colours. It is very fortunate that the application of colour to statuary was not universal in the golden age of Greece, because, in that case, the educational utility of many much-prized remains of Greek art, including the statues and reliefs of the Parthenon at Athens, would have been greatly depreciated, and their artistic value impaired, had they been covered with a coating of colour which would have rendered it impossible for their splendid natural surface treatment to be properly studied and appreciated by countless generations of artists.

A Plain Word from Wales.

Gallant little Wales is, without flattery, a most interesting country. One cannot keep away from it. Quite recently, as our readers are aware, it has furnished us with two delightful idylls. To make a third of equal charm, it would have to join the other two. So far as we are aware, however, that course has not yet been adopted. This time our interest in the Principality is stimulated in a different way. Gelligaer Urban District Council has "had a lively meeting." The only report of the proceedings that has come under our notice is, on the whole, rather obscure. But it contains one very plain word. The matter before the meeting was some question as to a proposed isolation hospital. The rector (we know not of what or of where) "did not think it advisable to have the 'pepper-box' class of building, and suggested one for each disease." It is useless to ask us, "One what?" We give it up. The chairman, however, seemed to understand what was meant, for he interjected that the rector would find a difficulty in getting sites. Why this onerous duty should devolve on the rector is not quite clear. But let us quote some more of the report: "The Rector (earnestly): There ought not to be difficulty in getting sites. If people who are responsible for the collecting together of an industrial community put difficulties in the way, then the whole thing—and I use the word deliberately—should be damned. Mr. Hammond seconded the rector's suggestion." The rector, being presumably a classical scholar, no doubt chose his condemnatory word with due regard for the primitive purity thereof. If he had not used it deliberately, but in the heat of debate, and without reflecting on its etymology, one might have been forgiven the suspicion that the "buildings that swear at you" must be prepared for an occasional return of the compliment, if they happen to profane the serene atmosphere of the rural district of Gelligaer. Nevertheless, the rev. gentleman's objection to the "pepper-box" style is inscrutable; his own exemplification of it being quite delightful.

Reckless Disregard for Red Tape.

The Local Government Board seems to be running short of red tape. It is actually in danger of becoming reasonable. It has "deviated into sense." It has recognised that circumstances alter cases. Some time ago the Leeds Corporation made application to the Board to vary the orders for the clearing of insanitary areas in the city, so as to relieve the Corporation from the necessity of building new houses to accommodate the tenants who are displaced. The existence of this clause has naturally hampered the work of clearing the scheduled areas. In practice it has been found to be unnecessary, because there are already many empty houses available in the locality. The Local Government Board, impressed with this argument, have so far varied the order as to permit the displacement of 2,000 tenants without building fresh tenements for them. Such an exhibition of plain common sense by a Government department is positively startling, and seems at first blush almost unconstitutional. It leaves one with a vague and uncomfortable dread of possible revulsion, with the president of the L.G.B. again hoisting his colours on board the grim "Inflexible."

R.I.B.A. and Measured Drawings.

We notice with some surprise that in an announcement with respect to the regulations as to students' measured drawings, the R.I.B.A. hint at the possibility of publishing such work at (presumably regular) intervals. Surely this were to pile Pelion upon Ossa. Facilities for the study of measured drawings are by no means rare. We would point to the collection at South Kensington, started, if we remember rightly, by Mr. R. Phené Spiers; to the existence of the Architectural Association Sketch Book, and to the publications of the Architectural and Topographical Society, and of the Society for the Survey of the Memorials of Greater London. Then there are the carefully selected examples appearing regularly in the "Architectural Review," in this journal, and in several other professional periodicals. In the circumstances, there does not seem to be any crying necessity for the R.I.B.A. to burden itself with an enterprise that must either be in the nature of a competitive trading venture or must amount to a tax on the Institute funds. If such work is being already done, as we think it is, abundantly and well, surely the Institute can find a more appropriate—we will not say a more dignified—outlet for its overflowing energies. If it continues to develop on such lines, it will be in no small danger of becoming "partly a trading concern." Such a reputation would not enhance its influence. Educative work is well within its province, and might legitimately take the form of publications if the accredited purveyors of such wares were in anywise lacking; but with respect to measured drawings the tendency, as we have shown, is rather towards superabundance, and we therefore trust that the R.I.B.A. will not be so ill-advised as to increase the glut. Where "to draw the line" is of the essence of the argument.

The Renovation of Rome.

Architects, archæologists, and artists, are shuddering at the contemplated rebuilding of Rome; and the man who happens to be all these things must suffer a threefold thrill that may well make him wish that he had hazarded fewer chances of æsthetic agony. It appears that in Rome the mania for town planning has become acute. The picturesque and venerable slums are to be swept away, and the narrow and tortuous alleys are to be superseded by broad and straight streets, perhaps—who knows, since Rome has been already more or less Americanised—to have, like the New York avenues, numbers instead of names, and steel-framed skyscrapers instead of marble palaces. The forlorn hope that, as some infinitesimally slight recompense for the destruction of so many relics of antiquity, the Italians might at least demonstrate the architectural possibilities of steel-frame construction is almost extinguished by the announcement that the scheme is to be entrusted, not to an architect, but to an engineer. When it is added that this engineer bears the ominously revolutionary name of Signor Saint Just, hope sinks to zero. But possibly these fears are exaggerated, even the "Times" correspondent who, last Saturday, set forth at considerable length some details of the project, admits that the plan, while it involves much that is deplorable and unnecessary, "might have been worse." The Via dei Coronari, which is marked for destruction, is filled with old Quattro Cento houses. It is narrow and dirty, but "it could be cleaned"—an expedient which does not seem to have occurred to the City Fathers. Apparently the thirteenth-century Castle of St. Angelo, which simply reeks with architectural and historical interest, is also in danger, and so are the numerous and extremely interesting houses in the neighbourhood of the church of San Giovanni dei Fiorentini; and a new wide road from the Via Porta Pinciana to the south side of the Villa Medici in the Pincio would probably, one may conjecture, see taxi-cabs and motor 'buses running through the gardens of the Villa, and through those of the Convent of the Sacred Heart. Of course there is a great outcry against these proposals; but the Roman municipality has a reputation for obduracy, and the worst is feared. But is it the worst? When sentiment and æsthetic feeling are opposed to convenience and social welfare, the more material consideration ought to prevail. If wholesale demolitions have become really necessary in Rome, it would be immoral to oppose them; and such relics as escape the hand of the really beneficent destroyer can then be enjoyed with a clear conscience. The new Rome may lose much of its interest for visitors, but it should gain immensely in the means of health and comfort for those who have to live in it. Reforming zeal can doubtless be carried too far; but so also can the enthusiasm for antiquity. If Signor St. Just can strike the middle course, he will be rewarded with the hearty execrations of both parties of extremists, but he will earn, even if he does not receive, the gratitude of the man in the street. If Rome is not to be regarded as an open-air museum of antiquities, but as a living and growing city, it will not be denied its "improvement schemes." But we could wish that they were entrusted to an architect rather than to an engineer. The International Congress of Architects will next take place in Rome, in 1911. In the meantime, there may occur such engineering innovations as "should move the stones of Rome to rise and mutiny."

Snubbed?

About the R.I.B.A. letters to the President of the Local Government Board, with respect to the Housing and Towns Planning Bill, which are printed in another part of the present issue, it would perhaps be unwise to say much at the present moment. Yet it is hardly possible to withhold the observation that there ought to have been no need to write them, and that the necessity for making them public is not conspicuous. As soon as the terms of Mr. John Burns's Bill became known, the R.I.B.A. very properly sent a deputation to wait upon him in order to express the views of that body. But apparently Mr. Burns was not feverishly anxious to avail himself of the invaluable assistance that the Institute was prepared to place at his disposal. Most legislators are wise enough to "consult the man who knows," but perhaps Mr. Burns honestly believed that he had already done this, and that as the man's name begins with a "B," any further information would be quite superfluous. At any rate, the publication of the letters addressed to him seems to indicate something like despair of catching him in a responsive mood. Whether it was wise to make public a correspondence in which it is rather amusingly evident that while "Barkis is willin'," the other party is either cold or exceedingly coy, is perhaps a matter of opinion. But, in any case, we do not believe that even the omniscient President of the Local Government Board can ignore with impunity the quite tolerably disinterested advances of so learned and influential a body as the R.I.B.A.

Labour Representation.

The right of a trade union to apply any portion of its funds towards securing or maintaining Parliamentary representation has been always keenly contested, and the objection is upheld in the judgment delivered by the Court of Appeal on Saturday last, in the case of Osborne *v.* the Amalgamated Society of Railway Servants. A final appeal to the House of Lords is by no means certain. After the very clear and decisive ruling of the Master of the Rolls and Lords Justices Fletcher Moulton and Farwell, the trade unions may well consider it hopeless to carry the case any further. They will probably prefer to address their energies to some internal reorganisation to meet the difficulty, or to some alteration of the existing law. In the meantime the position of the labour members, in being for the moment cut off from their supplies, is not enviable; especially with Christmas so near. Will they remain true to type, and strike in a body when their wages are stopped?

Our Christmas Special.

The special Christmas issue of THE BUILDERS' JOURNAL, of which the major portion must necessarily be prepared many weeks prior to the date of publication, is now sufficiently advanced to justify the confident belief that it will be even more successful than last year's "Edition de Luxe." As before, it will be a mammoth issue, but its value will again consist in its quality rather than in its mere bulk. In it the development of British architecture is sketched authoritatively and succinctly by Mr. Edward S. Prior, F.R.I.B.A., F.S.A., who deals with English Mediæval architecture; by Mr. J. A. Gotch, F.R.I.B.A., F.S.A., who treats of Early Renaissance; and by Mr. Mervyn E. Macartney, F.R.I.B.A., F.S.A., who gives a terse account of later Renaissance work. Modern work will be exemplified by buildings of 1908. Representative buildings of each period will be illustrated by what may be described without exaggeration as the finest collection of architectural examples ever brought together in a periodical publication. As last year's special issue was immediately exhausted, and copies of it are still being sought, and occasionally change hands at a high premium, and as, in our opinion, the new special will be a still more desirable acquisition, it is hardly necessary to urge our readers to take time by the forelock and send in their orders without delay; otherwise they will run the risk of missing a good thing. As the commercial success of the issue is already assured, we offer this advice solely in the interest of our regular subscribers, many of whom, we were sorry to find, were last year unable to procure a copy of the "Edition de Luxe." *Verb. sap. sat.*

PROPOSED GUILD OF ARCHITECTS' ASSISTANTS.*

By E. J. Dixon, A.R.I.B.A.

The present-day practice of architecture differs in a striking manner from the conditions which exist in a trade or business. Architecture is primarily an art, and it involves the management of the work of the various trades concerned in the making of a building in order to produce the highest artistic result possible to the architect. This is architecture ideally considered; it means that the architect should be (and is, if he deserves the title of architect) the essential and primary factor; the artist, to whom all others are mere accessories. Unfortunately, however, for the successful existence of this ideal state of things, the profession of architecture is gradually becoming, or is actually, a prey to the spirit of commercialism, or mere business, in which the cash factor is predominant, and art runs a grave danger of being displaced from its primary importance and relegated to a secondary position. A struggle for the mastery is now proceeding between art and commercialism. This struggle involves the deterioration of architecture as such; it divides interests which should be united; and the gradual separation of the assistants' interests from those of the principal is one of the chief phenomena of this period of transition through which the profession of architecture is now passing.

Some fifty years or so ago, the assistant never considered his position in reference to his principal otherwise than as that of a transitory phase in his career, necessary to his professional and artistic training, "a tent in which to pass a summer's night," not a permanent resting place beyond which only a few favoured ones could travel. The chances of private practice gradually became more remote as the present day was approached, and public competitions, Government and municipal appointments became the goal of all but a decreasingly small number. Now, the position for the assistant is becoming more and more hopeless, and the sentiment is gradually being impressed on the whole class that the position of assistant is becoming a permanent one. The influx into the profession continues, however. The number of unemployed, it is generally agreed, has reached alarming proportions, and the amount of work in hand is not only less than ever but is collected into fewer hands.

As long as the assistant considers his status to be simply a passing necessary condition *en route* for a possible practice of his own in the future, none of these questions will affect him if he is the assistant to whom a certain section of the profession refer as being typical when anything is said of employment difficulties—that is, a gentleman having some private income of his own to live upon. But the truth must be told, and the obvious made clear—the great mass of assistants have no such resources to make use of in times of difficulty. The savings of a few years are all lost in a few months of unemployment. To assistants generally, the evils of unemployment, the tremendous difficulty of winning a competition, and the gradual loss of status due to falling salaries.

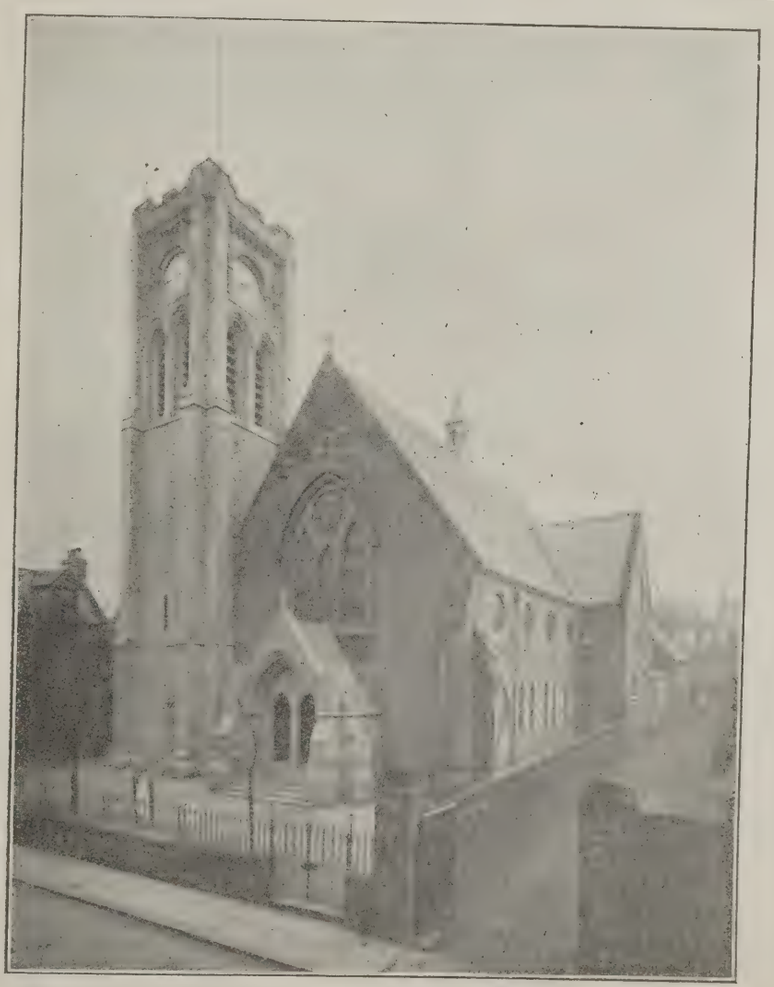
For it is very difficult, and involves enormous economy and mental ingenuity to maintain a professional status on thirty shillings or two guineas per week in a community where the "cash nexus" is the established criterion of position and professional dignty. All these matters are gradually impressing themselves on the minds of assistants, and they constitute a real danger to architecture, for they direct undue attention to the purely financial and business side of an assistant's responsibilities, and only the lapse of time is required to wear away the ideas and prejudices engendered by former conditions, to land the assistant very forcibly in the gulf of trade unionism, where financial matters come first and everything else nowhere.

That this is not a fanciful or theoretical picture, everyone acquainted with the change which has taken place in the prevalent ideas of assistants within the last fifteen years or so will agree. We all wish to avoid the risk of such a possibility as this. The R.I.B.A. and the Society of Architects are, as far as their consideration of the internal organisation of the profession is concerned, of interest only to principals (the latter, be it said to its credit, not so completely as the former); and the assistant has hitherto thought it necessary to engage in the positions taken up by these societies on account of the possibility and the hope he fondly indulged of at some future date becoming a principal himself. It is necessary for that interest to continue and increase, both in the interests of architecture and the profession.

The position now becoming more permanent, and involving less drafting of assistants into the ranks of principals, it becomes necessary and imperative to create a combination, a Guild of Architects' Assistants, for the consideration of questions which concern assistants especially, and to endeavour, by means of the strength that combination alone can give, to find solutions or palliatives to the questions or evils raised by present circumstances, and to endeavour to give effect to those solutions or palliatives.

It is necessary that the membership of such a guild should include all architects who are really interested in the advancement of architecture and the progress and well-being of the assistant. The membership should be divided into classes according to capacity and experience, the subscriptions should vary in amount correspondingly, the benefit or probable benefit received by the member forming a determining factor. The questions which should concern the guild should be, primarily, the maintenance of a high standard of efficiency and inducements to its members to develop the art of architecture to the best of their ability. In this matter existing societies and all sympathetic architects should be invited to co-operate. The organisation of the business and financial side of the work of an assistant should command our next notice,

*Mr. Dixon's letter, in our issue of October 21st, urging the desirability of organising architects' assistants, has aroused so much interest that he now feels justified in offering these further observations on the subject



NEW TOWER AND PORCH, ST. ANDREW'S PARISH CHURCH, NORTH BERWICK. HENRY & MACLENNAN, ARCHITECTS.

a system of unemployed insurance, to suggest a scale of minimum salaries, to consider the position of the pupil and the improver in reference to the assistant's office hours and overtime, and overcrowding in offices. In all these matters there is much scope for improvement, which might be effected in quite a friendly manner if the proposed reforms were carefully considered and properly presented.

It is not an absurd or ridiculous matter for assistants to combine to consider and advance their own interests, and it is to the mutual advantage of the principal and the assistant to make use of and assist such a combination.

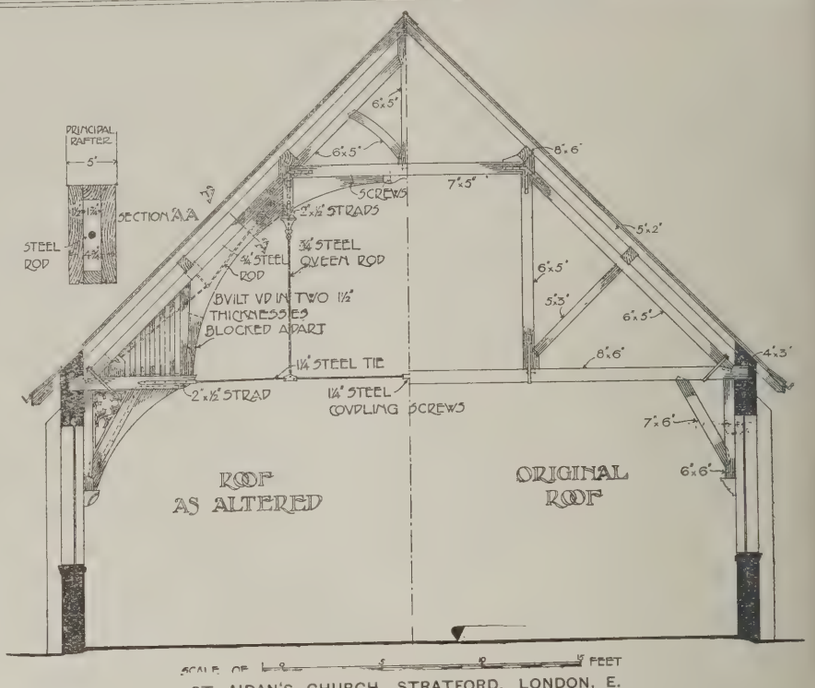
When an impartial assistant or practitioner reads, or hears, the writings or speeches of the architectural idealists at any of our societies, he is painfully conscious of a curious sense of detachment from the conditions which really prevail, and the remote position of the art of architecture from its present day practice. Such detachment is becoming more and more pronounced; and if our idealists are to continue their useful work they must find for it a field in which there is more earnest sympathy with their aims and objects, and they must take fuller cognisance of the inseparably sordid environment which menaces the artistic side of the profession, and they must come into closer touch with actual practice, so that they may be enabled to formulate their idealism in more accord with the greater knowledge thus gained. A Guild of Architects' Assistants would undoubtedly assist this object. Architecture without idealism and enthusiasm is dead. Idealism without deep and earnest sympathy and conviction becomes cant and hypocrisy. The danger of architecture at the present day is that of becoming the object of a canting idealism and the consequent prey of financial and business interests.

If architecture, and the organisation of the profession of architecture, is to see steady improvement and progression, it is only by means of such a guild that any such advancement can be brought about. None of us desire to see the assistant sink into the morass of trade unionism; and I can conceive of no other means to permanently benefit architecture and the entire architectural profession but that of a guild, in which all classes of the profession may meet for the discussion and settlement of all questions relating to the architectural assistant.

The Peterborough Cathedral Restoration Fund, which was started 25 years ago, has just been closed. The expenditure has amounted to £53,614, which has been raised by voluntary subscriptions; and, in addition, the special gifts for beautifying the cathedral have reached £20,000. The work has been carried on during the tenure of office of four deans and three bishops.

* * *

Mr. Alfred Gilbert's statue of Queen Victoria, which has stood for fifteen years in the Abbey grounds at Winchester, is to be removed to Winchester Castle, on the recommendation of Sir Edward Poynter, P.R.A., and Mr. Thomas Jackson, R.A., who state that the statue was never intended to remain out of doors, and that, facing the north, it is badly lighted. It is understood that Mr. Gilbert has consented to complete the statue in accordance with the original designs by adding two figures.



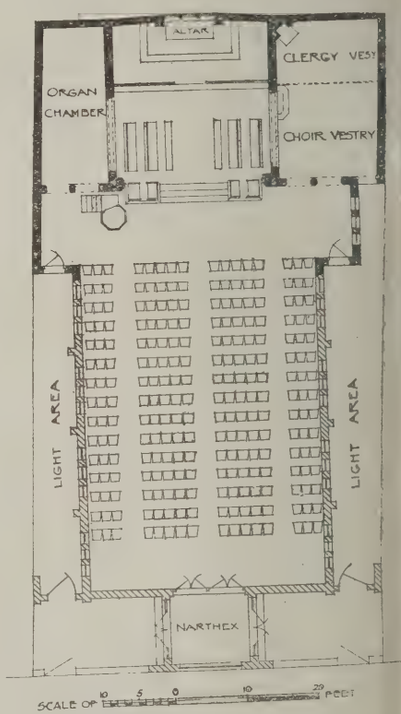
ST. AIDAN'S CHURCH, STRATFORD, LONDON, E.
SECTION SHOWING ALTERATIONS TO ROOF. BANISTER FLETCHER & SONS, ARCHITECTS.

Our Plates.

St. Aidan's Church, Stratford, London, E.

The alterations shown by the views and plan consisted of the extension of the chancel and the formation of clergy and choir vestries and organ chamber. The interior was constructed of stock brickwork, and the arches of Bath stone. Owing to the fact that the chancel is at the extremity of the site, and that the east window may therefore at some future time be blocked up, light to the chancel is also admitted by means of a clerestory. The east window has symbolic subjects representing God the Father, God the Son, and God the Holy Spirit. The whole of the glazing was executed by Messrs. Harvey and Ashby, of Birmingham. The detail of the roof shows on the right side the original simple queen-post roof erected some years back. The left side shows the alterations effected by cutting away the tie-beam and queen-post and inserting tie rods, and the formation of the lower portion as a hammer beam truss. In order to do this, it was necessary to truss the principal rafter to support the lower purlin, the steelwork being hidden by the built-up curved braces as shown in section. At the same time, the top of the queen-post had to be left, and this was treated with a pendant moulding. In addition to this a king-post and struts were added to the upper part of the truss. The general contractor was Mr. A. E. Symes, of Stratford. The whole of the works, including the pulpit, reading desks, and electric-light fittings, were designed by the architects, Messrs. Banister Fletcher and Sons, 29, New Bridge Street, E.C.

Red tape certainly appears to be at a growing discount with the Local Government Board. At a recent meeting of Fleet District Council, it was announced that a loan of £600 for making up roads had been sanctioned without holding the usual preliminary enquiry.



ST. AIDAN'S CHURCH, STRATFORD, LONDON, E. PLAN.
BANISTER FLETCHER & SONS, ARCHITECTS.

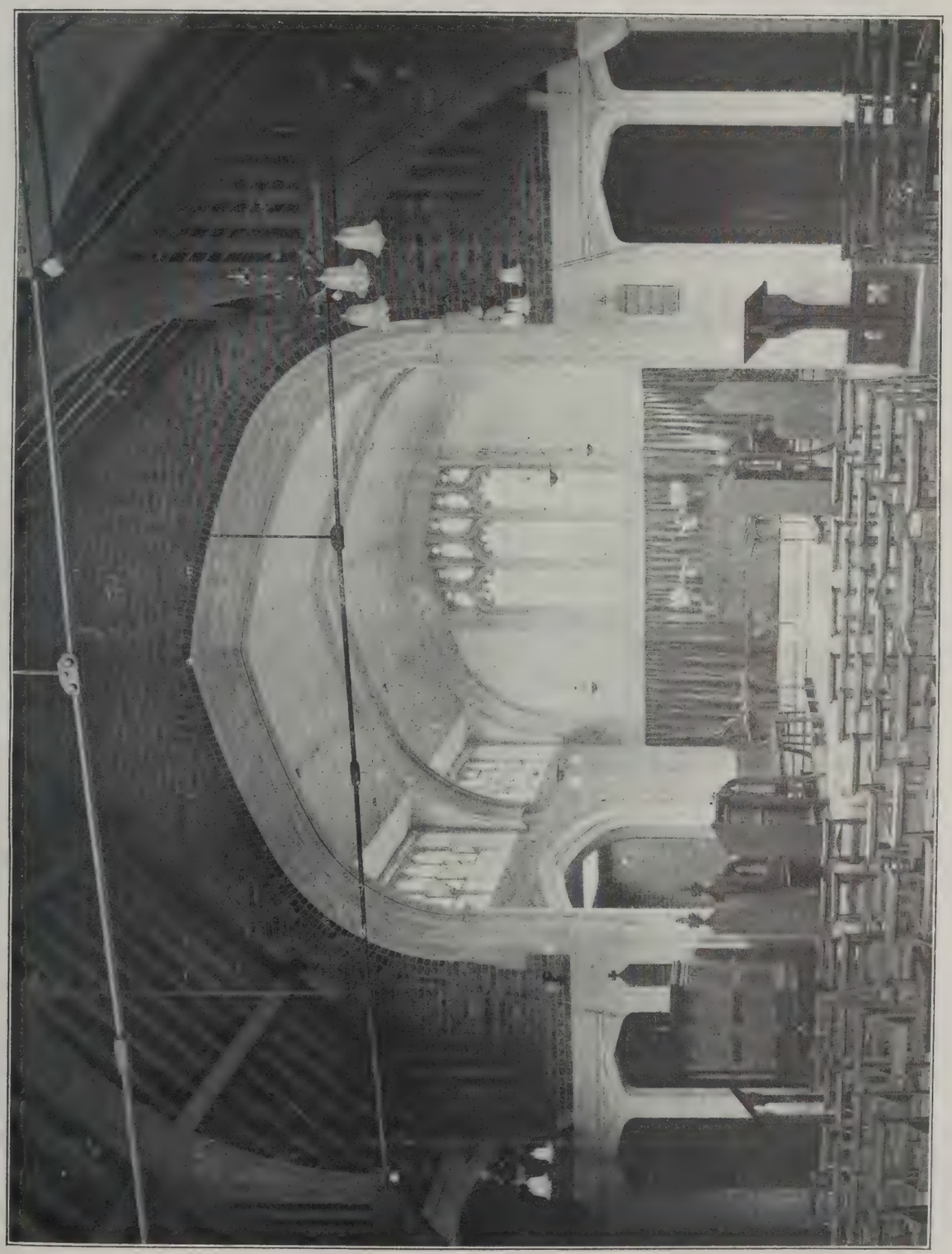
Mr. A. Wyatt Papworth, A.R.I.B.A., of the firm of Lovegrove and Papworth, Town Hall Chambers, 374/8, Old Street, E.C., has been appointed surveyor to the licensing justices of the Paddington Division.

* * *

Sir Weetman Pearson's newly-acquired mansion, Cowdray, Midhurst, Sussex, has narrowly escaped destruction by fire. The residence was being renovated, and the workmen on the premises employed the private fire appliances to good effect in extinguishing the flames.



ST. AIDAN'S CHURCH, STRATFORD, LONDON, E. VIEW SHOWING ALTERATIONS TO ROOF OF NAVE.
BANISTER FLETCHER & SONS, ARCHITECTS.



ST. AIDAN'S CHURCH, STRATFORD, LONDON, E. NEW CHANCEL. BANISTER FLETCHER & SONS, ARCHITECTS.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W.T. Postlethwaite, Council Offices, Swinton, Manchester.

* *This competition has been unfavourably reported upon by Correspondents.*

Proposed Public Shelter and Promenade, Whitley Bay, Northumberland.

In the competition for the above, thirty designs have been received, and these were on view at the Council Chamber, Whitley, on November 23rd, 24th, and 25th. The invitation issued by the Whitley and Monkseaton U.D.C. was for designs for a public shelter with seating accommodation for 1,000 people, with promenade space for another 400, the cost not to exceed £1,200; yet the majority of the designs submitted were for two-storey concert halls and pavilions, which could not be erected for double the sum stipulated. Some of the designs were decidedly poor, whilst others were far too elaborate and fussy. We understand that the Council have already decided on one of the designs, and the author's name will be made known at the next Council meeting.

Town Hall, etc., South Bank-in-Normanby.

We have received from a correspondent in the North the conditions for a competition for the erection of a new Town Hall, Market Hall, Council Offices, etc., for the South Bank-in-Normanby Urban District Council. Our attention is drawn to the first paragraph which deals with premiums: — "The architect whose plans are selected and approved by the Council will be employed to carry out the work, for which he will be paid a commission of five per cent. on the amount of the builder's contract (exclusive of furniture), such commission to include the preparation of plans, quantities, and specifications—revising same if necessary, preparing copies of plans for the Local Government Board, making working drawings, sketch plans, estimates, waiting on meetings of committees or council, granting certificates, supervising the work, travelling, and all other out-of-pocket expenses." So far from the Council paying premiums, they expect the architect whose plans are selected to provide the quantities as well as the plans and specifications, and he has also to find all travelling and out-of-pocket expenses on the bare five per cent. We need hardly say that our readers would be well advised to have nothing to do with the South Bank-in-Normanby competition.

Garden Designing Competition at Letchworth.

A competition for garden designing has recently been promoted by the First Garden City, Ltd., Letchworth. A large number of designs were submitted, and the following are the awards made by Mr. Robert Harkness, Hitching; Messrs. Kelway and Sons, Langport-Somerset; and Messrs. Mawson Bros., Windermere, who acted as judges:—Class I., David Smith, Wormit-on-Tay, N.B. Class, II., W. H. Johns, 5, Mortlake Terrace, Kew, Surrey. Class III., 1st, M. and A. R. Wilson, River Lodge, Harpenden; 2nd, F. J. Landsell, Dexford, Leicester. Class IV., 1st, Cayley and Rochester, Rothwell, Kettering; 2nd. Miss Louise A. Dunington, Belgravia Chambers, Victoria Street, S.W. The designs were on view in the Howard Hall, Letchworth, from November 16th to 21st, and the Horticultural Society have also arranged for them to be exhibited in the Horticultural Hall, Vincent Square, Westminster, on December 8th.

Architectural Societies.

R.I.B.A.

For some months past a scheme has been under consideration by a committee of the Institute, its object being to co-ordinate and systematise the measured work done by candidates as testimonies of study for admission to the final examination, and by competitors for the measured drawings prize. The proposals were first brought before the Literature Standing Committee, and having been referred to a sub-committee and favourably reported upon, the sub-committee, with other members added, was permanently established to thrash out details and give practical effect to the proposals. The committee, which is to be known as the Records Committee, R.I.B.A., consist of the following members of the Institute:—Professor W. R. Lethaby (F.), chairman Messrs. Alexander Graham, F.S.A. (F.), Halsey Ricardo (F.), R. Phenè Spiers, F.S.A. (F.), D. T. Fyfe (F.), Walter Millard (A.), W. Curtis Green (A), hon. secretary, S. K. Greenslade (A.), A. J. Stratton (A.), and two non-members, Messrs. Philip Norman, F.S.A., and R. Weir Schultz. Under existing conditions much excellent measured work is done which, through want of system and proper direction, is often of little permanent value. Measured drawings, for instance, are repeatedly made of the same buildings, or of buildings of which authentic record already exists, or, again, of buildings of insufficient architectural or historic interest. It is desirable, too, that a student who has done a certain amount of measured work of a building in his testimonies of study for the final examination should be encouraged to proceed wth further work on the same building if he intends later to enter for the measured drawings medal. In this way continuity of study as well as of record would be preserved.

With the view of directly aiding the student in his choice of building, and indirectly of gradually forming a measured record of the buildings of the United Kingdom, the committee have decided to prepare an extended list of old buildings suitable for study, and especially of those of which no adequate record exists. In order to make this list as complete as possible, the committee are inviting the allied societies and other bodies to assist in its compilation, and they are seeking also the co-operation of individual members of the Institute and others who have special knowledge of buildings of particular districts. It is proposed to include in the list ecclesiastical, civic, or domestic buildings of any period, and information will be given, where necessary, as to their position and character as well as to their accessibility for the purposes of study.

The manner in which the record of such work should be preserved may possibly take the form of publication of specially chosen drawings at stated intervals.

Architectural Association.

At the conversazione held at 18, Tufton Street, Westminster, on November 25th, the guests were received by Mr. Walter Cave (the president) and Mrs. Cave. The members and guests present were about 650 in number, and included Sir George and Lady Frampton, Sir Edward Ward, K.C.B., Sir A. Brumwell Thomas, Mr. Ernest George, P.R.I.B.A., Mr. Leonard Stokes, V.P.R.I.B.A., Mr. E. Guy Dawber, F.R.I.B.A., etc.

The A.A. Orchestral Society, conducted by Mr. Harry E. King, and the A.A. Choral Society, conducted by Mr. P. W. Pocock, jun., provided an interesting programme of music. The exhibits comprised drawings and sketches by Mr. W. Curtis Green and Mr. C. Wontner Smith; china, glass, and ivories, lent by Sir A. Brumwell Thomas, Messrs. R. S. Balfour, Walter Cave, E. Guy Dawber, Ernest George, H. Tanner, jun., J. J. Joass, Percy May, Maurice E. Webb, and W. Wonnacott. Tapestries and china were shown by Messrs. Martin Van Straaten and Co., Masonic china by Mr. W. J. Songhurst, ancient paintings by Indian artists by Mr. Edward Thornton, Lancastrian lustred pottery by Messrs. Pilkington's Tile and Pottery Co., sketches by the late Mr. Hugh Stannus, and the following exhibits lent by Mr. A. H. Ryan-Tenison: Model of three decker in ivory, made at Dartmoor by one of the French prisoners taken at Trafalgar. Japanese, Chinese, and Indian exhibits; specimens of Crown Derby china of the Billingsley period, and sixteenth century china dishes. In the School of Architecture there was an exhibition of students' work, as well as photographs and sketches taken on the Belgian excursion and by members of the Camera and Sketching Club.

At the ordinary general meeting on November 20th, Mr. Wontner Smith read the minutes of the last two nominations for membership. The President (Mr. Walter Cave) then read the following names of candidates for membership: — N. Kitchen, proposed by Hon. Secs (by order of the Council); A. G. Humphrey, proposed by H. P. G. Maule and W. A. Forsyth; J. C. E. Henslow, proposed by J. O. B. Hitch and J. A. Cheston. These gentlemen were unanimously elected.

Halifax Architectural Society.

The annual dinner of this Society was held at the Old Cock Hotel on November 20th, the president, Mr. C. J. Fox, in the chair. The Society, he said, was in its infancy and at present numbered only about thirty members. When he first came to Halifax as a pupil there were only five architects practising in the town. The young architect of those days was thrown on his own resources, but managed to worry through and get well grounded.

THE CONCRETE INSTITUTE.

At the first general meeting of this Institute, which was held at the Royal United Service Institution, Whitehall, on November 19th, and of which brief particulars were given in last week's issue, Sir Henry Tanner, I.S.O., F.R.I.B.A. (principal architect, H.M. Office of Works), vice-president, was in the chair.

Mr. Edwin O. Sachs, F.R.S.Ed., chairman of the executive, having been called upon to make a statement as to the progress of the Concrete Institute, which was founded in July last, gave the following particulars:—The Institute, which was started with 100 founders, already had a list of members exceeding 300, of whom more than a hundred were members of the Institution of Civil Engineers, and twenty-five represented various Colonies. The Institute had as its president the Earl of Plymouth, C.B., until lately First Commissioner of Works, and as its vice-presidents, besides Sir Henry Tanner, Sir Douglas Fox, Kt., J.P. (past president of the Institution of Civil Engineers), Sir William Mather, Kt., J.P., LL.D., M.Inst.C.E., etc., and Sir William Preece, K.C.B., J.P., F.R.S., LL.D. (past president of the Institution of Civil Engineers).

The objects of the Institute might be summarised as follows:—(a) To advance the knowledge of concrete and reinforced concrete and direct attention to the uses to which these materials can be best applied; (b) to afford the means of communication between persons engaged in the design, supervision, and execution of works in which concrete and reinforced concrete are employed (excluding all questions connected with wages and trade regulation); (c) to arrange periodical meetings for the purpose of discussing practical and scientific subjects bearing upon the application of concrete and reinforced concrete, and to conduct such investigations, and to issue such publications as may be deemed desirable. Mr. Sachs then went on to say that the great necessity for this Institute might perhaps best be gauged from the fact that the number of technical questions and suggestions made to its Council immediately upon formation had been simply enormous, and of such a scope as to require enquiry, research, and investigation for years. It was to be hoped, Mr. Sachs added, that the British public authorities concerned will find it advisable to contribute in some way towards the expense of the research work necessary. In America, the United States Government had already contributed £25,000 for research work in this direction, while the German authorities had contributed £20,000 towards research in reinforced concrete alone.

The Chairman (Sir Henry Tanner) expressed his confidence that the Institute would take an important place among the scientific bodies of the country.

Mr. Marsh's Paper.

Mr. Charles F. Marsh, M.Inst.C.E., assistant-engineer, Metropolitan Water Board, was then called upon to read his paper, entitled, "The Composition and Uses of Plain and Reinforced Concrete." The so-called natural cements, Mr. Marsh said, were very uneven in their composition, since the chemical constituents are not carefully proportioned as is the case with Portland cement. Natural cements were, it is to be feared, sometimes placed on the market as Portland cement, and care should be taken, when Portland cement was specified, to ensure that the proper material was supplied. The manufacture of Portland cement had been very greatly improved within recent years. The materials were scientifically proportioned, and all the processes of manufacture were carefully supervised. The improvement had been largely brought about by the gradual development of a thorough system of testing, but it was also due in a very great measure to the scientific study of the material by the manufacturers, most of whom have trained chemists on their staffs. It was, in fact, owing to the intelligent co-operation of engineers and manufacturers that the artificial Portland cement of to-day was an infinitely more reliable material than it was formerly.

Cement has within recent years been considerably improved by the finer grinding obtained by the introduction of tube mills, and at the present day it is quite usual to obtain a cement which will leave less than 15 per cent. residue on a 180 sieve. Generally speaking, the finer the grinding, or, rather, the greater the percentage of impalpable powder, the stronger will be the mortar or concrete made from a cement. This increase in the strength of mortars and concrete due to the fineness of the cement will be shown by the behaviour of the sand briquettes, the tensile resistance of which increases with the fineness of the cement used.

Mixing of Concrete.

In regard to the mixing of concrete, Mr. Marsh lodged a protest against the not unusual practice of defining the proportions as 1 to 4, 1 to 6, etc., which gave no indication of the relative quantities of sand and stone. Such a definition was only permissible when using a ballast or unscreened broken stone, and in such a case it should be clearly specified that a proper quantity of sand should always be maintained in the aggregate, either by the addition of further sand or the screening out of a surplus. Definite proportions of cement, sand, and stone should always be adopted for the best classes of concrete. It was probable that before long the old method of proportioning by volumes of cement, sand, and stone would be superseded by the proportioning by weight of cement to volumes of sand and stone. This appeared to be the rational method, since the cement was sold by weight, and it therefore seemed to be only reasonable that it should be proportioned by weight. It was impossible always to obtain the same amount of cement in gauge boxes, as the method of filling had a considerable effect on the quantity. The contractor carrying out any works had a much better control on the amount of cement used when it was proportioned by weight, while the engineer or architect was sure of obtaining the proper quantity. As a rule, machine mixing gave a more even concrete than hand mixing if "batch" mixers were used.

Aggregates.

The nature of the aggregates in concrete depended in a great measure on the locality, but it was an undoubted fact that, all other things being equal, the harder the aggregate the better the concrete. For some purposes, such as for reinforced concrete, which may be subjected to fire, certain aggregates should be avoided. Crushed limestone, for instance, would disintegrate when subjected to heat, and should not be used for fire-resisting structures. It was better to avoid the use of flints, if possible, when fire resistance is a desideratum, and if they are used it was advisable to break them, since they will break on the lines of cleavage, and the broken pieces will consequently have less tendency to fly.

Consistency.

The question of the proper consistency of concrete had received a good deal of attention since reinforced concrete became a recognised structural material. In the early years of the use of this material very dry concretes were almost universally employed, but at the present time it had become the almost universal practice to use a somewhat wet mixture, and some constructors favoured a quite sloppy consistency. It appears that, as usual, the mean was the best, as although a dry mixture, very thoroughly rammed, gave the strongest concrete, the ramming is likely to be shirked, and in any case the steel of reinforced concrete was not so well protected by a dry as by a moderately wet concrete, which required only moderate ramming.

Waterproofing.

The proper waterproofing of concrete structures was becoming a question of great importance. The extended use of concrete block and reinforced concrete construction forced us to consider seriously the provisions which might advantageously be taken to secure concrete from the penetration of water. Many materials, both natural and manufactured, had been employed as ingredients in the concrete with more or less success, and under small heads were undoubtedly beneficial so long as the concrete did not crack, but as soon as a crack existed it was evident that such ingredients were useless as preventatives to the penetration of moisture.

Protection of Steel.

A doubt still remained in some minds as to the adequate protection of the steel against oxidation in reinforced concrete structures. Personally, the lecturer was convinced that, provided the concrete was of a dense nature, such as was always used for reinforced concrete, was not mixed too dry, and was well worked around the reinforcements, there need be no fear that the steel would become oxidised.

Nature of Reinforcing Metal.

The advantage or otherwise of high carbon steel as a reinforcement was a question which might be expected to raise some discussion; personally, he was of the opinion that when employed in members subjected to bending the small advantage gained by its use when relatively small unit moments of resistance were required was counterbalanced by the probability that the highest stress allowed in the steel will cause the concrete on the tensile side to crack. With the higher percentages of reinforcement, when the compressive resistance of the concrete became the ruling factor, there could be no advantage in the use of high carbon steel.

For compression members of the ordinary construction even mild steel could not be stressed to its allowed limit; for such members, therefore, there could be no advantage in the use of high carbon steel. For hooped members, if the allowable compressive stress in the concrete was higher than about 1,000lbs. per sq. in., it was advisable to use high carbon steel for the longitudinal reinforcements, and the employment of high carbon steel for the bindings was always advisable. For the purpose of resisting temperature stresses there was an advantage in the use of high carbon steel, as its greater resistance would enable it to offer more assistance to the concrete.

Form of Reinforcing Bars.

The advantage of the use of deformed bars was another subject which would doubtless raise discussion. There was no

doubt that deformed bars offered more resistance than plain bars against sliding through the concrete, but the real question appeared to be whether plain bars offered sufficient resistance, as if such was the case there could be no real advantage in the employment of deformed bars, especially if they were more costly.

Mesh Reinforcements.

The Institute might well carry out some experiments to ascertain definitely the relative merits of various mesh reinforcements, and of plain rods either loose or tied at the intersections for reinforcing slabs. Tests might also be made to ascertain what increase of resistance is effected by placing the mesh reinforcements diamond-wise, so that they may have a tendency to close up under tensile stresses.

Test Loading.

The Institute might express its opinion as to the percentage of the super-imposed loading which should be used in applying test loads to a finished structure, the position of its application on various types of floors, etc., and the period which should be allowed to elapse before a structure was tested.

Architectural Rendering.

The subject of concrete surfaces and the architectural treatment of concrete structures generally was one which must be of extreme importance before long, and this Institute will doubtless render valuable aid in adapting this material to architectural uses. It could not be doubted that before very long engineers and architects generally would take up the design of the structures they wish to erect in reinforced concrete, or would entrust the design to specialists other than the firms constructing in the various "systems." It was to be hoped that these firms would adapt themselves to the new conditions and become specialists in a broader sense than they were at the present time. They occupied a very advantageous position with regard to the designing and carrying out of reinforced concrete works, having considerable experience of the practical methods of construction. With reinforced concrete, perhaps to a greater extent than any other structural material, the practical considerations of construction influenced the scientific and economical design. It could not reasonably be expected that reinforced concrete would remain a multitude of various more or less rational systems relving on more or less valid patents. If such were to be the case, it was to be feared that its employment would be seriously affected. This method of construction was not, and could not be, split up into defined systems, it must be adapted to the requirements of each case in the best manner possible; and while all honour was due to those men who, as proprietors of the various systems, had undoubtedly borne the labour and heat of the day, it was to be sincerely hoped that they would not try and hinder the advancement of this very excellent method of construction by petty disputes, but would come to take a broad view of the whole question. The lecturer was sure that it would be to the great advantage of all concerned when the various systems were merged into one, and reinforced concrete took its proper place as a method of construction which, by reason of its great adaptability, could be employed for a vast number of different types of construction. It was certain that there would be no lack of work for specialists if this broader view were taken, and they undertook the design and construction of works in reinforced concrete without restricting themselves to their one particular system.

Standardisation of Symbols.

This Institute will probably enquire into the standardisation of the symbols used for the calculations of reinforced concrete structures. It was unfortunate that so many systems of symbols should be used by various authors, and the lecturer was afraid that some might consider that he was one of the chief sinners in this respect. With such a subject as reinforced concrete the matter of proper symbols was one which required very careful consideration. There were so many different symbols required that the available alphabets were hardly sufficient for the purpose, and when trying to deal with the calculations in a complete manner one sometimes wished the Chinese alphabet were universally understood, as it might come in very handy when the Latin and Greek letters were all used up.

Discussion.

In the ensuing discussion, Mr. Wentworth Shields said that, notwithstanding the excellence of Portland cement, lime concrete should not be despised. Lime concrete was very successful in the Egyptian barrages. He mentioned that reinforced concrete had been in use at Southampton for nine or ten years, and was, on the whole, highly satisfactory, although there were occasional instances of oxidation.

Mr. Meik said that he had known only one instance of moisture affecting the metal, and that was where gravel had been used for the aggregate.

Mr. H. H. Statham urged that, architecturally, concrete should not be treated like masonry, but as a monolithic material. Some kind of treatment that was natural to the material should be evolved out of the construction.

Mr. B. Blount, Mr. H. G. Bamber, Sir John Cockburn, Mr. W. T. Hatch, Mr. D. B. Bulter, and the Chairman also took part in the discussion, and, votes of thanks to the chairman and the reader of the paper having been passed, the meeting came to an end.

The addition to the Law Courts in the Strand, London, upon which work has just been commenced, is expected to cost at least £95,000.

* * *

Mr. Walter Reynolds, of the London County Council, presided, on November 26th, at the London Hippodrome, at a demonstration of an apparatus for extinguishing fires in cinematographs. The device consisted of a tank containing water, to which was attached a piece of metal tubing, which in its turn held a sprinkler immediately over the drum upon which the film was wound. Connecting the tank and cinematograph was a piece of cotton, which, in the event of a conflagration, ignites, and automatically releasing a valve, causes the flame to be extinguished. Two films were set alight in succession, the apparatus acting satisfactorily in both cases. A heated discussion ensued, in the middle of which a rival invention was introduced, the originator immediately commencing to lecture upon its virtues. Mr. Reynolds brought the demonstration to an end by observing that he was there in the public interest only, and was perfectly willing to witness tests of any invention upon the market. By the courtesy of Mr. Oswald Stoll, the Hippodrome had again been placed at his disposal, and any gentlemen desirous of having inventions tested should communicate with Mr. Allan at the theatre.

THE ARCHITECT'S CERTIFICATE: SOME LEGAL ASPECTS.*

By A. M. Brice.

(*Continued from page* 412, *No.* 720).

II.—The Conclusive or Final Certificate.

Assuming that the architect is not unqualified to act in a quasi-judicial way and give a certificate, and assuming that he is the person designated by the contract to give the certificate (when the certificate of more than one architect is required, a certificate by one will not suffice), see Lamprell *v.* Billericay Union [(1849) 3 Ex. 282; 18 L. J. Ex. 282], and that he has received power to certify regarding the subject-matter of his certificate, that the power is still in existence, and that the certificate is shown by the contract to be intended to be binding on both parties, Robins *v.* Goddard [(1905), 1 K.B.D. 294], it will now be convenient to tabulate the various conditions which will have to be secured before the certificate is rendered final and conclusive.

I. The final certificate must not merely contain evidence that it is intended to be final, but must be in fact final [Robins *v.* Goddard, 1905, 1 K.B. 294] Thus, in the well-known case of Robins *v.* Goddard, it was held that though the architect had given a certificate which purported to be final, yet a clause in the building contract which provided for any dispute or difference being referred to arbitration, with power to the arbitrator to open up, review, and revise any certificate or notice and determine all matters in dispute, effectually destroyed the finality of the certificate. The certificate purported to be conclusive, but was in fact subject to revision. Consequently it was not binding, not conclusive, and therefore not final.

II. The final certificate must deal with a matter demanding judgment and skill, *i.e.*, it must not be a mere ministerial act [Stevenson *v.* Watson (1879), 4 C.P.D. 148; Cf. Goodman v. Layborn (1881) C. A. Roscoe's Digest of Building Cases, 4 ed., app. 162].

It was held in Stevenson *v.* Watson that the functions of an architect in ascertaining the amount due to a contractor are not merely ministerial, but such as require the exercise of professional judgment, opinion, and skill. Lord Justice Coleridge in that case pointed out that the quality of the work, and the extent to which particular deductions or additions come within particular heads of quantities, are questions perfectly fit for the determination of an architect; and in many cases it will be necessary, and probably in all cases required, that there should be an exercise of considerable professional judgment and skill, and that before the arithmetical results of so many feet of work and so many pounds and shillings for the work can be arrived at, there must be knowledge of the work, familiarity with the bills of quantities, professional understanding to comprehend the technical terms and judgments to say under which head the deductions or additions ought to be placed. Although the result is one of figures, before it can be arrived at there must be an exercise of professional knowledge, skill, and judgment. An architect in this relation, said Lord Denman, is not to be dealt with as a mere caster-up of figures, but as one

*Substance of a paper read before the Institute of Builders, on November 11th, by Mr. A. M. Brice, of the Middle Temple, and Oxford Circuit, Barrister-at-Law; author of "The Legal Liability of the Architect."

having to do something requiring judgment, discretion, and skill.

III. The final certificate of the architect must be bona-fide [Stevenson v. Watson (1879), L.R., 4 C.P.D., 148]. For where the building owner and the architect act in collusion, and in such collusion the architect abstains fraudulently from doing his impartial duty to the builder, the builder can maintain an action either against the building owner [Batterbury v. Vyse, 2 H. and C. 42] or against the architect [Ludbrook v. Barrett, 36 L.T. (S.S.) 616]. The architect, said Lord Denman, in Stevenson v. Watson, "must exercise his functions fairly and honestly between them [*i.e.*, the parties trusting to him], and if he violates that duty he is liable to an action."

IV. The final certificate of the architect must comply with the terms of the contract.

Obviously, the certificate must follow the conditions imposed by the contract, or the architect would be exceeding his authority and the terms of his reference.

If, for example, the certificate had been given before certain preliminaries required by the contract had been performed, it would not bind either builder or building owner. In practically every contract, certain conditions are conditions precedent to the validity of what purports to be a final certificate.

V. The final certificate must be given when and while the power to give it exists.

Thus, as a rule, an architect has no power to give a final certificate until after actual completion of the work, and, if he has given orally or in writing what was or was not intended to be such a certificate, but which in fact amounts to such a certificate, then he cannot issue another certificate. For he has already discharged his duty, and, as in the case of an arbitrator who has made his award he is *functus officio*, and the existence of his power has come to an end. But, on the other hand, the terms of the contract may provide for the issue of supplementary certificates, and in such a case a power would survive to give such supplementary final certificates.

In the case of McGreevy *v.* Boomer [Sup. Ct. of Can. (1880), Cassell's Digest 73], the building owner exercised his power under the contract, and terminated the contract, and the engineer gave, in accordance with the contract, a certificate of all that was due up to the time of the termination of the contract. Subsequently, however, he delivered a further certificate, in which he amended the one given previously. It was held that the former certificate was not a progress but a final certificate, and consequently that it was binding.

VI. The final certificate must, if it incorporates a binding valuation, be given by a licensed valuer upon stamped paper.

This would indicate that if a final certificate is a binding valuation, that certificate could not be legally issued, nor will it be valid as between the parties unless the certificate be written upon stamped paper, and be issued by a person who is a licensed valuer. Such a view is not commonly held, and it will be useful to set out the reasons why it should be taken into account.

The architect who gives a certificate is not, be it remembered, an arbitrator. As Lord Justice James pointed out in that most important case, Sharpe *v.* San Paulo Railway [1873, L.R., 8 Ch. 597 at 609], the architect giving a certificate which determines the sums to be paid is not like an arbitrator dealing with evidence, or like a judge dealing with a law suit. The very object of leaving these matters to be settled by the architect is in order to obtain the application of his own practical knowledge. It is intended that he, as an architect or surveyor or engineer or valuer, may say what is the proper sum to be paid under all circumstances. There can be little doubt that in such a case he is acting as a valuer, and that his final certificate is intended to be a binding valuation.

Now the 4th section of the Act of 46 George III., c. 43, an Act for granting certain stamp duties on appraisements, enacts that "every person who shall value or appraise any estate or property, real or personal, or any interest in possession or reversion, remainder, or contingency in any estate or property, real or personal, or any goods, merchandise or effects of whatsoever kind or description the same may be, for or in expectation of any hire, gain, fee, or reward, or valuable consideration to be therefor paid him, shall be deemed and taken to be an appraiser within the provision of this Act to all intents and purposes."

Section 5 provides that such appraiser shall take out a licence annually, and section 6 that no person shall appraise or value any such property as described in section 4 "without being so licensed as aforesaid, on pain of forfeiting for every such offence the sum of fifty pounds."

Further, section 8 provides that such appraisers should within fourteen days of having made their appraisements write out the same on duly stamped paper, under a penalty of £50 for each offence, and section 9 enacts that every person who receives or pays for an appraisement not on stamped paper shall be liable to a penalty of £20 for each offence.

The question is again dealt with in the Stamp Act of 1891 [54 and 55 Vict., c. 39], and in schedule 1 to that Act the following is found under the head of "appraisement": "Appraisement or valuation of any property or of any interest therein or of any annual value thereof, or of any dilapidations, or of any repairs wanted, or of the materials and labour used or to be used in any building, or of any artificer's work whatsoever," and thereupon a revised scale of fees follows.

Now there are certain exemptions to this provision, and the first exemption runs thus: "(1) Appraisement or valuation made for, and for the information of, one party only, and not being in any manner obligatory as between parties either by agreement or operation of law." This exemption, which is clearly the converse of a final certificate, is founded on the judgment in Atkinson *v* Fell [5 M. and S. 240].

In that case Bayley, J., pointed out that "the words 'valuation or appraisement' do not extend to such as are made merely for the private information of parties, but to such only as are intended to be binding between them." And, following this, Holroyd J. held that the Act "does not extend to valuation made merely for the information of the individual, but such only from which a right of action or some certain benefit may accrue to the party were in the contemplation of the legislature."

From the foregoing considerations it seems obvious that the architect, in issuing a final conclusive certificate, is acting as an appraiser or valuer, and that his appraisement should be on paper duly stamped according to the provisions of 54 and 55 Vict., c. 39. The cost of the annual licence of a valuer or appraiser is fixed by 8 and 9 Vict., c. 76 S.I., at £2; and whenever taken out, it expires on July 6th in each year.

The Finality of the Final Certificate.

In addition to the foregoing requirements, there are certain other considerations involved in the conclusiveness of the final certificate.

In the first place, there is the fact that such a certificate may be purely oral and in no particular committed to writing. It has been repeatedly held that where the contract does not require a certificate in writing, an oral approval will suffice. In the case of Roberts *v.* Watkins [(1863), 14 C.B.N.S. 592; and of Coker *v.* Young (1860), 2 F. and F., at p. 101], where, under a builder's contract, certain instalments were to be paid as the work proceeded, and the balance within two calendar months after the completion of the contract "provided that the architect should have certified that the whole of the work had been completed to his satisfaction," it was held that it was not necessary that the architect should certify in writing.

"There is nothing" (in the contract), said Williams J., "to make it requisite that this should be done in writing, though it is usual to give the certificate in writing, and in most cases it is required to be in writing. But I know of no rule of law which prevents the architect's satisfaction being certified by word of mouth. To hold that a written certificate was necessary here would be importing into the contract a term which is not found here." Willes J. agreed, and Byles J., in also concurring, said "The natural and ordinary meaning of the verb 'to certify' is, to give information or assurance. If it necessarily imported that this should be done in writing, the words 'in writing' which are commonly found in these instruments, are otiose. There are many things which may be equally well done by word of mouth, in the absence of a stipulation that they shall be done in writing."

If, however, the contract states that the certificate must be given in writing, then in writing it must be given. There are numerous cases illustrating this, but reference may be made to Brunsdon *v.* Staines Local Board as a ruling case [1884, 1 Cab. and El. 272 and cf. Russell *v.* Sa da Bandeira, 1862, 13 C.B.S.S. 149]. Again, in this case of Russell *v.* Sa de Bandeira, where orders and extra work and alterations were expressed by the contract to be in writing, and such work was done on the faith of oral orders, Chief Justice Erle stated that the court could not yield to suggestions of hardship on the one side or the other. "I feel bound," he said, "to give effect to the terms of the contract, and to hold that the extras and additions supplied, not under written orders, during the performance of the contract, form part of the contract for the construction of the ship, and are not to be paid by the defendant."

(*To be concluded.*)

The fine old fifteenth-century tower of Fowey parish church is about to be restored. The tower, which is about 100ft. high to the tops of the crocketed pinnacles, is in four stages, each stage being marked by a band of Gothic tracery. The church itself was rebuilt in 1336.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

The Architect's Relation to Reinforced Concrete.

The title chosen for this article is, perhaps, rather wide, and some persons may object that we do not cover all aspects of the subject. We are aware of this ourselves, for limits of space prevent a very comprehensive treatment, while no two persons' views on the subject are exactly alike, and no doubt there are many other aspects from which our readers may regard the matter. We always welcome the expression of opinion in regard to such subjects.

First, we may remark upon the fact that reinforced concrete construction is still rather novel in principle, and though we have certainly made tremendous strides in the last few years, there are still many architects who have not yet had the opportunity of closely investigating the matter and obtaining personal practical experience in its use—we mean from their point of view, of course, and not experience of the same nature as the specialist. The theory of reinforced concrete is rather intricate, though it is not really difficult, but it no doubt deters certain practitioners from studying the subject. Probably to many, minute and intimate knowledge is unnecessary. The architect, as long as he grasps the main principles, is perhaps sufficiently equipped for all ordinary circumstances and for the more general practice of the profession. Modern building construction is becoming so intricate that it requires many specialists to deal with all its various aspects, and no man can claim to be expert in all branches. The architect is the supreme controller of many workers and of a multitude of hands, and he orders their efforts on some general plan and to some general scheme. It would be foolish to require him to design every part, for it is not only impossible but quite unnecessary; it would neither make for efficiency, beauty, nor economy. Buildings nowadays embrace the work of several main professions, which again of recent years have become split up into various branches, each of which is specialised, and it is seldom that a professional man can be expert in even two branches. For instance, we have ventilating and heating, lighting, steelwork, reinforced concrete, plumbing and sanitation, electric fittings, mechanical equipment, cold storage, furnishing, besides the main divisions of architecture and civil engineering. On a large building, the architect calls in the assistance not only of the specialists in all the above-mentioned branches, but he has the assistance of the civil engineer, to whom he delegates a considerable part of his controlling duties, while he also engages the services of a quantity surveyor, and often a mechanical and electrical engineer. The architect's province is to co-ordinate the work of all these individuals, and to act in a province which can be compared with that of the admiral who has the assistance of his vice-admirals and captains, and they in turn the assistance of various officers in charge of specialised departments. The architect has a great province, and his control must be absolute, but the same principle applies to his control as that in any other walk of life; those who are entrusted with important work must be given a certain amount of responsibility and their opinions listened to. It has been argued that reinforced concrete will eventually come into the hands of civil engineers for designing, but everything, in our opinion, points to the opposite conclusion; for, just as the architect has had to devote himself to the general control of specialists, and no longer is able to design every part of the work himself, so the civil engineer has to delegate his work to many others. For instance, at one time he dealt with mechanical, electrical, and chemical engineering. Even at one time military engineering was within his province, though as regards the last the term "civil" was, of course, to distinguish the profession from that of the military engineer, but previous to that time an engineer embraced all branches of engineering. We find to-day, too, in the civil engineering profession, that firms are undertaking the design as well as construction of works, for instance, bridges, roofs, etc., in steel; while in other branches of engineering we find machines of all kinds, electrical work (comprising whole installations), locomotives, ships, etc., designed and supplied by firms of contracting engineers. The more work becomes specialised, the closer does the specialist become associated with the carrying out of the work; for it is the practical acquaintance with work that is the basis for all the advance in design. The profession of the civil engineer, like the profession of the architect, is becoming one more of generalising the construction and the work of specialists, and a supervision on behalf of the client. We do not think that reinforced concrete, any more than steelwork, will in the general way be designed by the civil engineer. The work will be in the hands of specialist firms, and there are many advantages in that method of dealing with it. No doubt some of the disadvantages which are at present obvious to anyone, such as the inordinate duplication of designs, will be eliminated in the course of time. Standardisation will overcome this to a great extent, and no doubt the industry will become more settled, and certain firms will be recognised for certain kinds of work, and a better understanding exist between themselves, and with the architect and the consulting engineer.

Coming now to another aspect of the subject—namely, the artistic treatment—we have always looked upon the architect as the artist in building. It is not, perhaps, always clearly distinguished that the artist is made, not born—that is to say, he must have training. The special function of the architect, therefore, is his ability, obtained as a result of training and specialisation in the planning and artistic design of buildings, and no one without such a training can design work that shall be architectural. That the artistic treatment springs from the construction is admitted, but a wider knowledge is required than a knowledge of one special form of construction. We do not see that the specialist in the engineering design of reinforced concrete can ever hope to deal with the artistic treatment; that is the architect's province. The architect is a man of refinement as regards artistic sense, and we are not going to effect the solution of the difficult problem of obtaining an artistic rendering of the new methods of construction in reinforced concrete by asking the specialist engineering designer to undertake it; we must wait for the architect to obtain sufficient grasp of the main principles of the subject, and to experiment, until he is enabled to present the new material in an architectural form. It has been contended that the architect of the future, even as a few architects do in the present, will be able only to deal with the client, run his practice as a business, and co-ordinate the work of the specialist, and that he will delegate the artistic rendering to a specialist in the decoration of the structure, the two, perhaps, working as partners. In large practices in the United States, some few firms have offered, as a solution, a partnership of two or three men, one of the principals dealing with the professional practice from the commercial side, another from the artistic side, and a third dealing with the execution of the engineering and building work. The heads of the firm are, however, men of sufficient talent and general education to be able to appreciate in some part the work of each other, and they co-operate and consult so as to secure some uniformity in the scheme of operations. Architects engage many assistants nowadays, and often in the practice of our most eminent architects a great deal has to be left to their assistant or junior partners. Still more so does the same principle, which is in question now, refer to reinforced concrete work. The engineering aspect of the subject is important, and it naturally must affect, in some degree, the architectural treatment, but it must conform with the plan. At the same time the plan may receive modification on the score of economy, or for other reasons of efficiency, in regard to the reinforced concrete work. This relation will be obtained by consultation; by some general grasp of the fundamental principles of the subject; by standardisation and by the expressions of the various points of view of the architect and the specialist. No doubt, before long, we shall be able to deal with reinforced concrete satisfactorily from the architectural point of view. As regards the treatment of the facade and the interior decoration of buildings, the architectural profession in this country and the United States has been struggling for some years to find an architectural treatment of the steel-frame building, and has achieved some measure of success. We now have the problem of treating the reinforced concrete frame building itself very much the same as the problem of the steel frame, but there are also other perhaps superior advantages in connection with reinforced concrete as regards fire resistance and freedom from corrosion, and the facilities it offers for securing a permanent form of decoration, that may lead to a very different method of handling. That, however, is the architect's province, and specialist firms cannot hope to deal with it; but, on the other hand, the architect cannot hope to deal satisfactorily with the engineering side of the question, any more than can the civil engineer—consequently, the place of the specialist in reinforced concrete, and the position of the architect, and of the civil engineer, are thereby respectively defined.

FORMS FOR REINFORCED CONCRETE.—V.

(Concluded from p. 357, No. 717.)

In concluding our notes upon centering or forms for reinforced concrete, we have to deal more particularly with curved forms.

Chimney work we need not here deal with, for such work is in the hands of a few specialists, and the work is generally done with the aid of specially patented moulds or forms, each being designed to facilitate their gradual rising as the structure is erected. Of course, at a great height, simplicity and ease of erection is very desirable. The moulds are carefully made and clamped in special ways, so that they can be easily undone, shifted up a few feet, and readjusted. The moulding, therefore, of annular pieces in a vertical position we need not further consider.

For the construction of piles and other circular and square pieces cast horizontally, moulds are employed, and these were dealt with by Mr. Vere Sussex Hyde in our issue for November 4th; they hardly belong to what may be classed as forms, with which it is the purpose of this article to deal. Mould construction for artificial stone is out of our present province, and where the materials are used over and over again for casting reinforced concrete pieces they belong to that category.

We now have to consider large sewers, tunnels, and culverts, which are now largely constructed in reinforced concrete.

Fig. 1 shows an arched culvert. The manner in which this was constructed was to excavate the ground closely to the curve required, deposit the concrete on the soil, and work to the exact form of the bottom by means of the invert template shown in Fig. 2. The surface was smoothed with a batten working on this template. The concrete at the bottom was left with a slightly inclined surface, probably so as to receive the thrust of the arched side and roof, and was roughened to afford a good bond thereto. In this invert were placed two curved side-pieces, the construction of which is shown in Fig. 3. These were fixed apart by means of a hinged cross brace (Fig. 4) sprung into position and bolted. The centering for the arch (Fig. 5) was then placed upon these side-pieces and propped at the centre by a vertical post. The concrete that was deposited upon this centering was again worked exactly to the required curve by means of another template, shown in Fig. 6; to retain the concrete in the haunches it was necessary to place planks against the template, but for the upper portion of the arch, where the concrete was able to stand alone, these planks were omitted. The centres and the forms were all built in sections 12ft. 6in. long, as the dimension on the drawing shows, and a sufficient number were provided on the job where this centering was used, to lay twelve sections of invert and six sections of arch. The removal of the centering was easy; all that was necessary was to remove a bolt in the cross brace, open on its hinges, pull away together with the side-pieces, and the arch then dropped. It was found that the centering could be removed in about three or four days after the concrete was put into position.

In designing centering for conduits it should be recollected that as few places as possible should be left where the old is joined to the new concrete. It is, therefore, desirable in each day's work to continue the concreting so that no portion has time to set before the adjoining portion is concreted; therefore, there should be sufficient centres to have several lengths ready so that the men can be working regularly forward. Where the concrete has to be stopped at each day, the surface should be left rough, so as to give a good bond to the next length.

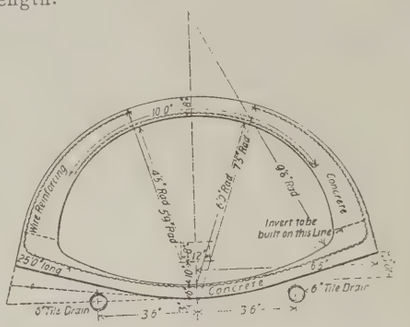


FIG. 1. GENERAL CONSTRUCTION OF CULVERT.

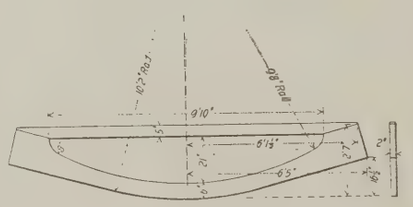


FIG. 2. INVERT TEMPLATE FOR CULVERT.

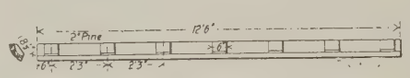


FIG. 3. SIDE-WALL FORMS FOR CULVERT.

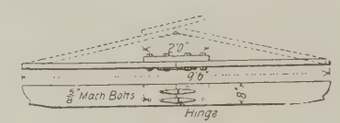


FIG. 4. CROSS BRACE FOR SIDE-WALL FORMS.

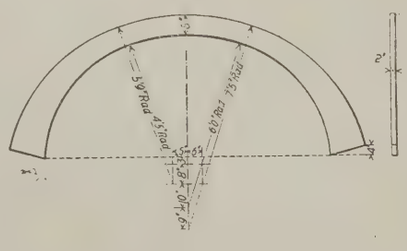


FIG. 6. TEMPLATE FOR ARCH-RING OF CULVERT.

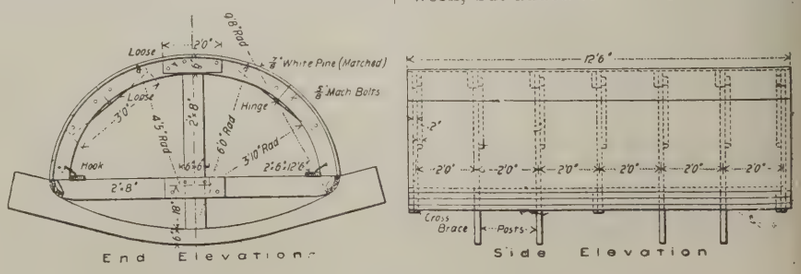


FIG. 5. ARCH CENTER AND GENERAL CONSTRUCTION OF CULVERT.

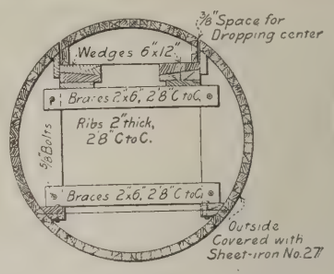


FIG. 7. FORM FOR 6-FT. SEWER.

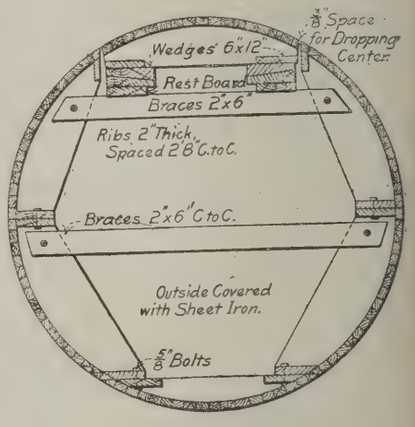


FIG. 8. FORM FOR 8-FT. 6-IN. SEWER.

Fig. 7 shows a form for a 6ft. circular sewer, and Fig. 8 shows one for an 8ft. 6in. sewer section. The lengths of the former are 8ft. It may be noted that two sections, or 16 lineal feet, were built in eight to nine hours, including the setting of forms, by one foreman, one carpenter, and 15 labourers. The section contained 13 cubic yards of concrete. The same gang built 14 lineal 8ft. 6in. sewers in ten hours with the other form. Fig. 9 gives a section of the larger sewer, in which it will be seen that the reinforcement consists of expanded metal. It was as the result of experience in the particular job where this centering was used that the form of conduit shown in Figs. 10 and 11 were substituted, which overcame the difficulty there was in ramming the concrete in the bottom and lower corners of the circular section. It was also found that the expanded metal could be handled easier with this shape, and we may note that the reinforcement were very heavy, two layers being found to be necessary in many cases. It was found with a small mesh that there was a tendency to screen the larger stones from the concrete, and therefore the 6in. mesh was employed and found to work well. The centres were covered with galvanised sheet iron, which not only gave a smooth surface to the concrete work, but added to the life of the centres.

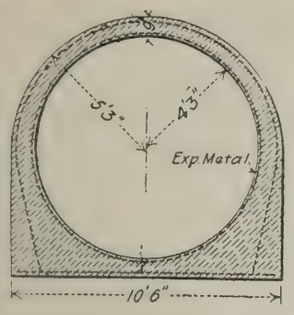


FIG 9.
SECTION OF 8FT. 6IN. SEWER.

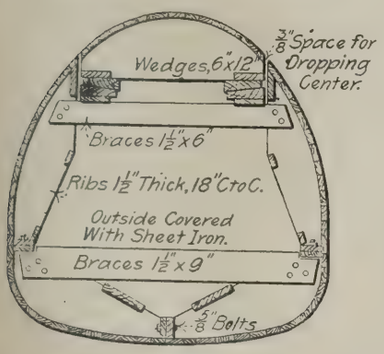


FIG. 10.
FROM FOR 7-FT. 6-IN. CONDUIT.

The bracing was arranged so as to allow the centering to be taken apart after the concrete had been in place for at least sixty hours, and to be brought forward through a form already in place for further use.

There are several special patented forms of steel sheet centering on the market. The centering is made in two halves, kept in place by rods having turn-buckles, which not only stiffen the form, but enable the ends to be drawn inwards, so as to pull the form away. The top half rests upon the bottom, and when reduced in this way can be dropped down

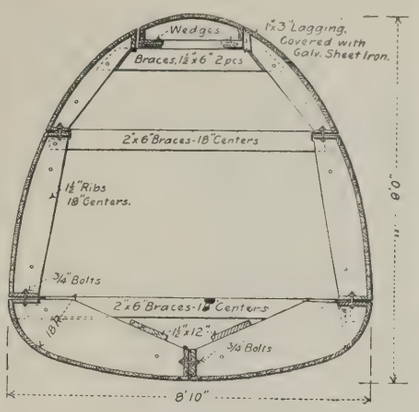


FIG. 11.
FORM FOR 9 FT. CONDUIT.

for removal, and the bottom can likewise, when reduced, be lifted up and removed in a similar way.

Fig. 12 shows the form of centering adopted for constructing the East Boston Tunnel, which was built in concrete by the aid of compressed air. The side drives, slightly chamfered, were pushed forward from 60 to 100ft. in advance of the shield, so that the concrete side walls, which were built in these drives to a height of about 16in. below the line of the arch, could set for about ten days before the shield reached them. The shield, resting on rollers, moved along on the inside of the walls, and the main excavation was made through it. The concrete arch was built as soon as the earth was removed. The supports for the centering consist of steel rods, shown in the diagram placed 2½ft. apart and supporting 4in. lagging. Portland cement grout composed of 1 part cement to 2 parts fine sand was forced in on top of the arch so as to form a film of about 1¼in. The invert was laid as the shield progressed. The progress of excavating was about 6ft. in 24 hours, about fifty men being employed on each of the two shifts.

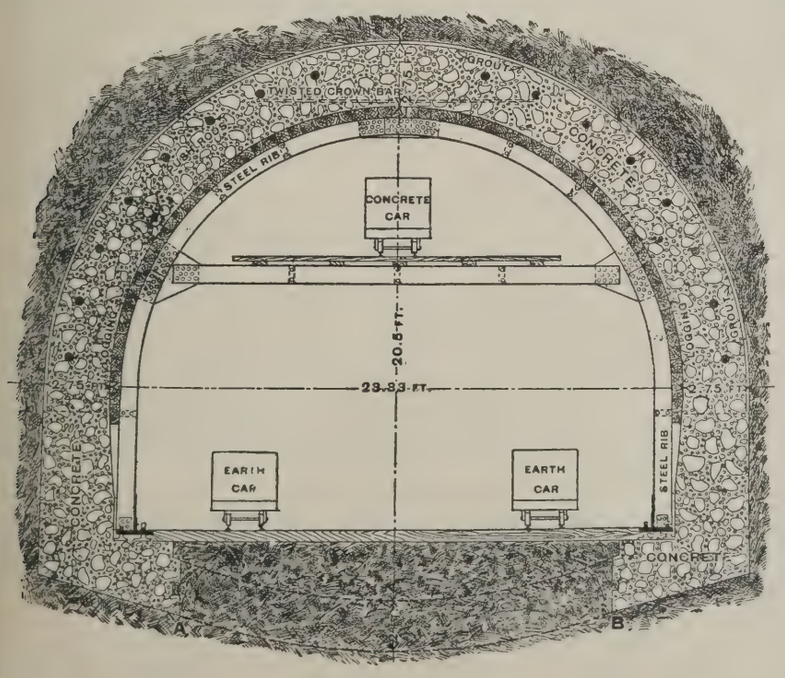


FIG. 12. CENTERING FOR TUNNEL.

CAST-IRON PIPES.

The Engineering Standards Committee has recently issued two reports on cast-iron spigot and socket pipes, one relating to low-pressure heating pipes, and the other to flue or smoke pipes. It is noticeable in the case of both specifications that it is stipulated that no pipe shall have an internal diameter or bore of less than the nominal dimension; that is to say, that the purchaser of a 6in. pipe shall obtain a pipe 6in. in internal diameter instead of one of $5\frac{7}{8}$in., or even less, as is at present often the case. The specification also required the pipes to be marked with distinctive class letters, to show the purposes for which they were made, and also with the manufacturers' trade mark or initials for the purpose of identification. Standard dimensions and designs for the soot doors of the various sizes of pipes are given in the specification for flue or smoke pipes, and both specifications are complete with tables of dimensions of the standard pipes and fittings.

With regard to heating pipes, the sub-committee draw attention to the fact that some public bodies require heavy pipes and deep sockets, whereas in many districts light pipes and short sockets are in use. They seem to have taken the mean, and they express the opinion that the depth of sockets and weights recommended in the standard pipes will render them not too heavy to be used for ordinary construction, and, at the same time, will be thoroughly sound and reliable.

Reinforced Concrete in Manchester.—The Parliamentary powers that are now being sought by Manchester include the following clause relating to reinforced concrete construction:—"To make further provision for controlling and regulating the erection of buildings or structures in reinforced concrete or of iron or steel construction, or in which iron or steel are largely used, and to authorise the erection or construction of such buildings, subject to the deposit of such plans and to such restrictions and conditions (if any) as may be prescribed or authorised by the intended Act, or may be imposed by the Corporation; and, so far as may be necessary, to alter, amend, and extend the provisions of and the powers conferred by any of the Acts or by-laws of the Corporation relating to buildings." If the Bill passes, the architects of the proposed new building for the Young Men's Christian Association will avail themselves of the facilities afforded by this clause: the use of reinforced concrete in Manchester being at present forbidden by the by-laws.

* * *

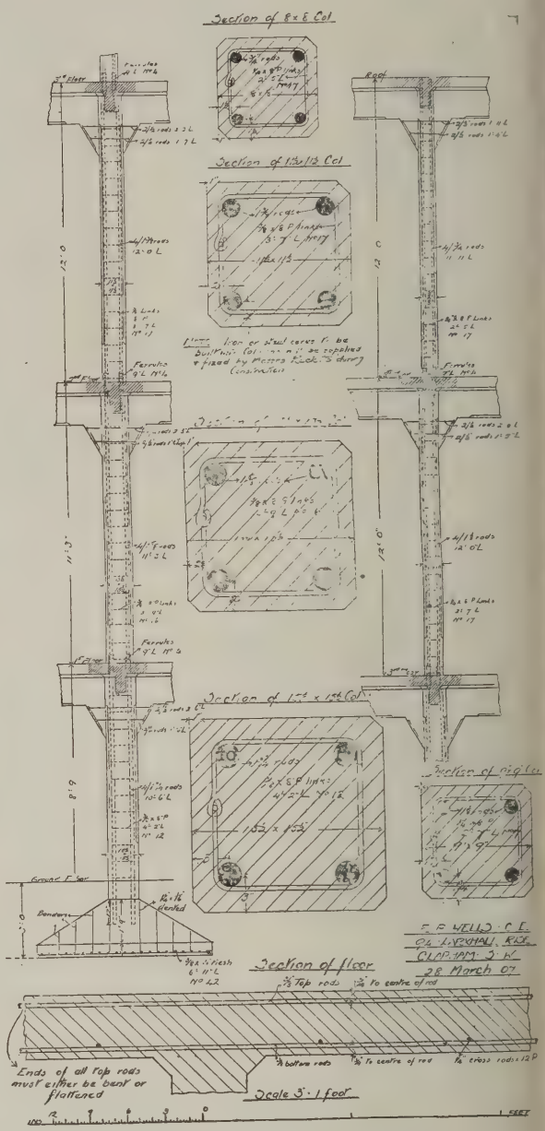
The development of bridges was the subject of a paper read at a meeting of the members of the Sheffield University Engineering and Metallurgical Society by Mr. G. F. Dale, who traced the gradual growth of engineering design and enterprise from the arch as seen in nature, the crude and primitive bridges of the East, some of the famous Roman examples as the Segovia viaduct in Spain; and so through the centuries down to modern times, where the trestle and boat bridges were taken as the intermediaries between ancient and modern structures. Various designs and types of suspension, cantilever, and large span arch bridges were commented on, special attention being given to the Forth Bridge, among others.



NEW MILL FOR RECKITT & SONS, LTD., HULL. GENERAL VIEW.



NEW MILL FOR RECKITT & SONS, LTD., HULL.



NEW MILL FOR RECKITT & SONS, LTD., HULL. DETAILS OF COLUMNS.

A HULL MILL.

We give an external and an internal view of Reckitts' Mill at Hull, which manufacture a metal polish called "Brasso." The building is carried out in reinforced concrete, and has been constructed by Messrs. Stuart's Granolithic Company, of 4, Fenchurch Street, London, E.C., upon the "Wells" system, the work having been designed for Messrs. Stuarts by Mr. E. P. Wells.

We also reproduce several of the working drawings, showing parts of the construction in detail. The "Wells" system was dealt with at length in our issue for July 19th, 1907. We may here briefly note that its chief distinctive feature is the use of the patent twin bar, which secures a rigid attachment of the shear members. The shear or diagonal reinforcements are passed through holes punched in the diaphragm between the bulbs of the bar, and are bent round. Not only is the system more theoretically perfect by such means, but the practical work of construction is greatly advantaged. We draw special attention to the following features of the construction:—

Floors designed for 2cwt. per ft. super inclusive, except for one portion, which had to sustain a live load of 2cwt. per ft. super, and entailed the use of the heavy stanchions shown in the illustrations.

Roof was designed for 1½cwt. inclusive, and the larger post had to act as a tank for water, and the remainder as a playground for girls.

When completed, a portion of one floor was tested to 50 per cent. excess load without showing any appreciable deflection.

The first sod of a new railway between Lampeter and Aberayron, with a probable extension to Newquay, further south, has been cut by Miss Molly Harford, daughter of Mr. Harford, chairman of the board of directors. The line will cost £80,000, and will be thirteen miles long. Half of the money has been found by the Treasury and local bodies, and the rest by landowners and directors.

Views and Reviews.

Diagrams for Designing Reinforced Concrete.*

Books of diagrams and tables intended for the design of reinforced concrete can hardly be expected to be elastic enough to meet all conditions of practice, but they serve a useful purpose in saving a certain amount of laborious calculation, and in serving as a rough and ready means of approximating to a correct result, as also a means of roughly checking designs. This work is only a small one, but it is printed in large portfolio size, which certainly renders the diagrams clear. It is based on the R.I.B.A. report on reinforced concrete. It is a useful book, but we regret that it were not much better done.

* "Reinforced Concrete Diagrams, for the Calculation of Beams, Slabs, Columns in Reinforced Concrete." By G. S. Coleman, Assoc.M.Inst.C.E. London: Crosby Lockwood and Son, 7, Stationers' Hall Court, E.C. Price 3s. 6d. net.

Correspondence.

To the Editor of THE BUILDERS' JOURNAL.

Architect as Clerk of Works.

SIR,—May I, a clerk of works of many years' experience, express my views of the remarks in No. 719?

The office of clerk of works was in olden times quite different from what it is now. Education was formerly so rare that the term "clerk" meant learned, and was applied to scholars of different kinds. A clerk of works was then a scholar in building, and was really the architect and supervisor of the workmen, but times have altered, and a clerk is now usually a penman.

The modern clerk of works is an inspector of work begun and done to an architect's written order. The estate clerk of works is really a building foreman, and has different duties from those of the architect's clerk of works, and would be more aptly described as an estate building foreman.

A man may be a very able architect and draughtsman, and yet be quite out of place on a building job in progress, and, as you have suggested, it was wiser under the circumstances to withdraw his application.

I do not agree that the question of status has much to do with the matter, as human nature will always assert itself in favour of the larger salary of three-pounds-ten against thirty shillings, and there is as much dignity in one office as in the other.

The chief requirements of a clerk of works is high character for integrity and sobriety, and a good practical knowledge of building operations gained by experience on buildings, and that is one of the chief reasons for a carpenter rising to the position. A carpenter has usually better chances of gaining an all-round knowledge than other working men, but not invariably so, and the most successful men in the calling have followed other branches of the building trade before becoming clerks of works.

A "gentleman ranker" requires but a thorough knowledge of the building trade to become qualified, and if he devotes his early years to acquiring it he becomes a good clerk of works as a rule.

A knowledge or acquaintance with "the little tricks that have to be circumvented" applies to all enterprises, and is not peculiar to the building trade, but a man with good practical knowledge cannot be cheated if he is of upright charater, and want of that knowledge would lead to confusion and bother all round; so under all the circumstances I agree with your leader-writer that the objector referred to was justified, and that the candidate from the surveyor's office acted wisely in retiring.

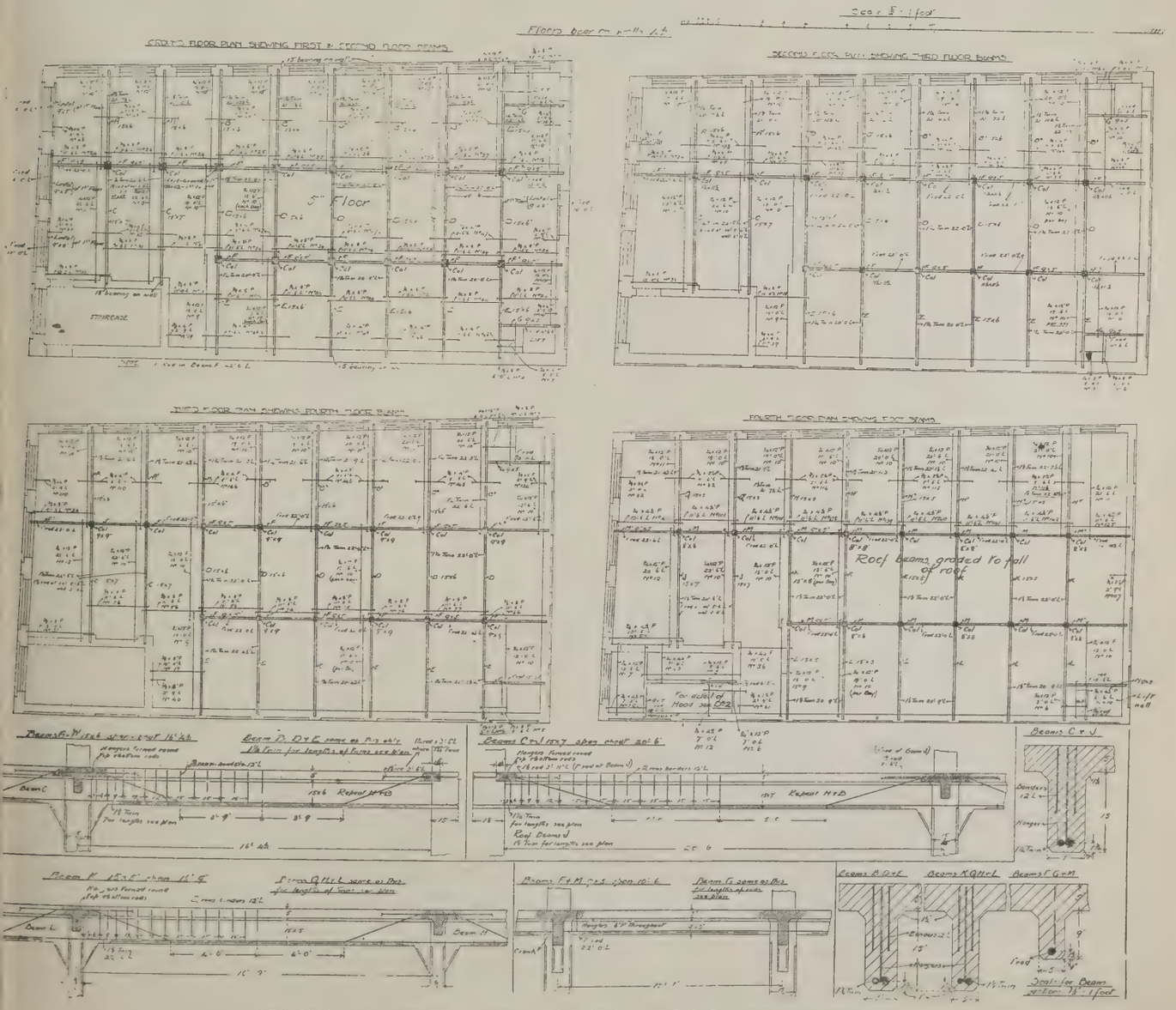
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To the Editor of THE BUILDERS' JOURNAL.

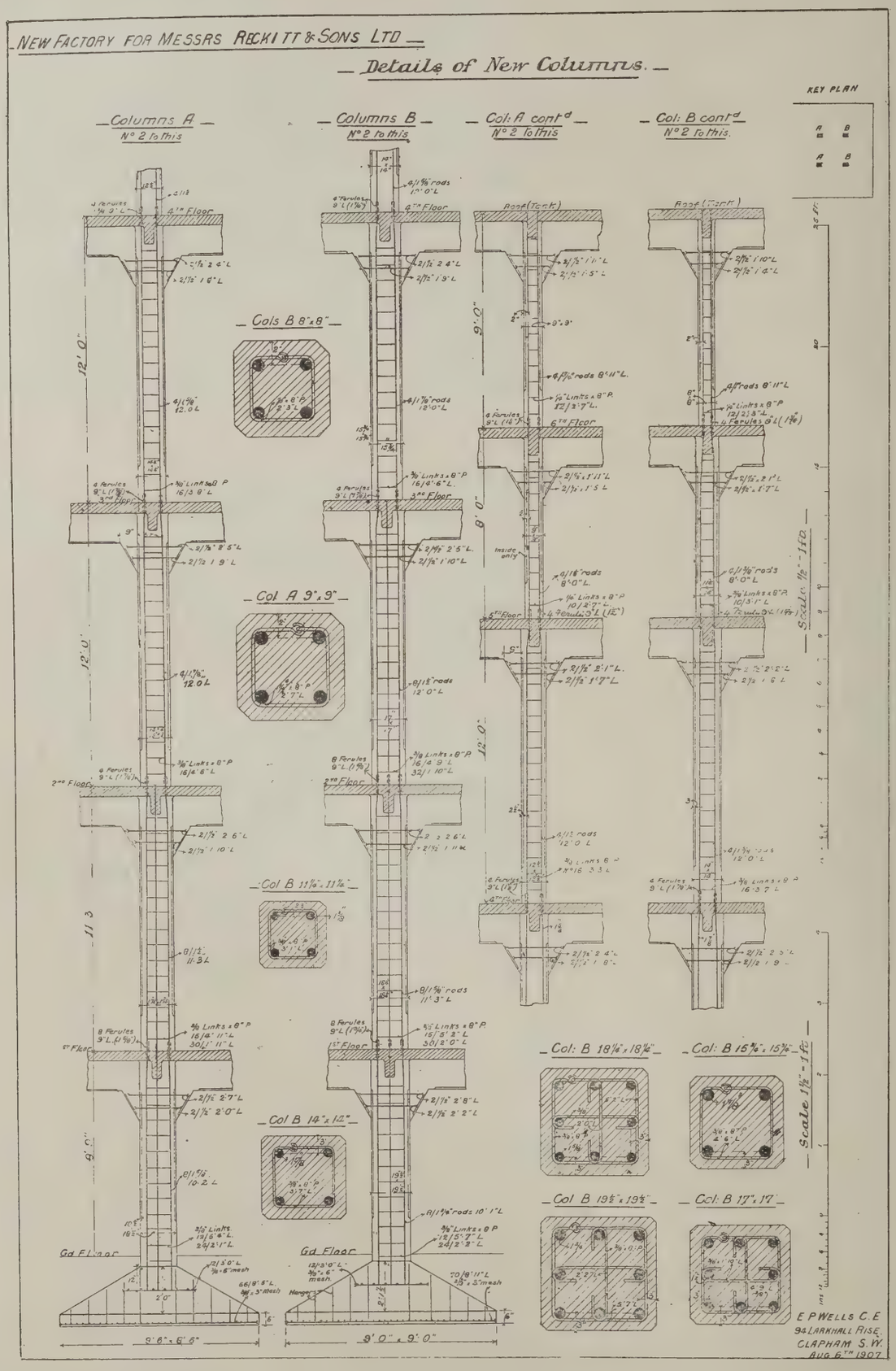
SIR,—It was with great pleasure that I read your remarks under the above heading in the current issue of the journal. I agree that a thoroughly practical "gentleman ranker" should make a far better clerk of works than one selected from a surveyor's office. Observation convinces me that a gentleman from the office is not happy among practical tradesmen.

OBSERVER.

Norwich.



NEW MILL FOR RECKITT & SONS, LTD., HULL. FLOOR PLANS AND SECTIONS.



NEW MILL FOR RECKITT & SONS, LTD. DETAILS OF STANCHIONS.

REINFORCED CONCRETE SYSTEMS: "THE PARAGON."

The system of reinforced concrete construction with which we have to deal in this article has not been long established, but it has ben worked out with considerable care. It is the result of a good deal of experience, and it is meeting with considerable favour, so that it is not by any means to be considered of mushroom growth, and it deserves careful attention by those interested in the subject generally. The "Paragon" system is worked by the British Reinforced Concrete Engineering Company, Ltd., of Royal London Buildings, 196, Deansgate, Manchester.

The main patents worked by the firm are the invention of a municipal engineer, who has been keenly interested in reinforced concrete since 1895, carrying out several works with it. We are informed that his experiments showed the importance of securely fixing the steel in such parts of construction as columns, so that it could not be disturbed in placing the concrete; while, in addition to this, the design of the hooping was carefully tested in order to ascertain the form that gave the best results, and also in this connection the value of adequately bonding the core. Numerous tests upon beams were conducted, and it was found from them that stirrups secured to the main tension bars and rods at an angle of 45 degrees gave considerably superior results to those with loose shear members, and were found to be easier to put in place.

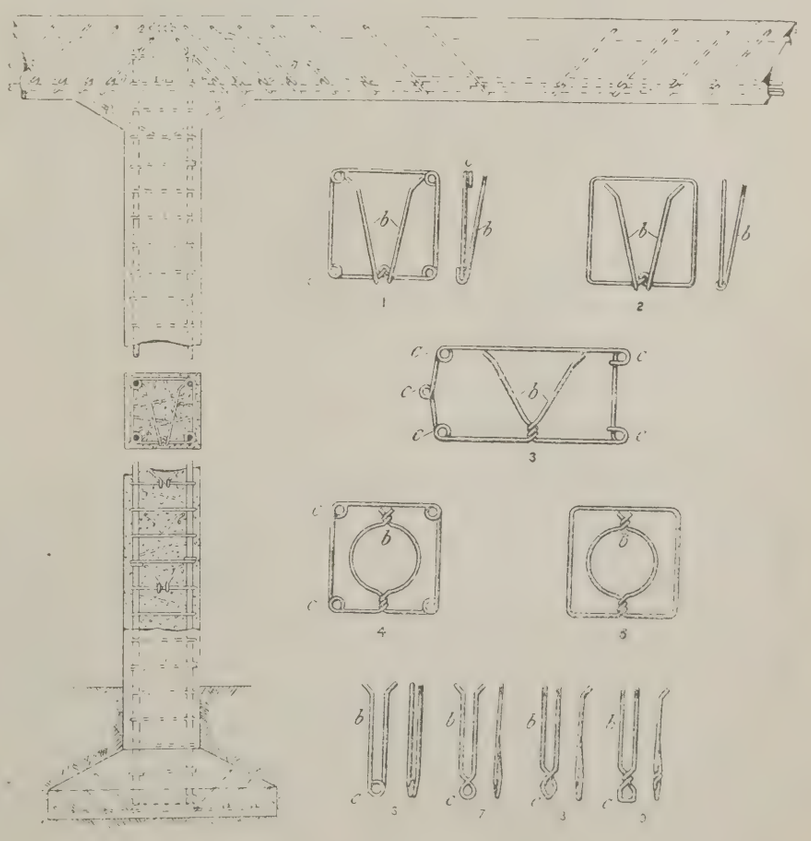
In dealing with the system in detail, and endeavouring to explain the various principles and ideas upon which the company work, we may refer, in the first place, to the question of adhesion or bond. Our readers, of course, are familiar with the controversy between the advocates of ordinary plain bars and those who, on the other hand, favour deformed bars, the latter costing somewhat more than the former. This firm, however, if we may say so, adopt a middle course, because they claim that their method of attaching stirrups to the main tension rods secures a rigid attachment, so that plain bars, which have the merit of cheapness, can be used; and mechanical bond is easily obtained because the stirrups tighten on the bar when stressed, and refuse to slide, so distributing the stresses into the compressional area of the structure and developing its full strength. Experiments have shown, the company state, that when a bar does slip, it is not the bond that eventually yields, but the concrete shears, a coating of the latter being found adhering to the steel. The bond stress is claimed to be about twice as great as the shear strength of concrete; and it may here be mentioned that the Committee on Reinforced Concrete, appointed by the Royal Institute of British Architects, take somewhat this point of view, because they recommend that the following working stresses should be allowed:—Concrete in shearing in beams, 60lbs. per sq. in. Adhesion of concrete to metal, 100lbs. per sq. in. In their view, therefore, a concrete will shear before the adhesion is destroyed.

Stirrups are applied in beam construction for resisting diagonal tension stresses, often but erroneously called shear stresses. The load upon a beam acting downwards tends to cause the beam to slide down between the supports, or to shear on a vertical plane. This vertical shear occurs throughout the beam, but is greatest at the supports, and remains practically constant throughout the depth of the beam. Now, the imposition of the load tends also to bend the beam between the supports, and this tendency is resisted by the couple of stresses, compression above the neutral surface, and tension below. The compression and tension increase materially in amount from the neutral surface outwards to the top and bottom surfaces of the beam. Though the vertical shear is constant, the tension or compression is varying considerably in amount through the depth of the beam. The combination of the vertical shear and the horizontal tension or compression is such as to produce curves of principal stress through the beam, these curves crossing each other at right angles. The principle is that known as "Rankine's ellipse of stress." Concrete has much greater strength in compression than it has in tension, and is quite able to resist the compressive stresses, but along the lines of tensile stress is inclined to open; and in tests on reinforced beams, when taken to destruction, these cracks are noted extending in a direction inclined from the supports towards the centre of the beam. It is to prevent the concrete opening in this way that stirrups or diagonal members are placed inclining in the opposite direction, *i.e.*, to cross these lines of diagonal tension, and to hold the concrete together so as to prevent its opening on these lines. A vertical stirrup is not so efficient in its action as one inclined at about 45 degrees, and the result of numerous tests conducted by the British Reinforced Concrete Engineering Company has been to show clearly the greater efficiency of these inclined members compared with the vertical stirrup.

Figs. 6, 7, 8, and 9, show the types of stirrup adopted by this company, and it will be obvious that not only does the tamping of the concrete tighten such a stirrup upon the bar, but that, when it undergoes a pull, it tightens still more, and so resists sliding. This form of stirrup has the great merit of not becoming displaced by the action of tamping the concrete, and facilitates the work of construction, as well as securing superior workmanship. The stirrups, of course, being separate members, can be arranged to give any desired spacing along the bar, and they can be carried up to any height in the beam, so as to reach well beyond the neutral axis.

Perhaps the most striking feature of the system is in relation to the reinforcement of pieces subjected to compressive stresses—namely, columns, posts, or pillars. The distinctive point to be noticed in this system is the reinforcement of the core. When a reinforced concrete column is subjected to heavy loading, it begins to shorten, and the concrete tends to bulge out from the centre, ultimately splitting in a vertical direction when loaded to destruction. To prevent this tendency hoops or bindings are placed at proper distances apart, or wires are wrapped spirally round the main vertical rods, so as to form a hooping.

Experiments were conducted which showed various features of weakness in



FIGS. 1 TO 10.

"THE PARAGON" REINFORCED CONCRETE SYSTEM.

other methods of constructing such columns, but the particularly remarkable feature brought out by them was that if steel was distributed through the thickness of the concrete core, it greatly increased the strength of the column. For this reason the company use a form of hoop-brace, which has inturned arms, or the arms may be twisted together to form spiral bonds, which lie through the centre or core; and as each alternate pair of arms or bonds are placed so as to lock in a different direction from that of the preceding ones, the whole structure is not only hooped, but the spaces between the hoops are protected in every way against bulging.

We have heard a great deal about experiments conducted on columns reinforced with spiral binding, and the great increase of strength they showed over columns reinforced with heavy longitudinals and links, but the results of these experiments brought out the remarkable result that the strength of a column reinforced with the company's patent hoop braces extending through the core give on the *average* 60 per cent. greater strength than the spirally reinforced column gives as a *maximum*.

The results of these tests provide some further information of great value in regard to the spiral reinforcing of concrete. In the testing machine used, the base-plate was capable of rotation, but was, as a rule, securely fixed by a pin. By accident, however, the pin was left out, the result being that, when tested, it was found that the spiral reinforcement under load acted as a spring might, and induced a twisting action; so it proved that, in a spirally reinforced column, especially a long one, torsion is developed, and this no doubt materially reduces the strength of the column. Many of the tests that have been conducted on reinforced concrete have been on short posts, and when these had fixed ends in the ordinary fashion they showed a much higher resistance than it would be safe to reckon upon in practice where the length of the column is much greater. It was supposed theoretically that the hooping of the concrete resisted the concrete bulging or bursting outwards, and that it practically enclosed the concrete within a cylinder, so that the concrete was thereby enabled, to some extent, to flow under pressure. The results of experiments conducted by this firm, however, seem to show that if the interior core of a hooped column is of some size, such as we get in practice, then this core does not act so homogeneously, nor flow so evenly as we desire; but by the placing of cross-braces or reinforcements extending through the core in various directions, the deficiency in this respect is overcome, and the strength of the column greatly increased. Some columns measuring 8in. by 8in. by 2ft. 6in. long, made on the "Paragon" system of 1 : 2 : 4 concrete, with four $\frac{3}{4}$-in. longitudinal bars wrapped round with the firm's patent hoop-braces, required for their destruction a total load of 5,724lb. per sq. in. of the core.

Figs. 1 to 10 illustrate the general details of the "Paragon" system of reinforcement. Fig. 1 is a plan and side view of the hoop braces as adapted for use in solid square columns, pillars, piles, and such-like structures, and this form may also be used for a rectangular beam. It will be seen that the loops are provided to engage with four bars, these loops being made by coiling the round rods to encircle the bars and hold them in a proper position, ensuring that the core shall be of proper shape and size, while arms (b) extend across the area enclosed with a loop diverging outwards and their ends also bent and turned away from each other so as to bond the core. Fig. 10 shows these braces in elevation, as well as in plan, in a column, and it will be obvious therefrom how the arms in each hoop brace are turned each in a different direction from its neighbour, so as to cross the core from all directions.

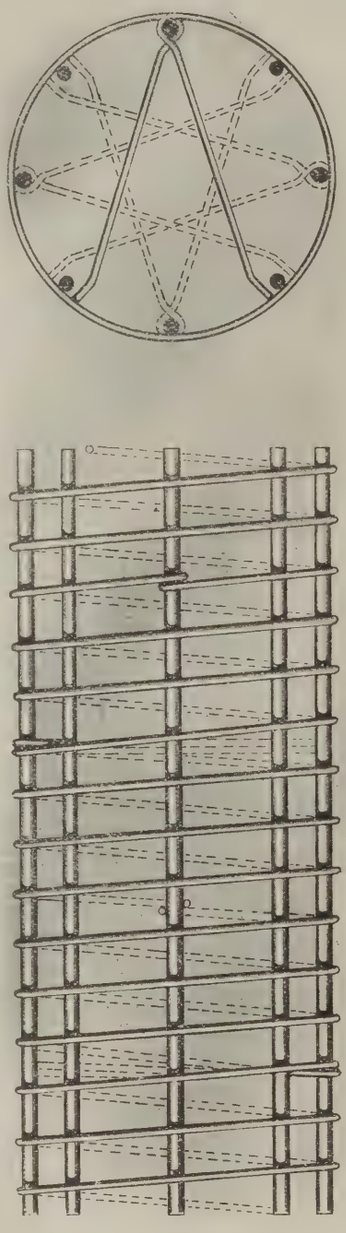


FIG. 11.

In Fig. 2 the coilings are omitted, this simply being a variation of the form shown in Fig. 1. The type shown in Fig. 2 is generally used in combination with that shown in Fig. 1, only every fourth one being as Fig. 1.

In Fig. 3 the hoop is formed to lie around and embrace five rods, and modifications of detail are shown to allow of the embracing of rods in parts of construction requiring to have a projection or tongue on one side, and a curve on the other, as illustrated in the middle reinforced concrete pile shown in Fig 14. It is obvious that such a form can be modified by the omission of the loops as in Fig. 2.

In Figs. 4 and 5, the difference is in the arms, which, instead of being straight, are curved, the ends being twisted to form a centre ring or annulus, by which the hoops may be used when builders or constructors have to deal with a centre column or pipe. Where it is impossible to make the arms straight, so as to ensure their forming a proper bond, it is found best to let them encircle the column or pipe and connect their ends.

Fig. 11 shows another type of hoop brace, which is a sort of sectional spiral binding, and in explanation thereof we quote the firm's arguments:—

"Much better results have hitherto been obtained, in laboratory tests, than in actual practice, with helically-wound hooping. In the former, the prisms or test pieces are small and quite easy to make, but in application to larger structures, it is attended with great difficulty to get uniformity and strength throughout. The usual way in constructing, say, a twelve-foot column, is to helically wind the longitudinal bars at a desired pitch, right from top to bottom, with wire, forming a skeleton or cage, and to build the timber forms around it to receive the concrete. Should the spiral wrapping re-

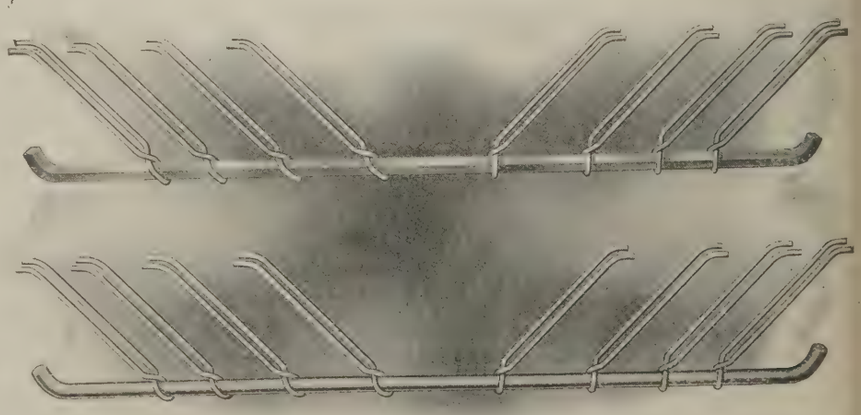


FIG. 12.

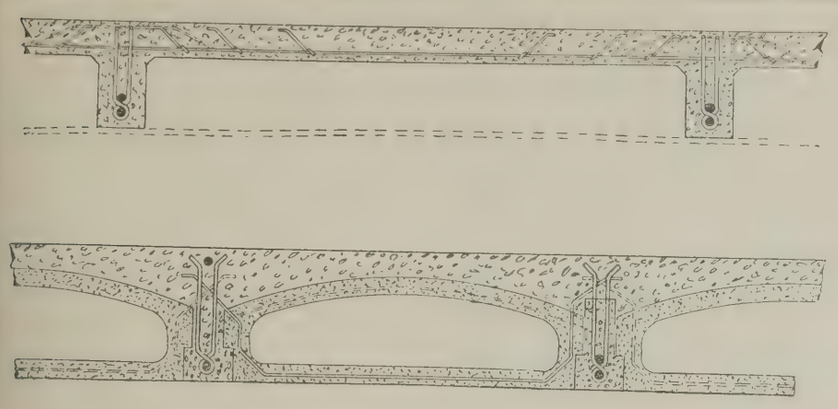
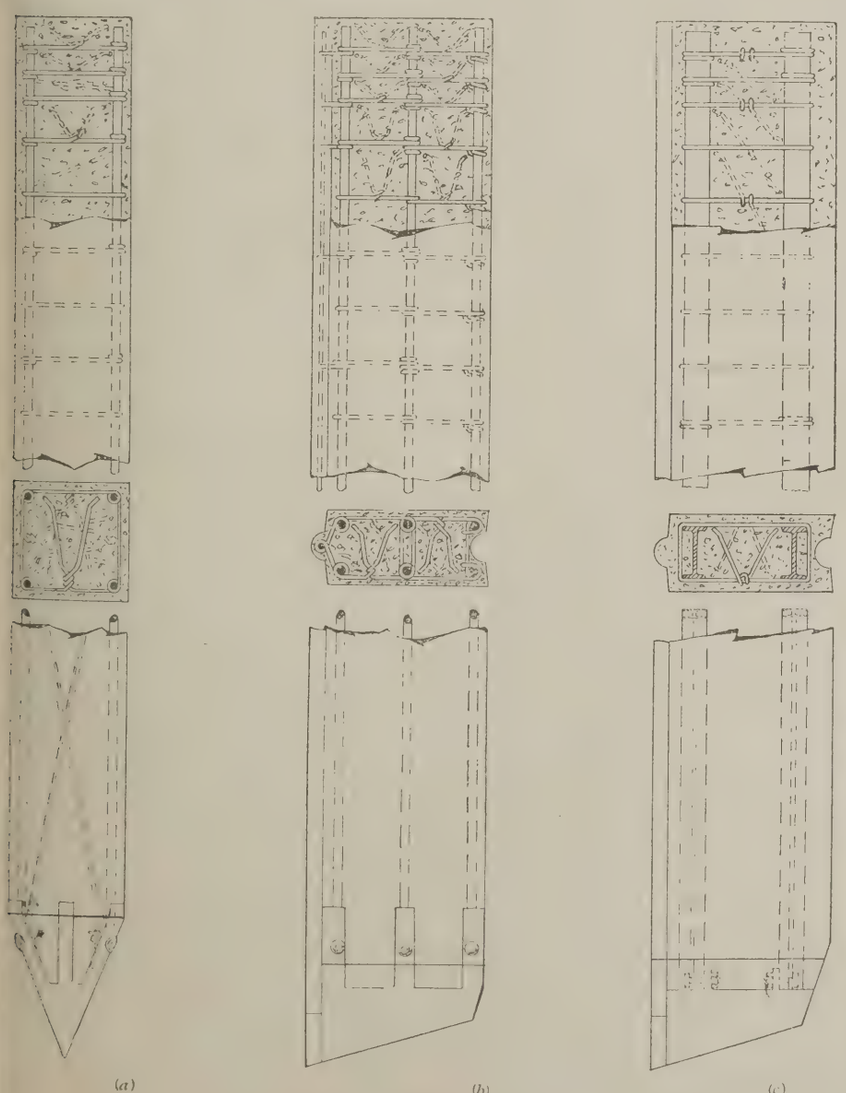


FIG. 12.

ceive a dent from a rammer or be otherwise injured—which, under the conditions, it is almost impossible to avoid—the whole length of winding is materially weakened, and has to be dropped in from the top, with the result that the larger particles leave the finer before reaching the bottom, making a porous base. There is also no means of seeing the concrete during the process of consolidating, except near the top, and the forms being full of steel rods they are not accessible for the tools; consequently, the work is troublesome and requires very great care, whilst rammers to reach so far are out of the question. The result is obvious, and to avoid these dangers our investigations led us to sectionise this winding wire, arranging the ends of the sections to reinforce the core in the form of bonds similar to our hoop braces. The sections are cheaply made by machinery, and when required one is threaded over the end of the bars, fixed in position, and the concrete filled around it, the placing and consolidating being carried out from the open side of the timber forms, there being ample room to avoid obstruction to the ramming, which is all done in full view. When another section is required, the operation is repeated, and the whole structure is gradually built up from the bottom, in the same manner as is done with hoops, without it damaging the reinforcing, and allowing the whole length to be accurately steeled and the concrete made of uniform strength throughout. This sectionising can be carried out to any desired extent, and in some pillars of rather large diameter, 35ft. in length, for a load of 300 tons, recently completed by Messrs. Lever Bros., Ltd., of Port Sunlight, under our patents, it was found convenient to divide this circumferential winding into a little over two parts in each complete circuit."



(a) (b) (c)

FIG. 14.

It is stated that tests have shown that there is practically no difference in the strength of columns reinforced with the ordinary hoop braces and with the sectionised spiral wrapping if both are made of the same pitch and of the same quality steel.

Figs. 6, 7, 8, and 9 show various forms of the Paragon single braces or stirrups adapted for use in floor beams, walls, etc. In Fig. 6 the metal is coiled centrally to form a loop (c), and its arms (b) are straight, except at the ends, where they are twisted to secure a mechanical bond. In Fig. 7 the metal is not coiled, the arms merely crossing each other, afterwards being either bent at an angle or curved. In Fig. 8 the same formation is adapted to a diamond-shape bar on edge, while Fig. 9 shows the adaptation of a square bar on the flat. The two latter forms fix the stirrup from working round or falling on to one side of the bar, which is an obvious convenience in the practical work of construction. Though shown made of a round steel rod, the stirrups, when designed, can be made from flats, and they have been supplied made of $\frac{5}{8}$in. by 3-16in., but the round rods are considered to give a better distribution, and to make a stronger job.

Fig. 10 is a diagram showing the general manner in which these hoop braces and stirrups are employed in the reinforcement of a column and beams and foundations.

As regards general arguments in favour of the system, it may be said that the reinforcements are secured in place by these details, which tend to improve the quality of the work, as well as to render the work of the contractor more easy. The ramming tightens the grip of the reinforcements to the bars, and the fewer loose members in reinforced concrete the better. The braces and stirrups grip the bars and resist sliding. The steel sections used are ordinary commercial ones, which are, of course, obtainable at the cheapest price. In the work of construction the reinforcements are not so easily displaced as they are with many loose members. The firm does not favour the use of any deformed bar. As regards the hoop braces, it is claimed that they permit of the structural column being gradually built up so as to offer no obstruction to the ramming of the concrete, thus obtaining proper consolidation with the resultant increase in strength, whereas one of the defects of the continuous spiral wrapping is the putting of the concrete in place and consolidating it. Criticism is offered that it has been found that sometimes where columns have been removed after construction on other systems, that in ramming the concrete the vertical bars have been worked towards the centre

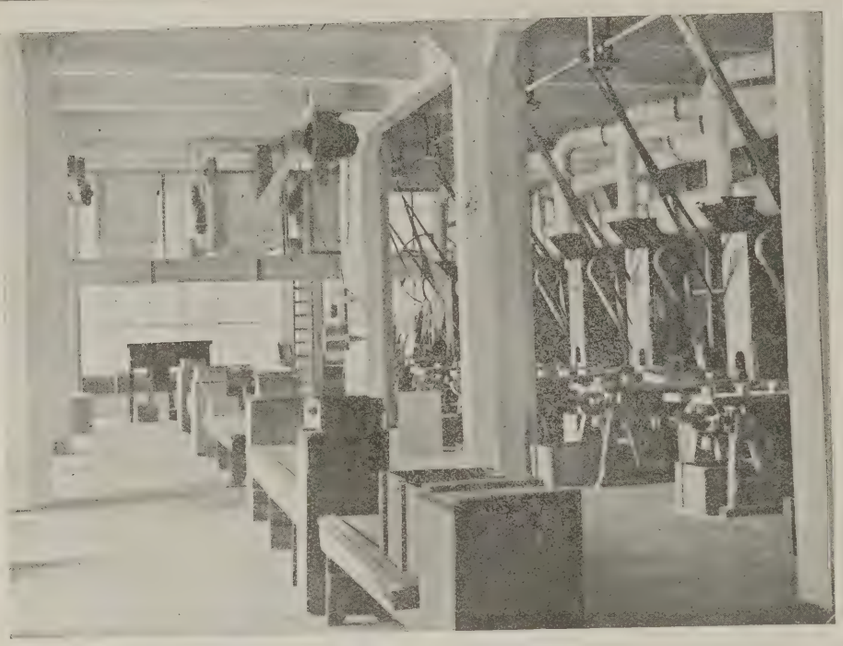


FIG. 15. WAREHOUSE FOR JOSEPH CROSFIELD & SON, LTD.

away from the hooping, so that the core became of less area than designed. It is claimed that with the Paragon hoop brace the core, which takes the principal part of the load, cannot be otherwise than the size intended.

We have referred to the tests conducted on columns, but the firm has also made numerous experiments upon the strength of beams of rectangular and T-section reinforced with their Paragon stirrups. These latter can be laid at any angle close enough to take the heaviest shearing stress, and provide a truss action by biting or locking on the main bars. We are assured that the tests conducted have shown, compared with tests on exactly similar beams—the only difference being in the form of the stirrup—that the Paragon stirrups increase the resistance with a distributed load to much more than that obtained with loose stirrups.

The firm supplies bars with the stirrups attached under the term of "The Paragon Truss Bar," these being shown in Fig. 12. The stirrups, it will be noted, are placed at an angle of 45 degrees, which is theoretically the correct angle to give the maximum efficiency.

Fig. 13 shows the application of the foregoing methods to the construction of solid and tubular reinforced concrete floors, and Fig. 14 shows details of three reinforced concrete piles with the Paragon reinforcement:—(*a*) shows a square pile, (*b*) a rectangular inter-locking sheet pile with round rod reinforcement, and (*c*) shows a similar sheet pile, using joists, however, instead of round bars for the main reinforcements.

Fig. 15 shows the interior of a large packing warehouse recently erected for Messrs. Joseph Crosfield and Son, Ltd., of Warrington. We may remark that this particular building shows the speed with which work of this nature can be carried out. The buildng has five floors and a playground roof. The foundations are deep, water having to be contended with, but the whole building was completed in four months from the commencement of the job.

As regards the general theory of stress distribution, upon which the calculations are based, this may be summed up as being practically equivalent to the report of the committee appointed by the Royal Institute of British Architects, with certain obvious modifications to suit the special system.

All hoops and stirrups are manufactured to gauge, consequently each size is identical throughout, ensuring the steel skeleton in columns, stanchions, etc., to be of the proper size and the main bars held in exact position, the result being an accurate core with the main bars all tight against the hooping. These members being always used in direct tension and shear respectively, it is an advantage to make them of harder steel than the main bars, the strength usually used being from forty to forty-five tons per square inch tensile strength, or harder for special cases.

The following is a list of a few of the more important works that have been carried out by the company, which has not been long in existence, so, naturally, the list is not a long one. It is extensive, considering the short time that the system has been upon the market:—

List of Works.

Ore bins, Kilsyth; retaining walls, Riverside, and Dock Walls, Glasgow; overhead water tank, Greenock; covered tank, Paisley; engineering shops, stores, engine beds, and foundations, Gourock; silos, Dunlop; highway bridges at Hallington and Swinburn; "Carbosil" and packing warehouse, Warrington; offices and stores, Warrington; deep foundations, Birkenhead; covered tank, Herefordshire; shops, etc., Lowton, with several floors, and smaller works. The firm have also recently had their system accepted for a large railway culvert scheme, a loading jetty on piles; a covered reservoir of 280,000 gallons capacity; an important county bridge, a large office block, and a pleasure pavilion, tenders for three of these latter schemes having been accepted.

A complaint, at Coventry, made by the United Trades' Committee, alleged that in certain instances the standard rate of wages was not being paid on some contracts in—Short Street and Narrow Lane! There is no mention of Queer Street.

Proposed New Works.

Ayr.—At a meeting of Ayr County Association under the Territorial and Reserve Force Act, on Nov. 17, the General Purposes Committee reported that plans for a new artilery drill-hall for the Irvine Battery of the Field Artillery had been approved by the committee. The estimated cost was £5,000, and the work was to proceed as soon as the sanction of the Army Council could be obtained.

Birmingham.—An enquiry has been held by Mr. R. H. Bicknell, Local Government Board inspector, with reference to an application by Birmingham Corporation for sanction to borrow £9,000 for the widening and improving of Highgate Road, and £3,525 for the construction of a boating pool in Ward End Park.

Dublin. — The Dublin Corporation propose to spend £100,000 on the completion of the city main drainage system.

Eton.—At a recent meeting of the Rural District Council, the following plans were approved:—New house in Bulstrode Way, Gerrards Cross, for the London and Country Investment and Property; new house, Packhorse Road, Gerrards Cross, for Mr. Aubrey Wright; alterations to Arran Croft drainage, Stoke Pogis, for Mr. N. H. Cooper; new house, Pitts Field Estate, Salt Hill, for Mr. E. A. Medcalf; drainage of house in Farnham Road, for Mr. W. E. Prince; new house, New Town Road, Hitcham, for Mr. W. Horwood. Also subject to restrictions—new house in Bulstrode Way, Gerrards Cross, for Mr. A. C. Cook; new house, "The Woodlands," Gerrards Cross, for Mr. A. C. Meyjes; new house in Marsham Lane, Gerrards Cross, for Mr. C. P. Lovell; drainage of Hitcham Vale, for Princess Dolgorouki; new cottage, Farnham Avenue, Farnham Royal, for Mr. A. Carter; three new houses in the Bath Road, Taplow, for Mr. C. R. Snell.

Glasgow.—A new hall in Anniesland, Glasgow, is the first hall in Glasgow to be planned in the amphitheatre style, the gallery rising from the floor. The hall seats 1,000, and has cost £10,000. The architect was Mr. H. Campbell, of Glasgow.

Glasgow.—The Glasgow Coporation Sub-Committee on Hospitals report that they have had before them a statement by Mr. A. B. McDonald, city engineer, in connection with the proposed erection of a permanent smallpox hospital at Robroyston. For permanent buildings the cost is estimated at—first section, £76,924; second section, £52,876 11s.; and completed scheme, £129,800 15s.; while for temporary buildings the estimate is—first section, £68,227; second section, £31,002; and completed scheme, £99,229. Each estimate is exclusive of furnishing and equipment. The sub-committee recommended that, before pronouncing on the subject, the Town Clerk be instructed to forward the plans to the Local Government Board for approval. This was approved by the Health Committee.

London.—The London County Council has consented to the following new works:—Erection of an addition to the South-Western Polytechnic to abut upon the western side of Manresa Road and the southern side of Trafalgar Square, Chelsea, on the application of Mr F. G. Knight, on the behalf of the governing body of the Polytechnic. Erection of Nos. 88 and 90, Standen Road, Wandsworth, with an irregular open space at the rear of No. 88, and with the boundary fence of No. 90 at less than the prescribed distance from the centre of the footway leading from Standen Road to Longfield Street, on the application of Messrs. P. and E. Mulliner. Erection of a building with a one-storey shop in front, upon the site of 188, Rye Lane, Peckham, on the application of Mr. H. E. Hill, on behalf of the Magnet Printing Press Company, Ltd. Erection of a house on the southern side of Logan Place, Kensington, with a chimney stack, eaves, rain water and soil pipes, and gutter projecting into the open space provided at the rear, and also erection of a projecting hood over the entrance doorway and retention of a forecourt fence at less than the prescribed distance from the centre of the roadway of Logan Place, on the application of Mr. E. W. Marshall, on behalf of Mr. C. Rea. The Council extend the time within which the erection of buildings upon the site of Nos. 8 to 14, Wild Court, Holborn, was required to be commenced and completed, and also consent to a further deviation from the plans approved on 18th July, 1905, under sections 13 and 43 of the London Building Act, 1894, for the erection of the said buildings so far as relates to the erection of an addition thereto, on the application of Messrs. Brown and Barrow.

Rawtenstall.—At a recent meeting of the Town Council, the following were among the plans approved:—New boiler-house and chimney at Pike Law Workhouse, for the Board of Guardians, of Haslingden Union; two houses at Bacup Road, Waterfoot, for Mr. Thomas Birtwistle. There were also approved several plans for minor operations.

Waterford.—The Viceregal Commissioners, appointed some time ago, recommend a new bridge across the river at Waterford, on the site of the present wooden toll bridge, and estimate the cost at £97,000, together with £10,000 for a temporary bridge for the time (about 3 years) the new bridge is supposed to take in its construction. The bridge will be on the girder principle, with two spans of 276 ft., and a centre opening span of 80 ft. This latter span will open and shut in 1½ minutes by hydraulic power.

Federation News.

THE INTERNATIONAL CONGRESS IN PARIS.

By Our Special Commissioner.

The proceedings in connection with the third International Congress of Contractors for Building and Public Works, held in Paris from November 15th to November 19th, began with an evening reception at the headquarters of the French Federation of Building Trade Contractors. M. Soulé, the President of the French Federation, welcomed the numerous delegates.

The Opening Meeting.

Next day the Congress was formally opened at a general meeting, over which a representative of the Government (M. Chapsal) presided. The sitting was numerously attended. M. Soulé, as president of the Congress, mentioned that some 250 delegates representing fourteen European States, and 250 delegates representing the French provincial associations with, in addition, the Parisian members, were attending the Congress. He suggested that the progress that was being made indicated that the time was ripe for establishing an International Federation of Building Trade Contractors.

M. Villemin, general secretary of the French Federation, outlined the business which was about to occupy the attention of the Congress, and in particular emphasised the need there was for a solution of the following questions:—(a) The guarantees demanded by public bodies from contractors prior to their being allowed to tender, together with improved methods of tendering; (b) the difficulties which stand in the way of better arbitration methods; (c) the need for the proper training of apprentices.

The representatives of the various countries were in turn invited to say a few words, and the chairman wound up the proceedings by expressing the sympathy which the Minister he represented (the Minister of Commerce and Industry) had for the objects sought by the Congress.

Conference and Visit to Tube Railway.

In the afternoon a short conference was held, when the contractor for the Paris Tube Railway (M. Chagnaud) explained the plans and methods of work of the section passing under the Seine, near Notre Dame Cathedral, then in course of construction. Afterwards the works themselves were visited. The plans showed a tube with double lines of rails instead of the twin tubes usual in this country, but in other respects and in principle did not differ from the practice here. The work was being carried out under serious difficulties in the shape of water and running sand, which has to be frozen to enable it to be removed.

Real Work of the Congress Begins.

The following day the real work of the Congress began. Three sections had been constituted, and sat simultaneously. The meetings were very well attended, and the debates well sustained, some of the speakers (notably MM. Galeoti and Villemin) being particularly effective.

Burning Questions.

The burning questions evidently were the methods of letting contracts by administrative bodies, the guarantees they demand from contractors both before and in connection with the letting of the contract and the question of the training of apprentices.

Methods of Letting Contracts.

The time-honoured method of letting contracts in France is that based upon a schedule of prices prepared by the administration for the work in question. Upon this as a basis contractors are expected to bid. The system appears to have given rise to serious abuses, the adjudication or letting being done in public, and the contractors allowed to underbid each other in a most objectionable manner. In short, the letting of a contract for a public work becomes a kind of inverted auction sale. By another method, the contractors are required to produce competition schemes complete in all details, and to undertake the works on a lump sum basis, the tender covering all eventualities. This method has certain advantages where the contractors are given a sufficiently free hand, but the onerous conditions imposed by the administrations, especially as to the wages payable to workmen and the hours and conditions of labour, and the lack of adequate relief in cases of strikes or lock-outs, has so far deprived the contractor of his liberty of action as to make it very difficult now for any responsible contractor to tender under this system.

The desire appears to be to adopt a system akin to that in general use in England, and also by railway companies in France, where the administration specifies its requirements, and issues bills of quantities, upon which the contractors base their tenders. It is significant, however, of the newness of this method in France that it does not seem to be expected that the quantities should be guaranteed, or in any case made part of the contract; on the contrary, it is suggested that the approximate quality of the quantities will necessitate a serious study of the nature of the works by the contractor before venturing to submit a tender, and have for result, therefore, the submission of well-considered tenders by men who know their business. In England, building contractors expect the quantities to be guaranteed, or, failing that, made part of the contract, so that any errors may be rectified at the completion of the works. It is not, however, desired to abandon entirely the earlier method, especially for large public works of a novel character; but resolutions were adopted tending to improved regulations and a combination of the methods referred to.

Contract Guarantees.

As regards the question of guarantees, some of these are merely annoying, as when a contractor is required to produce a certificate of good personal character and an extract from the judicial register to the effect that he has never been fined or imprisoned before permitting him to tender. Others are more serious, such as requiring the deposit of a sum of money, equal to 1-30th or more of the value of the proposed works, before permitting a tender to be submitted; further, requiring a similar sum to lie in the hands of the administration during the whole period of the contract, and, in addition, deducting retention money to the extent of fully 10 per cent. of the value of the work done. The English practice of sureties, either by personal bond or insurance bond, does not seem to be practised in France, at all events as regards contracts for public works. The resolutions proposed are, in effect, a sweeping away of the less serious annoyances, and for those that are more serious the substitution of moderate but reasonable reforms, such as being content with a promise to provide sureties if and when a contractor's offer is accepted, and the repayment at intervals of the guarantee in proportion to the amount of money retained as the works proceed; also that retention money never exceed ten per cent. of the amount of contract.

The Apprenticeship Question.

The question of apprenticeship seems, however, to overshadow the rest at this moment. As the result of ill-considered legislation in regard to the hours of labour by which the young persons, who may only work ten hours a day, are not permitted to work in the same workshops or on the same jobs as the workmen, whose day is one of eleven to twelve hours, the apprenticeship system formerly in vogue has been practically killed, and such a scarcity of good workmen has been brought about that the contractors find themselves forced into action. The chief speaker on this subject was M. Villemin, and his eloquent and masterly handling of the question, in a speech of over an hour's duration, and without notes, was a remarkable effort. His argument was that just as no employer would dream of asking the State to renew his labour-saving machinery when it wears out or becomes antiquated, so no employer ought to dream of asking the State to provide him with trained workmen who were, economically considered, in reality human machines in their services to industry. He, therefore, asserted, as a principle, that the employers in industries must rely upon their own initiative in the matter of training apprentices. He did not, however, suggest that the employers' associations should assume the sole responsibility for this work, because to do so would imperil their existence, since the cost would fall on those employers only who were members, and would, therefore, make it more advantageous to an employer to remain unassociated. Neither did he wish the State to take the matter up and establish manual schools, since that would mean the creation of expensive buildings and a technical staff, and would saddle industry with an enormous burden. In order that State interference should be as far as possible excluded, and yet every employer be compelled to do his share in the work of training apprentices, he proposed that to chambers of commerce or other similar bodies representative of every industry should be given by law the mission of providing such training; that the instructors should be drawn from the ranks of those employers and workmen practically engaged in the respective industries; and that their remuneration nd the other expenses should be provided for by a fund to which every employer should be bound to contribute. In some centres, manual training schools might be necessary, but the system he advocated was designed to be so elastic, and to leave in the hands of those responsible such latitude as would enable manual training to be given in every hamlet in France. The manual training to follow on as soon as the child leaves school (in France at about twelve years) and be continued until he is sixteen years of age. This system to be accompanied by an amendment of the existing law, so that apprentices may work in the same shops and on the same works as workmen, even though the latter work longer hours than are permitted to apprentices. That apprenticeship should be obligatory on those who desire to enter an industry, and that every apprentice should be obliged to produce a certificate of training and apprenticeship before being being admitted a journeyman. He praised the Danish system, which, he said, resembled that for which he now con-

tended, and required every apprentice at the end of his term to prove, by practical test before a competent jury, his title to be admitted a journeyman. The Danish system has proved so successful that the general practice there is for the workman to prefer to work by the piece rather than by the hour, and the supply of labour is ample and of excellent quality. The meeting strongly endorsed M. Villemin's views, and passed a series of resolutions to that effect.

Methods of Arbitration.

A question of subsidiary importance was that relating to methods of arbitration and the settlement of disputes connected with building contracts by experts. It appears that the existing system has given rise to a class of professional experts who make a living out of such disputes, and are more concerned to justify their existence than to render prompt and cheap justice to the parties; consequently arbitration is so expensive and unsatisfactory that employers resort to it with great reluctance. The resolutions passed ask for the right of either disputant to have disputes referred to arbitration, the establishment of panels of representatives drawn from the architectural, engineering, etc., professions, and from the associations of the various industries, from which panels all arbitrators are to be chosen. That there be no appeal allowed from the decision of such arbitrator or arbitrators. That when the assistance of experts is required, these are to be chosen from among similar panels, constituted from nominations made by the respective professional and industrial societies, and that professional experts be abolished. That all contracts for works be subject to an arbitration clause providing for the reference of disputes on the above lines.

Workmen's Compensation Law.

Consideration was also given to the question of some revision of the law as to workmen's compensation for accidents received during work. The growth of the demands for compensation has been very great, and now calls for insurance rates largely in excess of those prevailing in this country for similar risks; and, while agreeing that compensation for industrial accidents is rightly due to the workman, the system under the present law in France has led to great abuses, and modifications of the law are, therefore, asked for.

International Federation.

Finally, a proposal was outlined for the formation of an International Federation of those connected with building and public works, which proposal was referred to the existing permanent committee of the Congress for further study and elaboration. Proposals for such a federation will later be submitted to the existing building trade organisations in each European country. The ideas enunciated are very far-reaching, and merit the very serious consideration of all connected with the industry; but it would be premature to discuss them at the moment.

Utility of the Congress.

Certainly the proceedings of the Paris Congress showed how valuable such a combination may be. Being held in France, the matters under discussion were largely debated from the point of view of French employers. The result is likely to be that the discussion will excite so much attention in that country that opinion will be clarified and consolidated, and given a direction and force which is likely to yield substantial reforms. The representatives of the various countries will also take back with them clearer views in the problems they have at home, and be encouraged either to find solutions on the lines recommended by the Congress, or to bring their problems before a future Congress.

Venue of the Next Congress.

The next Congress will be held in Italy, when the building employers of that country will find their opportunity to invoke and proclaim the opinion of the building trade employers of nearly a score of countries on such abuses and grievances as may there press for alleviation.

The Language Question.

The language question, however, requires dealing with in future Congresses, if they are to fully attain their object. At present French is the language of the Congress. Some method is desired by which the papers may be published in at least four languages, and each speaker allowed to address the Congress in his own tongue. It is understood that some such change is contemplated.

Places of Interest Visited.

In connection with the Congress there were visits to the Hotel de Ville, to an interesting school for professional training of builders and architects, and to the Conservatoire of Arts and Crafts; also a theatre party, to which all who attended the Congress were invited. A banquet, at which some 400 persons were present, brought to a close a very successful gathering. The greatest attention and kindness were shown to the foreign delegates.

THE R.I.B.A. AND THE HOUSING AND TOWNS PLANNING BILL.

The subjoined letters on the subject of the Housing and Towns Planning Bill, addressed from the Royal Institute of British Architects to the President of the Local Government Board, and duly acknowledged, were published last week. The deputation referred to in the opening paragraph of the January letter had waited upon Mr. John Burns some weeks previously, and urged that provision should be made in the Bill for the formation of advisory committees composed of experts to be consulted in all matters connected with the preparation of town plans and plans for town extension.

January, 1908.

The Right Hon. John Burns,
President of the Local Government Board.

SIR,—You received our deputation on the 3rd December last with such frankness and courtesy that we venture once more to lay our views before you on certain points which escaped discussion at our interview. We fully admit the weighty reasons you gave for proceeding cautiously in this matter, the immense value of town sites, the necessity of considering the hinterland of great thoroughfares, together with political considerations, which lie outside our province; but we feel that in the preparation of any scheme for the laying out of towns there is a very intimate relation between the artistic aspect of the question and the dignity of civic and national life which is in danger of being overlooked. It seems to us that the problem of enlisting in the service of the State the most competent advice in dealing with such matters is worthy of the serious consideration of statesmen, the more so as the attempt has not been made in this country on any organised system. In this matter of the relation of public authority to trained architectural opinion this country is, and has always been, far behind others.

We venture to return to this matter, because, in the Bill of which you very kindly gave us a general outline, although there appears to be ample provision of powers of control and regulation, we did not gather that there is provision for preparing town plans as understood in other European countries, or for enlisting the assistance of architectural opinion. We venture to hope that the Bill will provide for these important matters on a comprehensive scale, for we submit that no satisfactory scheme of town planning can be drawn up without architectural advice, inasmuch as no other profession has the requisite training for dealing with such problems. Architecture is concerned not only with individual buildings, but also and very particularly with the proper placing of buildings in relation to each other, and with considerations of spacing, of vista, perspective and composition, problems which demand special study and powers of design of a high order. At the interview which you were kind enough to grant us, this larger aspect of municipal planning was hardly brought into sufficient prominence.

The point which we would put before you is that the satisfactory laying out of towns and planning of municipal improvements is in the main a question of design; that is to say, given the data supplied by the engineer, the surveyor, the sanitary and local authorities, there still remains the question who is to mould these elements into the best possible form—for the work of the engineer and surveyor is contributory rather than final. As the necessary complement to their work, another order of mind is required, and that in the initial stages of the scheme. We would urge that the practical and the artistic sides of town planning are inseparably connected, and that no scheme can be wholly satisfactory which does not satisfy both aspects of the matter. It is in regard to the artistic aspect that we make our suggestions.

We submit that the translation of the various practical conditions into the best possible scheme is a problem of architectural design, and as such should have the benefit of the best architectural assistance it is possible to obtain.

We would point out that in France special importance has always been attached to this power of laying out public spaces, which is an essential function of architecture. It does not fall within the scope of professions into whose training æsthetic considerations do not enter. It is generally admitted that for the last two hundred years or more the French have shown other countries the way in the handling of large problems of town planning, and the reason for this superiority lies not so much in individual ability as in a great tradition of design built up by the successive General Councils of Civil Buildings, which are composed for the main part of the ablest architects of their time in France. We suggest that, having regard to the constant development, rebuilding, and rearrangement of towns entailed by the changing conditions of modern civilisation, the time has come for a more systematic and comprehensive treatment of these problems, and that an attempt should be made to bring the best architectural opinion into play in dealing with these matters.

We feel that it would be greatly to the interest of the larger towns of this country that their development and extension should proceed on carefully considered general plans drawn up to meet local conditions and on lines sufficiently broad to admit of such minor modifications as may be necessary in succeeding generations. We feel that without some such provision the difficulties which already meet us, and are already beyond control, will recur in the future in an aggravated form. It is more particularly in connection with this aspect of town planning that we suggest to you the desirability of devising some machinery for the enlistment of competent advice.

Should you consider this desirable, the Royal Institute of British Architects will feel honoured by being permitted to submit suggestions for your further consideration.—We have the honour to be, Sir, your most obedient Servants,

THOMAS E. COLLCUTT,
President R.I.B.A.

ASTON WEBB,
Chairman of the Town Planning Committee R.I.B.A

17th July, 1908.

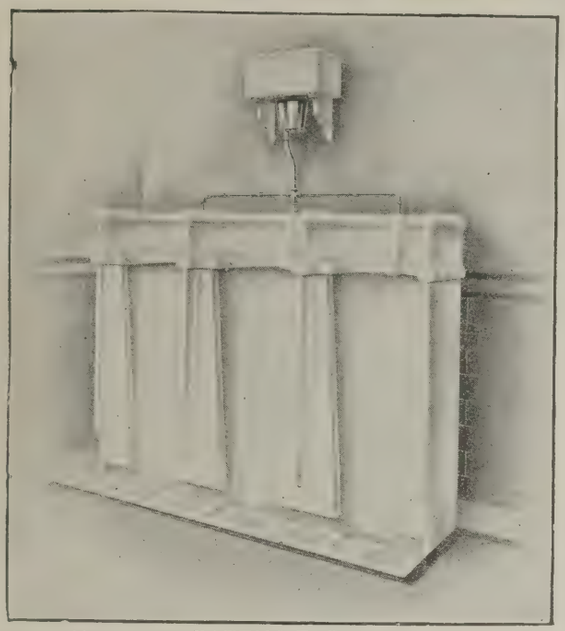
The Right Hon. John Burns, M.P.,

SIR,—I am desired by the Council of the Royal Institute of British Architects to refer you to their letter of January, 1908, on the subject of the Housing and Towns Planning Bill, and to request that the Royal Institute of British Architects should have specific permission to make recommendations or representations as "persons affected" at inquiries held by the Local Government Board before the approval of town planning schemes.

It is understood that this was indicated by the speech in which you moved the second reading of the Bill, and by paragraph 2 (c) of Schedule III., but it is considered desirable by the Council that it should be more clearly defined in view of the importance of the artistic side of such schemes being fully considered. The Council would also be glad to know if the Bill will require that, in the case of schemes for the laying out of estates by private owners (which may have received the approval of the local authority), there will be an appeal to the Local Government Board from the decision of the local authority.—I have the honour to be, Sir,

Your obedient Servant,
IAN MACALISTER,
Secretary, R.I.B.A.

Mr. Burns's stolid unresponsiveness seems to require explanation. The subject is dealt with briefly and tentatively in an editorial note that appears on p. 420 of the present issue.



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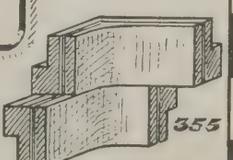




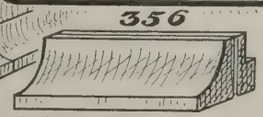
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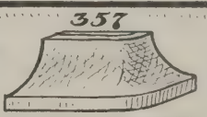
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Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—364, Westminster. PUBLISHING—2200 Holborn (six lines).

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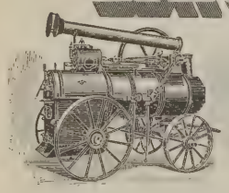
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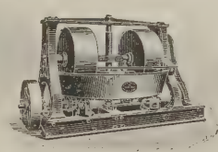
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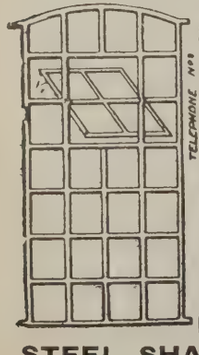


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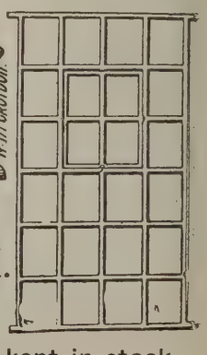


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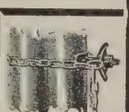
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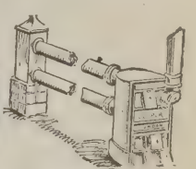




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(*Tenders continued from page vi.*)

Blackpool.—For post office at Blackpool, for H.M. Office of Works, etc.:—

	In Portland Stone.	Credit.
J. Parkinson and Sons Blackpool (Ltd.	£22,300 0 0	£50 0 0
W. Higley	21,853 0 0	87 0 0
Stephens, Bastow and Co., Ltd.	20,895 0 0	——
W. E. Blake	19,540 0 0	60 0 0
Smith Bros. (Burnley), Ltd.	19,428 0 0	——
H. Smith	19,047 0 0	50 0 0
W. Pattinson and Sons, Ltd.	18,832 0 0	67 0 0
J. Fielding and Sons	18,676 0 0	75 0 0
H. Kelly and Bros.	18,668 0 0	106 0 0
W. Eaves and Co., Ltd.	18,650 0 0	——
T. Cottam	17,700 0 0	80 0 0
T. Riley, Ltd.	17,621 5 4	100 0 0
J. Eaves	17,380 0 0	——
R. Neill and Sons*	16,760 0 0	103 0 0

In Stancliffe Stone.

J. Parkinson and Sons (Blackpool), Ltd.	£22,600 0 0
W. Highley	21,900 0 0
Stephens, Bastow and Co., Ltd.	20,895 0 0
W. E. Blake	18,660 0 0
Smith Bros. (Burnley), Ltd.	19,728 0 0
H. Smith	19,247 0 0
W. Pattinson and Sons, Ltd.	18,882 0 0
J. Fielding and Sons	19,210 0 0
H. Kelly and Bros.	18,800 0 0
W. Eaves and Co., Ltd.	20,250 0 0
T. Cottam	17,700 0 0
T. Riley, Ltd.	18,168 12 4
J. Eaves	17,980 0 0
R. Neill and Sons*	17,204 0 0

*Accepted.

Brentwood (Essex).—For erection of new central kitchens, etc., at the Essex County Lunatic Asylum, Brentwood, for the Visiting Committee. Mr. Frank Whitmore, architect, Chelmsford:—

Jackson and Co., Herne Bay	£6,759
Smith and Son, Witham	6,495
Jenkins and Son, Southampton	6,314
Foster and Co., Loughton	6,020
Dowsing and Davis, Romford	6,000
Parren and Son, Earith, Hunts	5,999
Spencer, Santo and Co., London	5,980
Lawrence and Son, Waltham Cross	5,944
King and Son, Westminster	5,929
G. Grimwood and Sons, Sudbury	5,889
F. W. Jarvis, Brentwood	5,811
Young and Son, Norwich	5,794
Wallis and Son, Maidstone	5,678
Pattinson and Son, Westminster	5,664
Parkington and Son, Ipswich	5,555
F. and B. E. Davey, Southend	5,499
J. W. Jerram, East Ham	5,499
E. and B. H. Davey, Southend	5,494
G. Grimwood and Sons, Ltd., Ipswich	5,487
Potter and Son, Chelmsford	5,423
F. Bennet, Ipswich	5,350
F. and A. Willmott, Ilford	5,317
Pavitt and Son, Aveley	5,212
R. Beaumont, Lexden	5,200
F. W. Burtwell, Brentwood*	5,195

*Recommended for acceptance.

Gaunton (Devon).—For the erection of additions to "Endcliffe," Gaunton, Devon. Mr. Spencer Edwards, P.A.S.I., architect, Barnstaple:—

E. Karslake, Barnstaple	£166 10 0
H. Slee, Gaunton	160 0 0
W. Davis, Braunton*	158 10 0

*Accepted.

London, W.C.—For Royal Courts of Justice extension (first contract), for the Commissioners of H.M. Works and Public Buildings:—

W. Johnson and Co., Ltd.	£9,533 0 0
J. S. Carmichael	9,197 0 0
J. Parnell and Son	9,118 0 0
A. Porter	8,814 0 0
W. H. Lorden and Son	8,675 0 0
A. M. Coles	8,632 6 4
B. E. Nightingale	8,630 0 0
W. Pattinson and Sons	8,629 0 0
G. Trollope and Sons, etc.	8,585 0 0
Perry and Co.	8,557 0 0
W. Lawrence and Sons	8,544 0 0
Spencer, Santo and Co.	8,531 0 0
Galbraith Bros., Ltd.	8,494 0 0
Higgs and Hill, Ltd.	8,484 0 0
F. and H. F. Higgs	8,390 0 0
Lawrance and Sons	8,302 0 0
J. Allen and Sons, Ltd.	8,298 0 0
G. Godson and Sons	8,232 0 0
Holloway Bros., Ltd.	8,140 0 0
Dove Bros., Ltd.	8,122 0 0
J. Chessum and Sons	7,991 0 0
W. Downs	7,943 0 0
J. Mowlem and Co.	7,927 0 0
J. Thompson and Co.	7,898 0 0
Leslie and Co., Ltd.	7,890 0 0
H. Lovatt, Ltd.	7,835 0 0
Foster and Dicksee	7,666 0 0

Scunthorpe (Lincs.).—For erecting a fire-station, highway depot, cart sheds, and public convenience at the corner of Mary Street, E., and Cole Street, for the Urban District Council. Mr. W. F. Bickford, engineer and surveyor. Quantities by engineer and surveyor:—

Exors. of J. Arundel	£2,726 6 0
Smith Bros.	2,547 5 0
Holmes and Richardson	2,267 10 0
W. Pallister	2,260 0 0
A. J. Elms	2,230 0 0
H. J. Thompson*	2,139 8 8
Parker and Sons	2,098 0 0

*Accepted.

Engineer's and surveyor's estimate, £2,121.

Stratford, E.—For erection of a Memorial Hall to Conference Hall. G. Baines and Son, architects, 5, Clements Inn, Strand:—

Johnson and Co.	£2,226
G. J. Hosking	2,183
F. and H. Higgs	2,090
H. Knight and Son	2,084
F. G. Minter	2,083
W. Lawrence and Son	2,076
Patman and Fotheringham	1,993
W. G. Shurmur	1,980
Mattock and Parsons	1,973
F. G. Coxhead	1,970
Battley, Sons and Holness	1,959
Sands and Burley	1,930
J. W. Jerram*	1,929

*Accepted.

Wickford (Essex).—For the erection of two cottages, Garden Village Estate, Wickford, Essex, for Geo. Ramuz, Esq. Messrs. Wornell and Davis, architects, Slough, Bucks:—

Boulton and Paul, Ltd., Norwich	£378
R. Myall, Ilford	366
F. W. Burtwell, Brentwood*	330

*Accepted.

Kirkburton.—The new joint isolation hospital which has just been opened here contains twenty-four beds, and has cost, including furnishing and equipment, £9,696.

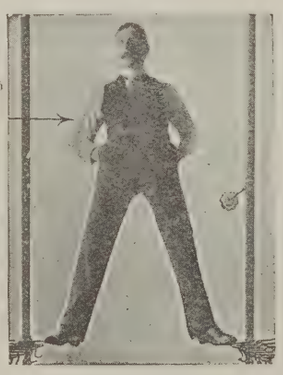
Coming Events.

Monday, December 7.
LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. F. W. Troup, F.R.I.B.A., on "Ornamental Lead Work."

Friday, December 11.
SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—General Meeting. Councillor J. S. Nettlefold on "Housing Reform and Town Planning."

Thursday, December 17.
CONCRETE INSTITUTE.—General Meeting. Mr. W. Dunn, F.R.I.B.A., on "The Examination of Designs for Reinforced Concrete Work."

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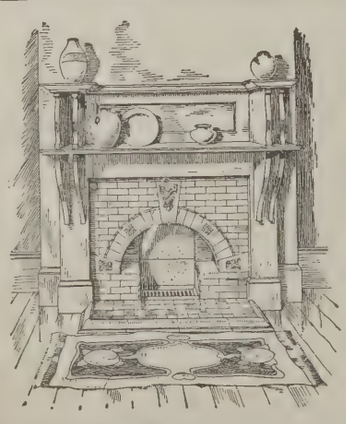
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Dec. 3. GUEFFORDD.—Erection of a new schoolroom, dwelling-house, and stabling, adjoining C.M. Chapel, Geufford near Guilsfield. Plan and specification, or copies of the same, can be seen at the house of D. Jones, Broniarth Hall, Guilsfield, or at the office of G. Dickens-Lewis, architect, Talbot Chambers, Shrewsbury. Estimates, sealed and endorsed "Tender for Schoolroom," etc., are to be delivered to Mr. Jones not later than 12 o'clock mid-day on Dec. 3.

Dec. 4. STOTFIELD.—Erection of dwelling-house at Stotfield. Estimates are wanted for the mason, carpenter, slater, plumber, plaster, painter, and glazier works. Plans and specifications may be seen with C. G. Doig, architect, 149, High Street, Elgin, and offers lodged with him not later than Dec. 4.

Dec. 5. NORTH RAUCEBY.—Erection of two small farm-houses and the erection and alteration of farm buildings at North Rauceby, for the Kesteven C.C. Builders willing to tender should make written application before Dec. 5, to W. Mortimer and Son, architects, Lincoln.

Dec. 5. ABERAVON, Port Talbot.—Erection of a parsonage house for the Vicar of Aberavon. Plans, etc., may be seen at the office of J. A. James, architect, Port Talbot, and bills of quantities obtained, upon receipt of a cheque for £2 2s. Tenders must be delivered not later than Dec. 5.

Dec. 5. MANCHESTER. — Pointing brickwork, coping, etc., and making good generally 122 cottages, Miles Platting, for the Improvement and Buildings Committee. Specification may be obtained at the office of city architect, Town Hall, Manchester, upon payment of £1 1s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Sealed tenders, enclosed in the official envelope, to be delivered at the above office not later than 9 a.m. on Dec. 5.

Dec. 5. PALTERTON.—Erection of proposed Council school at Palterton, near Chesterfield, to accommodate 120 infants, for the Derbyshire C.C. Persons desirous of tendering for the work may see the drawings, specification, agreement, etc., at the office of the architect to the committee, St. Mary's Gate, Derby, between the hours of 10 a.m. and 4 p.m., except on Saturdays, when they will be on view from 10 a.m. to 12 noon. A copy of the bill of quantities, specification, conditions of contract, and form of tender can be obtained at the architect's office upon payment of £1 1s. Sealed tenders, in envelopes provided for the purpose, endorsed "Tender for Palterton Council School," must be delivered to G. H. Widdows, A.R.I.B.A., architect to the Committee, County Education Office, St. Mary's Gate, Derby, not later than 1 p.m. on Dec. 5. Securities required.

Dec. 7. ALDERSHOT.—Certain works to be carried out at the cemetery, for the Burial Board. Plans and specifications can be obtained from Friend and Lloyd, architects, Aldershot. Tenders, marked "Tender for Work at Cemetery," to reach N. Clinton, clerk, Station Road, Aldershot, not later than Dec. 7.

Dec. 7. LEEDS.—Pulling down and rebuilding a portion of the retaining wall supporting the Leeds and Bradford Road, situated between the Leeds and Liverpool Canal, and the Midland Railway Company's station at Kirkstall. The drawings, specification, etc., may be seen, and bill of quantities obtained at the office of W. T. Lancashire, city engineer, Municipal Buildings. Tenders, properly endorsed, must be received at the town clerk's office not later than 10 a.m. on Dec. 7.

Dec. 7. GALWAY.—Erection of a new fever hospital at Galway, for the Board of Guardians, in accordance with drawings (amended), prepared by their architect, A. Cowlishaw, Brentwood, Saltihill, Galway. Plans and other particulars may be seen at the architect's office any day (Sunday excepted) between the hours of 10 a.m. and 4 p.m. Quantities will be supplied by the architect on deposit of £2 2s. Securities required. Tenders forms of which will be supplied by the architect), endorsed "New Fever Hospital," will be received by R. F. Mullery, clerk of union, Galway, up to, but not later than, 4 o'clock p.m. on Dec. 7.

Dec. 9. PORT TALBOT.—Erection of Masonic Temple at Forge Road, Port Talbot, for the "Afan" Masonic Lodge. Plans and specification may be seen at the offices of J. A. James and T. Gibb, joint architects, Port Talbot, and bills of quantities obtained on receipt of £2 2s. Sealed tenders, endorsed "Masonic Temple," to be sent to F. W. Page, Ael-y-Bryn, Pentyla, Aberavon, on or before Dec. 9.

Dec. 9. LAMLASH.—Repairs of Lamlash Timber Pier. Plans and specification can be seen and schedule of measurements obtained from D. and C. Stevenson, civil engineers, 84, George Street, Edinburgh. A deposit of £1 must be made for copy of schedule. Tenders are to be lodged with the above on or before Dec. 9.

Dec. 9. LONDON, E.—Works in connection with certain of the gutters to existing buildings at the Forest Gate Branch Workhouse, for the Guardians of the Poplar Borough, in accordance with specification prepared by their architects, J. and W. Clarkson, 136, High Street, Poplar, E. Persons desirous of tendering for the work must send their names to the architects not later than December 2. The conditions of contracts may be seen at the offices of the architects as above and a copy of the specification and form of tender obtained on payment to the architects of a deposit of £2 2s. Tenders, sealed and endorsed "Tender for Works to Gutters at the Forest Gate Branch Workhouse," addressed to G. H. Lough, clerk to the Guardians, at 45, Upper North Street, Poplar, E., must be delivered not later than 6.30 p.m. on Dec. 9. The successful contractor will be required to only employ the men whose names are on a list which will be supplied to him from time to time by the Poplar Distress Committee or the Poplar Employment Exchange. The contractor is at liberty, however, to choose and employ a foreman independently of the Poplar Distress Committee or the Poplar Employment Exchange. Fair wages clause.

Dec. 10. SEVEN SISTERS.—Erection of new hotel, stables, etc., at Seven Sisters, for E. E. Bevan, Neath. Plans, and specification, and bill of quantities may be seen at the offices of J. C. Rees, architect, Parade Chambers, Neath. Sealed tenders to be sent in by Dec. 10, endorsed "Tender for New Hotel."

Dec. 12. TRESWITHIAN.—Erection of new Sunday-school and renovation of the present chapel, for the Trustees of the Wesleyan Chapel, Treswithian, near Camborne. Plans, etc., may be seen by appointment at the residence of J. Holman, Treswithian, or at the office of S. Hill, architect, Green Lane, Redruth. Tenders must be sent in by Dec. 12.

Dec. 14. DARTON.—Erection of a new school at Darton, for the West Riding Education Committee. Plans may be seen and quantities obtained on application to Crawshaw and Wilkinson, architects, 13, Regent Street, Barnsley. A deposit of £1 must be paid to the West Riding treasurer, and sent to him direct at the County Hall, Wakefield. Tenders must be delivered by Dec. 14.

Dec. 14. BRIDLINGTON.—Erection of a pumping station at the Higher Waterworks, Bridlington, for the B.C. Specification, bills of quantities, general conditions and form of tender, may be obtained from, and the drawings inspected, at the office of E. R. Matthews, A.M.I.C.E., borough surveyor, Town Hall, Bridlington, on payment of a deposit of £1 1s. Sealed tenders, endorsed "Pumping Station," to be received by A. E. Matthewman, town clerk, Town Hall, Bridlington, on or before Dec. 14.

Dec. 15. LONDON, W.—Erection of proposed new public offices at Acton, for the Acton U.D.C., in accordance with plans prepared by and under the superintendence of W. H. Raffles and J. B. Gridley, architects, 10, Gray's Inn Square, London, W.C. Plans and specifications can be seen at the offices of Raffles and Gridley, and bills of quantities can be obtained, after Dec. 8, from Matthews and Coleman, 11, Old Queen Street, Westminster, S.W., on payment of the sum of £1 1s. Securities required. Tenders, endorsed "New Public Offices," to be addressed and delivered to W. Hodson, clerk to the Council, Council Offices, 242, High Street, Acton, W., on or before 3 o'clock p.m. on Dec. 15. Canvassing will disqualify.

Dec. 16. BIRMINGHAM.—Erection of additional workshops, etc., at the public lighting department, Park Street, Birmingham, for the Public Works Committee. The drawings and specification may be seen, and quantities and forms of tender obtained at the office of H. E. Stilgoe, M.Inst.C.E., city engineer and surveyor, the Council House, Birmingham, on deposit of the sum of £3 3s. Fair wages clause. Tenders, sealed and endorsed "Tender for Additional Workshops, etc., Park Street," and addressed to the Chairman of the Public Works Committee, will be received at the office of H. E. Stilgoe, as above, not later than December 16.

Dec. 18. MARGATE.—Erection of new post-office at Margate, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to the Postmaster. Bills of quantities and forms of tender may be obtained at the undermentioned address on payment of £1 1s. Tenders must be delivered before 12 o'clock noon on Dec. 18, addressed to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., and endorsed "Tender for Margate New Post Office."

Dec. 21. PADIHAM.—Erection of a new elementary school at Padiham, near Burnley, to accommodate 620 scholars, for the Lancashire Education Committee. The plans may be seen and bills of quantities obtained at the office of H. Littler, county architect, 16, Ribblesdale Place, Preston, by payment of a deposit of £2. Tenders must be delivered before 12 o'clock noon on Dec. 21, sealed and endorsed, to F. Shutt, Education Office, Padiham.

Dec. 31. SOUTHEND-ON-SEA. — Construction of a new pavilion ward at the Sanatorium, Balmoral Road, Southend-on-Sea, for the Corporation. Plans, sections and specification may be seen, and bill of quantities and form of tender obtained, on deposit of cheque for £1 1s., upon application to E. J. Elford, M.I.M.E., borough surveyor, Southend-on-Sea. Sealed tenders, endorsed "Pavilion, Sanatorium," to be delivered at the office of W. H. Snow, town clerk, Town Clerk's Office, Southend-on-Sea, before 12 o'clock noon on December 11. No tender will be considered unless made on the prescribed form.

No date. ST. HELENS.—Erection of a new monastery at St. Helens Junction. Builders and contractors desirous of tendering can have quantities and particulars from R. Curran and Son, architects, Warrington, on deposit of £2 2s.

No date. ALDERSHOT.—Erection of two cottages and motor garage, Grosvenor Road, Aldershot. Plans and specifications may be seen and any further information obtained upon application to Friend and Lloyd, architects, Aldershot.

No date. STAFFORD.—Erection of a new mission hall, for the Trustees of the Wesleyan Church, Rowley Street. The drawings and specification may be seen, and bill of quantities and all particulars obtained, on application to C. W. D. Joynson, architect, Springhead, Wednesbury, upon payment of the sum of £1.

No date. FYNING COMMON.—Erection of a detached dwelling-house, at Fyning Common, within two miles of Rogate Station. Those desirous of tendering are requested to apply to Stride and Son, East Street, Chichester; or to W. R. Howell, A.R.I.B.A., 5, York Buildings, Adelphi, W.C.

No date. TREFRIW, N. Wales.—Erection of a new Welsh Calvinistic Methodist Chapel at Trefriw, N.W. (the estimates are to be in two parts, with and without a spire). Persons desirous of tendering are requested to send in their names to G. Dickens-Lewis, architect, Talbot Chambers, Shrewsbury, together with a cheque for £2, when they will be supplied with the bills of quantities, form of tender, and full particulars. Drawings, or copies of the same may be seen at the house of R. Roberts, secretary to the Building Committee, Bron Derw, Trefriw, or at the office of the architect. Tenders, sealed and endorsed, are to be sent to the secretary by the time mentioned in the particulars. The contractor whose estimate is accepted will be required, if necessary, to enter into a bond for the satisfactory completion of the contract.

ENGINEERING.

Dec. 7. BILLERICAY.—Supply and fixing of laundry machinery and fittings at their Workhouse laundry at Billericay, for the Guardians of the Union, to which alterations and additions are about to be made. Plans and specification may be seen, and a form of tender, on application to R. J. W. Layland, architect, of Billericay. Sealed tenders, endorsed "Laundry Machinery," to be delivered to C. E. Lewis, clerk, New Road, Brentwood, not later than Dec. 7.

Dec. 7. NEWCASTLE-ON-TYNE.—Supply and delivery of 660 yds. of 6 in. C.I. water pipes and

150 yds. of 12 in. C.I. water pipes, for the Bedlingtonshire U.D.C. Further particulars, specification, and form of tender may be had on application to J. E. Johnson, surveyor, Bedlington. Sealed tenders, marked on the outside "Tender for Water Pipes," to be sent to D. Forster, clerk of the Council, Clerk's Office, 24, Grainger Street West, Newcastle-on-Tyne, not later than 12 o'clock noon on Dec. 7.

Dec. 8. LONDON.—Supply of bridgework for the Secretary of State for India in Council. The conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W., and tenders are to be delivered at that office by 2 o'clock p.m. on Dec. 8, after which time no tender will be received.

Dec. 8. CRUMPSALL.—Reconstruction of the bridge carrying Waterloo Street over the River Irk, etc., Crumpsall, for the Improvement and Building Committee of the Manchester Corporation. Drawing may be seen and specification, bill of quantities and form of tender obtained on application at the City surveyor's office, Town Hall, Manchester, on payment to the city treasurer of £2 2s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Tenders, enclosed in the official envelope addressed to the chairman of the Improvement, etc., Committee, are to be delivered at the city surveyor's office not later than 10 a.m. on Dec. 8.

Dec. 8. BRIGHTON.—Laying of certain 6 in., 4 in. and 3 in. water mains, and other works, for the purpose of supplying water to the parish of Lancing, for the Brighton B.C. The specification and form of tender may be obtained on application at the office of H. Talbot, town clerk, Town Hall, Brighton, where sealed tenders, addressed to him and endorsed "Tender for Laying Water Mains," must be left before ten o'clock in the forenoon on Dec. 8.

Dec. 9. MANCHESTER.—Supply, delivery and erection at their Stuart Street Generating Station, of exhaust, steam, circulating water and air pump discharge pipes, for the Electricity Committee. Specifications and form of tender may be obtained on application to F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester, on payment of a deposit fee of £1 1s. Further particulars and information can be obtained from S. L. Pearce, chief electrical engineer, Dickinson Street, Manchester. Tenders, duly endorsed and addressed to the chairman of the Electricity Committee, must be delivered at the Town Hall before 10 a.m. on Dec. 9.

Dec. 10. GLASGOW.—Construction and repair of the embankments on the north side of the river Clyde. Plans and sections may be seen and specifications and forms of tender obtained on application to the city engineer, at his office, City Chambers, 64, Cochrane Street. Sealed tenders, marked outside "Tender for Repair, etc., of Banks of Clyde," must be lodged with A. W. Myles, town clerk, City Chambers, Glasgow, not later than Dec. 10.

Dec. 18. CASTLE CARY.—Construction of the Castle Cary Water Co.'s works at Castle Cary, Somerset. The works include the building of engine house and reservoir, laying mains, and incidental matters. The work is arranged in two sections, and a tender for either section will be considered, as well as tenders for the whole. Plans and specifications, with bills of quantities, prepared by W. Phelps, C.E., the company's engineer, may be inspected at the registered office of the company, Bailey Hill, Castle Cary, on any weekday between 10 and 5 (Saturdays between 10 and 1). Copies of the specification and quantities will be furnished on payment of £2 2s. Sealed tenders, marked "Tender for Water Works," must be delivered at the said office by 10 a.m. on Dec. 18.

Dec. 22. NEWPORT, I.W.—Supply and fixing complete of:—1. A 110 b.p. continuous working load suction gas engine and suction plant at the Waterworks, Carisbrooke, I.W. 2. A vertical three-throw double acting pump of Hayward Tyler's pattern, for the Corporation. Specifications and conditions of contract may be seen and forms of tender obtained on application at the office of T. R. Pratt, town clerk, Town Clerk's Office, 19, Quay Street, Newport, I.W. The pumping station may be inspected by appointment with the engineer. Sealed tenders endorsed "Tender for ——" must be delivered at the town clerk's office by Dec. 22.

IRON AND STEEL.

Dec. 7. LONDON, S.W.—Supply of about 1,652 tons of Bessemer acid steel main rails, weighing 88 lbs. per yard, and fish plates, for the Crown Agents for the Colonies, acting on behalf of the Government of Ceylon. Forms of tender and all particulars may be obtained on application at the office of the Crown Agents for the Colonies, Whitehall Gardens, S.W., between the hours of 10 a.m. and 4 p.m. (Saturdays 10 a.m. to 1 p.m.), on payment of a deposit of £1. Tenders to be delivered in sealed envelopes, addressed to the Crown Agents for the Colonies, Whitehall Gardens, S.W., not later than noon on Dec. 7, endorsed "Tender for Steel Rails and Fish Plates, Ceylon Government Railways."

Dec. 10. NANTYMOEL.—Supply and delivery of about 225 yds. of 12 in. cast iron flange pipes, to be delivered at Nantymoel G.W.R. Station, for the Ogmore and Garw U.D.C. Full particulars and form of tender may be obtained from H. D. Williams, engineer and surveyor. Sealed tenders, endorsed "Tenders for Cast Iron Pipes," to be sent to him not later than Dec. 10.

Dec. 14. MELBOURNE.—Supply and delivery at Williamstown Railway Pier, Melbourne, of the following rails and fishplates: 6,914 tons of 80 lb. steel rails, 620 tons steel fishplates for 80 lb. rails, and alternatively for 13,828 tons 80 lb. steel rails, and 1,240 tons steel fishplates for 80 lb. rails, for the Agent-General for Victoria, Australia. Specification and forms of tender may be obtained at the office of the Agent-General for Victoria, 142, Queen Victoria Street, London, E.C. Tenders must be delivered to him not later than 10 a.m. on Dec. 14.

Dec. 15. LONDON.—Supply of fire hydrants during the three years commencing Jan. 1. Tenders must be upon the official forms to be obtained from the clerk of the Council, County Hall, Spring Gardens, S.W. No tender will be received after 11 a.m. on Dec. 15. Full particulars and also information as to the conditions to be observed by tenderers will be found in the "London County Council Gazette" of Nov. 23.

No date. MANNINGTREE.—Supply and delivery to Manningtree Station, Great Eastern Railway, of about 880 tons of 12 in. cast iron water pipes, for the directors of the Tendring Hundred Waterworks Co. Copies of the specification may be obtained on application at the offices of the Company, Mistley, Manningtree, Essex.

PAINTING.

Dec. 5. MANCHESTER.—Painting the outside of 122 cottages, Miles Platting, for the Improvement and Buildings Committee. Specification may be obtained at the office of the city architect, Town Hall, Manchester, upon payment of £1 1s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester." Sealed tenders, enclosed in the official envelope, to be delivered at the above office not later than 9 a.m. on Dec. 5.

Dec. 11. SHEFFIELD.—Plumbers' and glaziers' work required for general repairs during the year ending Dec. 31, 1909, for the Education Committee. Specifications and forms of tender, together with cover, may be had on application at the office of the Education Committee, until Dec. 7. Sealed tenders, which will only be received on the form and in the cover provided, should be sent to G. S. Baxter, secretary, Education Office, Leopold Street, not later than Dec. 11.

Dec. 14. LEEDS.—Painting, etc., the interior and exterior of the Meanwood Road baths. Specification may be seen, and forms of tender and schedules of work obtained at the office of W. T. Lancashire, city engineer. Tenders, properly endorsed, must be received at the town clerk's office not later than 10 a.m. on Dec. 14.

PLUMBING & SANITARY

Dec. 7. DAGENHAM.—Construction, etc., of certain pipe sewers and other works on the sewerage system and sewerage disposal works of the parish of Dagenham, for the Romford R.D.C. Specification and drawings may be inspected at the office of W. Fairley, civil engineer, 69, Victoria Street, Westminster. A copy of the bill of quantities and form of tender may be obtained at the office of the engineer on producing receipt showing that a cheque for £2 2s., made payable to the Council, has been deposited with the clerk. Sealed tenders, on the forms required, must be received by W. Smith, clerk to the Council, 13, North Street, Romford, on or before Dec. 7. Securities required.

Dec. 7. SOUTHAMPTON.—Construction of a soil sewer for the sewerage of the Terrace House Estate, for the Corporation. Plans, specification, and conditions may be inspected and bills of quantities and form of tender obtained at the borough engineer's office upon production of the borough treasurer's receipt for a deposit of £1 1s. Sealed tenders, endorsed "Tender for Soil Sewer, Terrace House Estate," must be delivered at the town clerk's office, Municipal Offices, Southampton, before 2 p.m. on Dec. 8. Every tender must be accompanied by the borough treasurer's receipt for a deposit of £10 (Bank of England note). If a contractor should withdraw his tender after the same has been recommended for acceptance, his deposit will be forfeited.

Dec. 8. ITCHEN.—Constructing a storm water sewer in the Bridge and Vicarage Roads for the U.D.C., in accordance with the plans, specification, and conditions, which may be seen upon application to T. A. Collingwood, surveyor, Council Offices, Portsmouth Road, Woolston, Hants, from whom also bills of quantities and form of tender may be obtained on the deposit of £2 2s. Tenders endorsed "Tender for Storm Water Sewer," to be delivered at the office of W. H. Bell, clerk to the Council, Clerk's Office, Woolston, on or before Dec. 8.

Dec. 9. RIPLEY.—Construction of sewage disposal works at Northern Sewage Farm, comprising subsidence tanks, percolating filters, storm water filter, and other appurtenant works, for the U.D.C. Plans and specification may be seen and bill of quantities and form of tender obtained on application to H. Walker, consulting engineer, King Street, Nottingham, or to G. N. Bird, surveyor to the Council, Town Hall, Ripley, Derby. A deposit of £1 1s. will be required. Sealed tenders (upon the form to be supplied) must be delivered at the office of G. M. Capon, clerk, Public Offices, Ripley, Derby, not later than 12 noon on Dec. 9, endorsed "Tender for Sewage Works." No tender will be considered unless made upon the above-mentioned form. Fair wages clause.

Dec. 10. ST. ALBANS.—Supply of two gas engines (13 b.h.p.), suction plant, air compressors, receiver, shafting, and certain other alterations and additions to their present pumping plant situated at the Sewage Outfall Works, near Park Street (L. and N.W. Railway), St. Albans, for the Town Council. Further particulars, specifications and forms of tender may be obtained, and plans may be seen, at the offices of H. H. Humphreys, engineer, 28, Victoria Street, Westminster, on Dec. 2 and 3, only between the hours of 10 a.m. and 5 p.m. Intending contractors will be required to deposit a sum of £3 3s. prior to particulars being furnished. Tenders, endorsed "Contract 3 (Mechanical)," must reach A. H. Debenham, town clerk, St. Albans, not later than 4 p.m., Dec. 10.

Dec. 10. WALSALL.—Laying and jointing of about 1,092 yds. of 12 in. and 1,486 yds. of 9 in. stoneware pipe sewers, in deep tunnel and open cutting; the construction of manholes and lamp-holes, screening and distributing chambers, septic tank, and the laying out of irrigation area, including carriers, sludge lagoons, and other works, incidental thereto, for the R.D.C. Plans may be seen, and copies of the specifications, bills of quantities, and form of tender obtained, at the office of W. P. Young, surveyor and engineer to the council, District Council Offices, Rushall, Walsall, on payment of a deposit of £5. Sealed tenders, endorsed "Streetly Sewerage," to be delivered to me at the office above named, not later than 12 o'clock noon on Dec. 10. Securities if required.

Dec. 10. UCKFIELD.—Construction of sewerage and sewage disposal works for the village of Buxted, for the U.D.C. The works comprise about 1,700 yds. of stoneware pipe sewers, from 6in. to 8in., all necessary manholes, flushing arrangements, ventilation, etc., a small pumping plant, with about 250 yds. of 4in. rising main, sewage and storm-water disposal works, tanks, percolating filter, and irrigation works, etc., in accordance with plans and specification, which have been prepared by J. Taylor, the surveyor to the Council. The drawings and specification may be seen at the office of the surveyor, Henley House, Uckfield, from whom copies of the bills of quantities, schedules of prices and forms of tender may be obtained on payment of the sum of £2 2s. Sealed tenders, endorsed "Buxted Sewerage Works," must be delivered at the office of F. Holman, clerk, 86, High Street, Lewes, on or before noon, Dec. 10. Tenders will not be considered unless they are on the form above referred to, with the quantities and schedules properly filled in.

Dec. 12. MOLD.—Construction of new stoneware and iron pipe sewers, Dortmund tank, filter beds, and all appurtenant works at Mold, Flintshire. The plans may be seen and quantities and form of tender obtained at the office of W. H. Radford, engineer, Albion Chambers, King Street, Nottingham, on deposit of £2 2s. A copy of the plans may also be seen at the surveyor's office, Town Hall, Mold. Sealed and endorsed tenders must be sent in to R. S. Kelly, clerk to the Council, on or before Dec. 12.

Dec. 15. LONDON, W.—Construction of a sewer, mainly of cast-iron, lined with concrete and blue brick, of 7 ft. internal diameter, and of a total length of about 14,770 ft. to be formed in tunnel, together with weir chambers, manholes, side entrances, ventilators, etc., between Grosvenor Crescent and Warwick Road, Kensington, for the L.C.C. Persons desiring to submit tenders may obtain the drawings, specifications, bills of quantities, form of tender, and other particulars, on application to M. Fitzmaurice, C.M.G., chief engineer, County Hall, Spring Gardens, S.W., upon payment to the cashier of the Council of the sum of £10. Full particulars of the work may be obtained on application at the County Hall, before the payment of the fee for the specification, etc. Tenders must be upon the official forms, and the printed instructions contained therein must be strictly complied with. Fair wages clause. Each tender is to be delivered at the County Hall in a sealed cover, addressed to G. L. Gomme, clerk of the London County Council, Spring Gardens, S.W., and marked "Tender for Low Level Sewer, No. 2, North Side, Contract No. 5." No tender received after 11 a.m. on Dec. 15 will be considered.

ROADS AND CARTAGE.

Dec. 4. MANCHESTER. — Sewering, draining, paving, etc., passage behind the temperance billiard hall, and 78, Wilmslow Road, Rusholme, South Manchester; passage behind 38-48, Rushford Street, 2-40, Hatton Street, 1-37, Hopkins Street, and adjoining 2 and 38, Hatton Street, and 1 and 37, Hopkins Street, Newton Detached; passage behind 50-60, Rushford Street, 1-39, M'Farren Street, 8-42, Hopkins Street, 1-3, Newton Bank, and adjoining 1 and 39, M'Farren Street, 8-40, Hopkins Street, and 3, Newton Bank, Newton Detached; and passage behind 62-72, Rushford Street, 1-43,

Smart Street, 2-42, M'Farren Street, and adjoining 2 and 42, M'Farren Street, and 1 and 41, Smart Street, Newton Detached, North Manchester, for the Paving, Sewering and Highways Committee. Forms of tender may be obtained on application to the surveyor's office, Paving, etc., Department, and must be returned to the chief clerk, Paving, etc., Department, Town Hall, Manchester, not later than 10 a.m. on Dec. 4.

Dec. 5. HARBORNE.—Widening and reconstructing a portion of Ravenhurst Road, Harborne, for the Society of Harborne Tenants, Ltd. The drawings and specification may be seen at the Works Office of the Society in Moor Pool Avenue, Park Hill Road, Harborne. Tenders, sealed and endorsed "Ravenshurst Road," and addressed to the Chairman of Harborne Tenants, Limited, 106, Colmore Row, Birmingham, will be received not later than Dec. 5.

Dec. 5. BEXHILL.—Making up Collington Avenue with tar macadam (length about 1,100 ft.) and other works, for the Corporation. Plans may be seen, and bills of quantities, specification and form of tender obtained, upon application to G. Ball, borough surveyor, Town Hall, upon deposit of £20. The amount deposited will be forfeited if any tender accepted is withdrawn. Tenders, endorsed "Collington Avenue," must reach T. E. Rodgers, town clerk, Town Hall, Bexhill, not later than noon on Dec. 5.

Dec. 7. LONDON, E.C.—Paving carriageways as granite, syenite, basalt, or similar stone for road purposes during the year 1909, for the B.C. Particulars and form of tender may be obtained on application to the borough surveyor, Guildhall, Cambridge, to whom tenders should be sent so as to reach him not later than 9.30 a.m. on Dec. 7.

Dec. 7. LONDN, E.C.—Paving carriageways as undermentioned, for the Finsbury B.C.: King's Cross Road (part of), with 3 in. by 4½ in. by 8 in. creosoted deal blocks. King's Cross Road (part of), with 3 in. by 6 in. Aberdeen granite cubes. The specifications can be seen, and forms of tender obtained, at the borough surveyor's office, Finsbury Town Hall, Rosebery Avenue, E.C., any day except Saturday between 10 a.m. and 4 p.m., on deposit for each form of tender of £1 1s. Tenders must be delivered to G. W. Preston, town clerk, Finsbury Town Hall, E.C., not later than 4 p.m. on Dec. 7. Only those made upon the official form and properly filled in, will be entertained.

Dec. 7. LONDON, S.W.—Making up and paving of the following new streets, viz.:—A. That part of Franciscan Road, Tooting, which lies between No. 102, Franciscan Road (inclusive) and the North Eastern boundary of No. 148, Franciscan Road, described as "Franciscan Road (3)." B. That part of Franciscan Road, Tooting, which lies between the North-Eastern boundary of No. 148, Franciscan Road, and No. 168, Franciscan Road (inclusive), described as "Franciscan Road (4)." C. That part of Effort Street, Tooting, which lies between Recovery Street and Hoyle Road. The specifications and drawings may be seen, and forms of tender obtained at the borough engineer's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between the hours of 9 and 4 (Saturdays 10 and 12). Tenders, enclosed in separate sealed envelopes, and endorsed "Tender for Paving ——," must be delivered at the Council house, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose, not later than 4 o'clock in the afternoon of Dec. 7. Securities if required. Fair wages clause.

Dec. 8. LONDON.—Roadwork and platelaying required for the electrification, on the underground conduit system of traction, of the existing tramways from Hackney Road via Mare Street and Lower and Upper Clapton Roads to Stamford Hill, for the L.C.C. Full particulars, and also information as to the conditions to be observed by tenderers, will be found in the "London County Council Gazette" of Nov. 30. Tenders must be upon the official forms to be obtained from M. Fitzmaurice, C.M.G., chief engineer of the Council, County Hall, Spring Gardens, S.W., upon payment by the cashier of the Council of the sum of £5 for the specification, etc. Full particulars of the work may be obtained on application at the County Hall before the payment of the fee. No tenders received after 11 a.m. on Dec. 8 will be considered.

Dec. 9. STROOD.—Supply of a high-grade 12-ton weight steam road-roller, with scarifier attached, and also a water-cart, for the R.D.C. Specification, with form of tender, may be had on application to L. Randerson, district surveyor, District Surveyor's Office, Meopham, near Gravesend. Tenders to be sent to J. E. Povey, clerk to the Council, Strood, Kent, not later than 4 p.m., Dec. 9, endorsed "Tender for Steam-Roller Plant."

Dec. 9. CARSHALTON.—Making up of Salisbury Road and Bernard Road, for the U.D.C., within their district, in accordance with the plans, sections, and specifications, which have been prepared by W. W. Gale, Assoc.M.Inst.C.E., Council's surveyor. Bills of quantities and all particulars may be obtained on application at the office of H. P. Lovelock, clerk, District Council Office, High Street, Carshalton, and on deposit of £1. Sealed tenders, accompanied by a priced-out bill of quantities, addressed to the chairman, and endorsed "Tender for Salisbury Road, and Bernard Road," to be delivered at the clerk's office, before noon on Dec. 9. Securities required.

Dec. 10. ENFIELD.—Making up the following private streets in the district for the U.D.C.:—Holtwhite Avenue, Enfield, Manor Road, Enfield. Plans and specifications can be seen, forms of tender and all information obtained, on application to R. Collins, Council's surveyor, at the Public Offices, any day except Saturday, between the hours of 9 a.m. and 5 p.m. Fair wages clause. Separate tenders for each road (on the forms supplied only) to be sent in to T. W. Scott, clerk to the Council, Public Offices, Enfield, Middlesex, not later than noon on Dec. 10, endorsed "Tender for ——." The tenders must be accompanied by a schedule of hours of labour, and of prices and wages to be paid for different classes of work, which schedule will be embodied in the contract.

Dec. 12. LEEDS.—Paving and flagging of the following streets:—Station Terrace, Station Mount, Station Place, Henley Road, East Park Parade, and Ivy Street, for the Highways Committee. Drawings may be seen at the city engineer's office, Municipal Buildings. Forms of tender and bills of quantities may be obtained, and copies of the documents forming the contract inspected, on application at the Highways Office, 155, Kirkstall Road. Sealed tenders, endorsed "Tender for Private Street Works," and addressed to the Highways Committee, must be delivered at the town clerk's office, Town Hall, Leeds, not later than 10 a.m. on Dec. 12.

Dec. 12. MAIDSTONE.—Supplying between April 1, 1909, and March 31, 1910, 65,000 tons (more or less) of broken road stones, such as:—1, Rhenish basalt; 2, Guernsey, Jersey, or Alderney granites; 3, Glee Hill basalt; 4, Leicestershire granite; 5, Penlee, St. Keverne, or other Cornish granites; 6, Penmaenmawr or other North Wales granites; 7, quartzite; 8, Norway granite; 9, quenast or lessines; 10, or other equally durable material. Also the following local materials:—3,000 yds. (more or less) of Sevenoaks rock, unbroken; 20,000 yds. (more or less) of surface-picked or grubbed flints; 2,000 yds. of Kent rag. Specifications and forms of tender can be obtained upon application to the county surveyor, Maidstone. Sealed tenders, endorsed "Tender for Road Metalling," must be sent to W. B. Prosser, clerk to the Council, Sessions House, Maidstone (upon the prescribed form) not later than 12 noon on December 12

Dec. 16. CHELMSFORD.—Widening of the carriage-way, relaying the wood paving and reconstructing of footpath in Duke Street between the Golden Lion and Threadneedle Street, for the B.C. Specification, bills of quantities, forms of tender and full particulars may be obtained, and the plan may be inspected at the borough surveyor's office, 16, London Road. Tenders (which must be on the form provided) enclosed in sealed envelopes and endorsed "Duke Street," must be delivered at the office of W. Smith, town clerk, Municipal Offices, 16, London Road, Chelmsford, not later than 4 o'clock on Dec. 16.

Dec. 31. TROWBRIDGE.—Steam rolling on 316 miles of main roads during the financial year ending March 31, 1910, for the Roads and Bridges Committee of the Wilts C.C. Specifications, schedules of approximate quantities and tender forms can be obtained on application to J. G. Powell, county surveyor, County Offices, Trowbridge. Sealed tenders, addressed to the clerk of the County Council, and endorsed "Tenders for Steam Rolling," must be delivered on or before Dec. 31.

Dec. 31. TROWBRIDGE.—Supply of road metal for the financial year ending March 31, 1910, for the Roads and Bridges Committee of the Wilts C.C. The materials required will consist of granites, basalts, flints, limestones, gravel, etc., particulars of which are set out in specifications. Schedules of approximate quantities and forms of tender to be obtained of J. G. Powell, county surveyor, County Surveyor's Office, Trowbridge. The bulk of the material will be required to be delivered at railway stations or wharves, except in the case of local material. Sealed tenders, to be addressed to the clerk of the County Council, County Offices, Trowbridge, must be delivered on or before Dec. 31. All tenders to be endorsed "Tenders for Road Metal."

No date. NEWCASTLE-ON-TYNE.—Supplying, breaking, and carting stone for the maintenance of main roads during the year ending March 31, 1910, for the Northumberland C.C. For forms of tender, condition and specification, apply to J. A. Bean, county surveyor, Moothall, Newcastle-on-Tyne.

MISCELLANEOUS.

Dec. 4. WORCESTER.—Supply and erection of about 500 yds. of unclimbable wrought-iron fencing by the side of the main road, near Bromsgrove Railway Station, for the Highways and Bridges Committee of the Wilts C.C. Full particulars and forms of tender will be forwarded on application to J. H. Garrett, county road surveyor, Shire Hall, Worcester. Sealed tenders, endorsed "Tender for Iron Fencing," must be delivered at his office on or before Dec. 4.

Dec. 7. SOUTH HETTON.—Supply of iron, castings, wire rope, oils, and other colliery stores, except timber, for the South Hetton Coal Co., Ltd. Forms of tender and specification, with full conditions, may be obtained from J. R. Lambert, South Hetton, near Sunderland, and applicants for forms must state the kind of stores for which they wish to tender. Tenders, addressed to the South Hetton Coal Co., Ltd., Sunderland, will be received up to Dec. 7.

Dec. 9. LONDON, E.—Supply of materials for fencing, and garden requisites. The guardians of the poor of the parish of Poplar Borough will, at their meeting to be held on Dec. 9, proceed to open tenders for supplies, as above, to the Farm Colony, Sumpney's Farm, Dunton, nr. Brentwood, Essex. Printed forms of tender, containing full particulars of requirements, which alone can be received, may be obtained by personal application at the office of G. H. Lough, clerk to the Guardians, Guardians' offices, 45, Upper North Street, Poplar, E., or on request will be forwarded by post. Sealed tenders must be delivered at the clerk's office, not later than 6.30 p.m. in the afternoon of Dec. 9.

Dec. 10. NOTTINGHAM.—Supply of (1) cement, (2) blue lias lime, (3) red bricks, (4) blue bricks, (5) timber, (6) earthenware pipes, etc., (7) earthenware pipes, etc. (patent joints), (8) iron castings, iron gullies, etc., (9) Yorkshire flags, kerb, etc., (10) granite setts, kerb and broken granite, (11) broken slag, chippings, etc., (12) broken gravel, (15) ironmongery, for the Works and Ways Committee, to commence Jan. 1 for one year. Forms of tender may be obtained by applying to A. Brown, M.Inst.C.E., city engineer, Nottingham, on payment of 5s. each. Patterns and samples may be inspected at the Eastcroft Depot, London Road, Nottingham. The committee will not consider any tender except those on the authorised form of tender, which must be sent to J. A. H. Green, town clerk, Guildhall, Nottingham, on or before Dec. 10. Fair wages clause.

Dec. 12. FARNHAM.—Execution of all or any of the following works at Hale Cemetery, near Farnham:—1.—Fencing additional ground. 2.—Setting out and forming paths and laying out additional ground. 3.—Repairs, painting, etc., to chapels and caretaker's lodge, entrance gates, fences, etc., for the Joint Burial Committee. Specifications can be seen at the office of A. J. Stedman, surveyor, South Street, Farnham, and quantities can be obtained from him upon the deposit of £1 1s. Tenders, which may be in respect of the whole of the work or any of the above portions thereof, to be sent to H. Potter and E. Crundwell, joint clerks, Farnham, on or before 9 a.m. on Dec. 12.

Dec. 19. LEEDS.—Supply of fireclay retorts, firebricks, lumps, and fireclay, for the gas committee. Specification and form of tender may be obtained on application to R. H. Townsley, general manager, Gas Offices, East Parade, Leeds. Tenders, endorsed "Fireclay Goods," addressed to the Town Clerk, Town Hall, Leeds, to be delivered not later than Dec. 19.

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ARCHITECT and Surveyor's Assistant (24); 8 years' London exp.; working drawings, specifications, superintendence, prizeman and medallist, testimonials; mod. sal.—W., 20, Holmewood Road, Streatham Hill, S.W. 4669

ARCHITECT'S, builder's, estate agent's assistant, 10 years' practical experience; good draughtsman; details; quick tracer; used to general routine, builder's office.—E. H. S., 13, Maidstone Road, New Southgate. 4729

ARCHITECT and Surveyor's junior assistant desires engagement; probationer R.I.B.A.; good draughtsman; 4½ yrs.' general exp; moderate salary.—F. G. C., 46, Franklin Road, Gillingham, Kent. 4641

ARCHITECT'S and Surveyor's Assistant, 15 years' good practical experience; excellent draughtsman, designer, and colourist; working drawings, details, specifications, surveying, levelling, and general routine; excellent references; moderate salary.—A. R., 1, Ivy Villas, Cheam, Surrey. 4698

ARCHITECT'S Junior Assistant, over 4 years' London experience, competition work, contract drawings, details, perspective; honours construction, Prelim. R.I.B.A.; very moderate salary.—Box 4661, BUILDERS' JOURNAL Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade.—Apply Box 4585, BUILDERS' JOURNAL Office.

AS Clerk, cashier, depot manager, or any position of trust, 11 years' experience, builder's and coal merchant's trade; age 25; good penman; also reference; moderate salary.—Box 4659, BUILDERS' JOURNAL Office.

BUILDER'S or surveyor's assistant (20), 4 years with quantity surveyor; quantities, estimating, correspondence, plans, tracings, measuring up, levelling, etc.—H. Priddle, 4, Sumatra Road, West Hampstead, N.W. 4705

BUILDER'S general foreman, advertiser seeks engagement; 16 years' service as above with first-class London firm on important and various works; good references.—Address H., 150, Effra Road, Wimbledon, S.W. 4703.

BUILDER'S and Surveyor's Assistant (24), practical experience in construction and surveying; also quantities and levelling, supervision; assist estimating; draughtsman; well up in costs, accounts, wages, etc.; moderate salary.—Box 4684, BUILDERS' JOURNAL Office.

BUILDER'S Assistant desires situation; age 23; thorough office routine; can take charge; experienced in estimating; quantities; accounts; p.c. invoices; good draughtsman; moderate salary.—F. Webber, Cranfurd Rise, Maidenhead. 4701

BUILDER'S general foreman desires re-engagement; just finished large schools; town or country; thirty years' experience; thoroughly practical in all branches; good manager; steady and reliable. First-class testimonials.—W. R., 85, Grove Lane, Handsworth, Birmingham. 4702

BUILDER'S Assistant disengaged, 21 years' experience; office routine, plans, specifications, quantities, supervision, measuring up, levelling, and surveying; good references; abstainer.—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4717

BUILDER'S Foreman, with good London experience of all trades, seeks position of trust; estate or business firm; correspondence invited.—H., 150, Effra Road, Wimbledon, S.W. 4716

CLERK of Works, just finishing large schools, wants situation, 15 years' experience; expert timber, good all trades; plans, surveying, levelling, etc., etc. Country estate preferred.—Caswell, New Council Schools, Biddulph, Staffs. 4720

CARPENTER and Joiner (age 32) wants job. Bench, fixing, alterations, or jobbing. Could take charge if required. Good references. Life abstainer.—Pearson, 53, Hartham Road, Isleworth, W. 4681

DOMESTIC Engineer, young, energetic, thoroughly practical, seeks sit as estimating or working foreman, used to taking charge; large heating and sanitary, installation; good refs.—Box 4707, BUILDERS' JOURNAL Office.

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER, general, wants permanent appointment, official or private staff; thorough all-round experience; electrical, plumbing, smith, married, 34; good testimonials.—86, Bathurst Gardens, Willesden. 4704

FIREPROOF Engineers and Concrete Specialists. Advertiser, connected with above trades for 10 years, and whose name is well known in connection with same, desires position as manager, traveller, or head clerk; first-class book-keeper; aged 33; very moderate salary.—P. W. Potter, 73, Penshurst Road, Thornton Heath. 4719

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

GENERAL Foreman (or foreman of carpenters and joiners, either inside or out), seeks situation. Country or colonies preferred. Good references. Age 30. Life abstainer.—A. White, 51, Alexandra Avenue, Southall, W. 4730

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home abroad; good practical knowledge of constructi and details; competent draughtsman and colo ist, working drawings, measuring and supervisin surveying and levelling; moderate salary.—B 4613, BUILDERS' JOURNAL Office.

PLUMBER (26), abstainer, well up in all sanita or lead-laying; will do piecework; town or count Can do zinc and hot water.—W. E. B., Sch House, Muriel Street, Barnsbury, N. 4

PLUMBER (Reg. by Exam.), well up in hot wat and heating systems, capable of taking ent charge; 6 years' ref.; age 38.—H. P., 11, N Buildings, Hampstead, London. 4

PLUMBER (aged 30); gas and hot water fitte well up all branches, new or jobbing; wages m Town or country.—11, Glaskin Road, Hackney. 4

QUANTITY Surveyor, London, first-class expe ence, and qualifications, wishes to arrange w architects or others for preparation of bills quantities, adjustment of variations, etc.—B 4675, BUILDERS' JOURNAL Office.

QUANTITY Surveyors.—A builder wishes place his son (18) in above office; has had so experience. No premium, but can introduce bu ness.—Apply H., Ashford House, Wimbled Common. 4

REINFORCED concrete foreman, disengaged, lo and varied experience, especially in Kahn bars a expanded metal, timbering a speciality; carpen by trade; good refs.—G. C., 59, University R Tooting, London. 4

SLATE MERCHANTS AND BUILDERS' ME chants.—Experienced traveller (with 14 years' c nection Midlands), desires re-engagement; liberty middle of December; or could arran earlier.—Address, Slate, c/o Secretary, Builde Exchange, Sheffield. 4

SLATING and tiling wanted (labour only) day piece; any quantity, large or small; distance object.—Mack, Slater and Tiler, 3, Granville tages Tower Hamlets Street, Dover. 4

SHOP or General Foreman, long West-end ex rience, used to alterations and repairs; un stands stairs; used to good jobbing work. Addr A., c/o Mr. Seymour, 14, Allsop Place, Rege Park, N.W. 4

STONEWORK wanted (piecework).—Stone dre ings, Bath stone fronts to villas, etc.—Apply Powell, mason, 15, Elm Lodge Avenue, Readi 4

TO Builders.—Situation as improver wanted young man just out of his time; technical stude neat draughtsman; assist with quantities, su vision, etc.; abstainer. — Box 4662, BUILDI JOURNAL Office.

TO Estate Owners.—Builder (38), varied ex ence, desires position as agent or clerk of wo surveys, plans, quantities, setting out, acco and supervision; country preferred.—Box 4 BUILDERS' JOURNAL Office.

TRAVELLER.—Architect desires post as re sentative to good firm. — Address Box 4 BUILDERS' JOURNAL Office.

Appointments Vacant

AGENT, with slight knowledge structural e neering, wanted by well known firm to introc sale of speciality on commission, in Southam and district, gentleman having connection am architects, surveyors, and engineers preferre Write Reinforced Concrete, c/o Brown's A tising Office, 17, Tothill Street, Westminster.

CARPENTER and joiner wanted in provin good all-round and able to work saw bench, pla and moulding machine; gas engine; constanc suitable man; state wages, etc. — Box BUILDERS' JOURNAL Office.

WELL educated youth, to learn routine of a tect's office; some knowledge of shorthand typing desirable; commencing salary.—E. C and Co., 11, Bermondsey Square, S.E.

WANTED, immediately, a first-class active round architect's assistant, with considerable e rience in public, elementary, and secondary sc planning. He must also be an expedi draughtsman, capable of writing specifications checking accounts. Preference given to capable of preparing a complete bill of quan (London system), up to at least £10,000. S not to exceed three guineas per week, pa monthly. Apply stating full particulars and timonials (copies) to D. Pugh - Jones, C (School) Architect, 62, Charles Street, Ca

December 9, 1908. Volume 28. No. 722

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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ıe Rise of Art in Rome.

The rise of Roman art—or, rather, its elevation to the level of a fine art, for the old city walls, the arcer Mamertinus, and the Cloaca axima, prove that Romans of remote mes could carry out constructive works pon a grand scale, whilst they had also quired the rudiments of the art of sculpıre—synchronises with the fall of Athens hich, previously sacked by Sylla, came, on the termination of the civil ar between Pompey and Cæsar, a Roman ovince. It is true that before the period nen Rome was thus included within the here of Greek influence and Greek cultre, the city had been, for many years st, constantly acquiring various works art, the result of conquests in countries ore highly civilised than her own. But ese trophies of national prowess were ized by the inhabitants of the city rather evidence of Roman valour than from y real appreciative feeling for the reed art which they embodied. Indeed, in e Roman view, the general study and ltivation of the fine arts could only tend weaken and render effeminate the aracter of the nation—now so long ured to a life of strenuous labour and nger; and as the national existence was pendent upon the continuance of its litary supremacy the development of istic taste was not encouraged by the vernment. The fine statues and other rks of art, obtained by conquest, were, wever, lavishly applied to decorate the blic buildings and streets of Rome, hough it was not until later times that, th the increased wealth and luxury of Romans, there came an ardent desire sumptuous edifices. The magnificent ult eventually achieved was not the outne of native genius. Much of the ndeur of ancient Rome was due to the te and skill of alien artists—chiefly eeks—who had sought an asylum in the y of the conquerors of the world. But is transplanted to a strange land, and ojected to new influences, customs, and vironments, Greek art lost many of its ional characteristics, and the monuntal works of Roman origin had little common with the best examples of se to be found in Hellenic towns. Few, eed, of the monuments of the eternal can be cited as evidence that their igners possessed that faculty of high iginative fancy (or poetical conception) ch was typical of Greek art at its ith. Despite many praiseworthy efforts de by contemporary Roman writers and ts, to direct public attention to the ner artistic triumphs of Athens, they do not appear to have been particularly successful in exciting the real interest of the nation at large. In fact, there is no doubt much of the monumental grandeur of Rome was due rather to the personal taste and liberality of successive emperors and private individuals (who were wont to patronise artists—not always for art's sake)—than to any acquired national instinct for aestheticism. Thus, although many temples, baths, aqueducts, amphitheatres, and other buildings, some of which are still in existence, bear witness to the unrivalled constructive and creative power of the Romans, yet there can be no doubt that all that was best in Roman art was either directly Greek or evolved from Greek prototypes. But, as the earlier Greek art had deteriorated since it left its native land, the ancient artistic memorials of Rome rarely contained more than a suggestion of those subtle refinements and poetical fancies which are the unique characteristics of the best monuments of the age of Pericles.

The Carmelites & Architecture.

Messieurs les Architectes, there is yet hope for you! The Carmelite fraternity have discovered you, and though it is not yet certain whether—being discovered—you are lost or found, yet the eyes of the Carmelites are upon you, and, just at present, upon your sins of omission and commission. So be well assured that through the medium of giant circulations your misdeeds and your merits shall be known to all the world, and in no wise shall you escape the penalties of such fame. For the "Daily Mail" critic finds but two buildings in all modern London possessed of beauty, and these, mark you, be alien buildings, by an alien hand. Thereafter, transferring his attention to modern Birmingham, he chastises it with whips and scorpions—yea, every bit of it, from its terra-cotta triflings to the badly-planned and factory-fashioned University. So now we know! Not that we would quarrel with Mr. Konody's conclusions about some of the Birmingham Bantlings, or about the very excellent work of M. Charles Mewès and his partner; but his panegyric on the Ritz Hotel and "The Morning Post" offices, and his inability to find good in aught else, raises in us a mood of philosophic doubt as to his qualifications for criticising English architecture. The storm thus raised, it was inevitable that the weakness of our present position should be given away by some stout protagonist of the Gothic Revival, to whom the style of Louis Seize would be as much anathema as any work of Inigo Jones or Christopher Wren. Yet, despite Mr. Weatherley, we take leave to assert that the Ritz is at least as truly indicative of its purpose as, say, the St. Pancras Hotel. What was not inevitable in such a controversy, and, therefore, all the more welcome, were the few sly digs by which Mr. Ernest Newton established the necessity for discrimination in the critics. Certainly, for a critic, Mr. Konody has an unfortunate penchant for labels. Mr. Belcher is doubtless searching for those Assyrian, Byzantine, and Egyptian elements that we learn are manifest in his latest works; and other worthy gentlemen will wonder how Flemish and Moorish motives have crept into buildings that they fondly hoped and believed were Renaissance of the real English brand. Nor do we quite know why the Netherlands gable should come in for such castigation, seeing that Inigo Jones, the father of the moderns, did not disdain its use for his Royal patrons abroad. Following this excellent lead of one branch of the Carmelite fraternity, the "Evening News" made a bold request in asking London architects to pillory the ugliest modern building in their city. Needless to say, very few had the temerity to do so, for ugliness is the cloak that covers a multitude of London buildings. One fearless individual, whose name is not familiar to us, found beauty in Whitehall Court, and ugliness in the British Medical Association Building; but there are dozens of others who would transpose the relative positions of these two. The hatred of the Goth for the Classicist will always appear in any architectural controversy; the fanaticism which brought the Gothic revival into being seems still to linger in its mouldering bones, and prevents a mutual understanding and appreciation.

R.I.B.A. as House of Lords.

In a breezy after-dinner speech the other evening, Mr. Paul Ogden, F.R.I.B.A., president of the Manchester Society of Architects, said that in some respects the R.I.B.A. was to the allied societies as the House of Lords was to the House of Commons. That looked like a very pretty compliment. But then Mr. Ogden went on to explain his comparison. The R.I.B.A., like the House of Lords, was something which, in the opinion of the other institutions, required revision, but resented interference with its aristocratic history. They all had, and always would have, a profound respect for their Institute, for it had undoubtedly done, and was doing, excel-

lent work in all that appertained to architecture, and to the education of an architect; but the latter work, as far as the training of young architects was concerned, would in the near future be carried out by the universities, and the Institute would be, or would have to be, content with the final examination qualifying for practice. Mr. Ogden's essay in prophecy was greeted with a chorus of "Hear, hears," and it may therefore be presumed that Manchester architects are with him in this matter; and it is, perhaps, not a far-fetched inference that they had all read with profit the articles in THE BUILDERS' JOURNAL on "The Architect of To-day." We would rather inspire prophecy than indulge in it; having, indeed, as much respect for the American proverb, "Never prophesy unless you know," as Mr. Odgen professes for the R.I.B.A. Mr. Edwin T. Hall, V.P.R.I.B.A., speaking to the same assembly, said that "the action of the Institute with regard to competitions was directed towards ensuring that all architects who took part in them should receive just and fair treatment." So mote it be; and, for our part, we are always glad not only to cheer them on in so excellent a work, but to render them all the help in it that lies in our power.

Standardising Trade Circulars.

Trade catalogues and circulars, in the aggregate, embody almost every item of practical information that the architect or the builder can desire to possess. But starvation in a land of plenty is not a rare incident, and few things are more exasperating than the knowledge that a particular item that one requires is so near and yet so far as yonder stack of catalogues, each of them compiled on an independent plan, some of them orderly and systematic, others exactly the reverse, some of them meagre in the extreme, others bewilderingly encyclopædic. In such conditions the search for data is apt to consume much precious time, and to ruffle the most equable of tempers. Clearly, some system of standardising the arrangement of catalogues would be an immense boon; and a general index to their contents would be a benefaction to business men. It would be an inestimable advantage to have at hand all the important trade catalogues bound into one volume, and furnished with a complete general index. The idea is by no means Utopian. It is not even novel. The booksellers long ago gave it practical effect. Perhaps the Architects' Technical Bureau is feeling its way towards a similar consummation. It is, at all events, taking an important step in the same direction. Standardisation of size and form is, of course, essential for catalogues that are to be bound together; and the Bureau is adopting a standard form of circular, and is providing folios in which the circulars can be filed and classified for ready reference. It should not be difficult to convince manufacturers and traders of the advantages of standardisation, since the chief object in view is that at which they all aim—to gratify the client, who would be only too glad to preserve circulars and catalogues that could be conveniently stored and comfortably handled, but who, as a rule, has a most decided objection to littering his office with pamphlets and leaflets that, being of almost every conceivable size and shape, defy the best efforts to keep them tidy, and are, therefore, as often as not, contemptuously cast into the waste-paper basket immediately on receipt. Hence both the trader and the would-be client suffer considerable loss; the former having to deplore the poor returns for his expenditure on printing, the latter the lack of information that he would have preserved if it had been put before him in a form rendering it convenient of storage. Those traders who have a firm belief in individuality of presentation may indulge it within reasonable bounds in the design and display of their advertisements in the trade Press, which, while allowing free scope for originality of appeal, furnishes also a rather apt example of the advantages of uniformity of size and shape. The trade journal is, at all events, easily filed and kept. If the Architects' Technical Bureau can do as much for catalogues and circulars it will economise the forces of all concerned. It will eliminate much worry and waste.

Problems of Unemployment.

A very careful systematic study of "Problems of Unemployment in the London Building Trade" has been made by Mr. Norman B. Dearle, Scholar of Brasenose College, Oxford, and Shaw Research Student of the London School of Economics, and the results of his investigations have been published in a volume that has just been issued at 3s. 6d. by Messrs. J. M. Dent and Company, of Aldine House, 29 and 30, Bedford Street, W.C. It is an extremely interesting book, but its practical value to any but students of economics and sociology is not very clear. The author, being an expert economist, does not fall into the popular error of saying, in effect, "Lo! here is the cause, and lo! there is the cure." That would be mere quackery. Instead, he makes use of every available source of information, carefully examines all the data, and proves nothing so clearly as that the causes of unemployment, being highly complex, do not admit of a simple remedy. His main concern is the ascertainment and statement of the problem, or rather series of problems, and he does but little more than indicate the directions in which the remedies may be sought. The various tendencies making for lack of or irregular employment are thus briefly summarised: Changes in the demand for labour that are irregular, but temporary, such as cyclical and other changes over a period of years; changes within the year, whether climatic and seasonal, or due to the consumer; while irregular but more permanent variations depend on changes of methods, processes, or materials, or migrations of trades or of particular processes, and on fluctuations of fashions and similar changes in demand. Then there is the failure to adjust the supply of labour to the demand for it. This results from leakage between one job and another, or between one firm or one district and another; or from the effects of changes among employers. A third group of causes are those that are inherent in human nature, such as physical and moral defects or other peculiarities in the individual; or, again, the collective defects of want of trade organisation, the immobility of labour, and the defectiveness of industrial training. The interaction of certain of these causes must also be reckoned with; and variation of locality gives them a fresh complexion, and necessitates special study. It will be seen, therefore, that the subject has many ramifications, and it must be admitted that Mr. Dearle has traced them not only with trained skill, but with admirable patience. One of the most interesting chapters in the book is that on "Long Period Variation," in which it is shown how cycles of prosperity and of depression interact, and how the intensity of the one is in proportion to that of the other. A "boom" usually coincides with a low bank-rate, cheap and plentiful money, and few opportunities for investment. The reverse conditions may cause depression, which is intensified by the locking up of much capital in municipal enterprises. Then it is found that "among the results of the recent boom has been an over-production of commodities—that is, of houses—and an over-supply of labour. Trade conditions caused everything to be built that could be built, especially the smaller work, the present shortage of which is one great cause of bad times." This is a comparatively simple view, and conveys no news to the builder; but the author, in his searchingly thorough survey of the situation, deals luminously with many matters that are far more recondite, his book being, indeed, crammed with eminently useful and very interesting data. No aspect of the subject seems to have escaped attention, and the student of industrial economics, as well as the architect and builder who take an intelligent interest in the phenomena of unemployment, will be glad to enjoy the fruits of Mr. Dearle's conscientious if necessarily inconclusive labour in a difficult field of inquiry.

The "Earthscraper."

What is to be "the most remarkable modern building in the world" will have, when complete, we read, "thirty-eight storeys scraping skywards and six storeys scraping earthward." This soaring and burrowing building will be situated at No. 50, Broadway, New York. It is to cost £775,000, and is to be faced with white enamel brick and terra-cotta. "There will not be enough wood in the building to make a toothpick." Hardware's your only wear. The new building code that comes into force next year in New York limits the height of skyscrapers, so that Mr. Hazlitt's example is sure to be extensively copied and developed. Unless some meddlesome code-maker steps in and limits the depth, these New Yorkers, in their new *vaulting* ambition, may get right through to their antipodes: when the enterprising American may be easily able to escape the—for him—desperate tedium of "coming out of the same door he went in at."

Our Special Issue.

As our Special Issue grows under our hands, its value becomes increasingly evident. The very numerous illustrations comprise first-class half-tone engravings of some of the most beautiful and most interesting buildings in the kingdom. The issue, which will be ready on December 30th, will be in reality a volume of considerable bulk; as, besides the abundance of historically and architecturally interesting pictures, there will be a large amount of reading matter, introducing many features of special interest. Regular readers are again urged to place their orders without delay, so as to prevent disappointment, as there is every indication that the demand will greatly exceed the supply, as it did very considerably in the case of last year's Special Issue, copies of which were soon at a premium.

PUBLIC BUILDINGS IN ENGLAND AND FRANCE.*

An Appreciation of French Buildings.

By A. R. Jemmett, F.R.I.B.A.

I assume the superiority of French public buildings, and I state this quite simply as a fact needing no demonstration and admitting of no discussion. The only thing left to discuss is the reason why it is so.

Racial Distinctions.

Certain racial distinctions of character and temperament have produced the result we see. I would take as the first example the stubborn individuality which seems to me to be a dominant racial characteristic of the Englishman. I do not wish to belittle this excellent quality; but every quality has its defects, and the defects of this one have produced results which it were well to examine. It has produced a passionate love for individual liberty of thought and action, and for the development and the free expression of individual character which has profoundly affected our political, social, and artistic development. It is no doubt one of those qualities which, as they say, have made us what we are; but it is precisely what we are that I am about to deplore.

The Englishman's Individualism.

Individualism tends to exalt the individual at the expense of the State; carried to extremes, it destroys the state and spells anarchy. It tends to make a man self-centred and selfassertive, unsympathetic and narrow; to confine his enthusiasm in life to himself and his own achievements, his own home, and his own business interests. Such a man approaches all public questions from his own personal standpoint. If he sees no personal profit, he will make no personal sacrifice. This attitude affects his buildings. He will spend money with pleasure on his own house, with satisfaction on his own business premises, but grudgingly and of necessity only on a public building, which he regards in the light of a painful public necessity or even that of a public nuisance. Naturally, therefore, we find the artistic energy of the country expended on private, not public, buildings.

The Subjective Architect.

This same characteristic in our architects gives to them, too, the personal point of view, and drives them on, unconsciously, perhaps, to express themselves, not the nature of the buildings; to seek inspiration from the depths of their own inner consciousness, and not from a sympathetic insight into the ideas and feelings of the communal life, and the special characteristics of that special section of the community whose life they are supposed to interpret and express. Our public buildings tend, therefore, to be only the expression of their authors' personality, influenced more or less by such necessities of the case as cannot be ignored, though greatly resented, and by such considerations as are firmly forced upon them.

The Communal Frenchman.

Now, with the Frenchman it is different. He is not so stubbornly individualistic; his social instincts are more strongly developed. With him the communal life tends to develop at the expense of the individual. He has an enthusiasm for the corporate life of the nation; his country is to him a poetic abstraction, a sacred ideal. The artistic energy of the country is expended less on private than on public buildings, which fitly express the dignity of the national life, and neither time nor pains nor money is spared. The Englishman may give grudgingly and of necessity, but in this the Frenchman is a cheerful giver. Their architects, less self-centred or self-assertive than ours, approach their work in a different spirit; they take the impersonal attitude and endeavour to express the building, not themselves. Their more sympathetic outlook enables them to enter more fully into the communal ideas which the buildings typify, and these buildings tend to be a more adequate expression of these ideas. The personality of the author is apparent only as a subtle flavour in the dish, but it is never aggressive, not the dominant flavour: that is given by the personality of the buildings. With us the personality of the author is the all-pervading flavour, while that of the building is difficult to taste.

When we in England come across a new public building by one of our well-known masters, we exclaim: "Ah! one of Blank's buildings; I wonder what it is." In France they say: "Ah! a town hall; I wonder who designed it."

Love of Open-air Life Affects Buildings.

Another point to which I will just briefly refer is the Englishman's greater love of the open air and of country life. Owing in part to this and in part to our insular position, our country life was made more secure and was, therefore, more fully developed at an earlier date than in France. This has tended to enhance the relative importance of the French towns and their public buildings. But although this is most interesting from an historic standpoint, I would prefer to pass on to a point which is to me the most interesting of all, and one to which reference is not so often made.

It begins with a question of temperament. We are told that the average Englishman is a reserved, shy, self-conscious person who hates what he calls making an exhibition of himself or his feelings, and that the one thing in this world that he really fears is the idea of making himself ridiculous; that he dislikes ceremonies and public functions of all descriptions, at which he always feels self-conscious and ill at ease.

The National Self-consciousness.

Now whether it is really the natural expression of our temperament under modern conditions, or the effect of the outbreak of Puritanism in the seventeenth century, when the beauty of life was denied and the natural instincts of the heart were considered vile, and their expression in all forms and ceremonies was condemned as ridiculous, childish, or worse (a corrosive acid that would bite deep into a temperament predisposed to self-consciousness), or whether again it is the result of the predominant position in our public life of the serious and sober-minded Scot—whichever it may be, the fact remains that since Puritan times we seem to be losing all interest in what might be called the decorative side of communal life—the pageantry, the ceremony of life—the poetic aspect of human relationship in public affairs.

A certain amount of ceremony in the relations of man to man is, of course, necessary to the mere existence of even the lowest form of civilisation; in fact, ceremony is civilisation: that we seem to admit; but we have reduced it to minimum, reserved it for exceptional occasions, and starved our civilisation accordingly.

It is not my object, however, to point out how this neglect of the poetic interpretation of life in the daily conduct of our public affairs lessens the value of life to us all, but rather observe its effect on our public buildings.

The Poetry of Public Affairs.

It is evident that if you desire no ceremony in the conduct of public business you desire no ceremonious arrangements and lay-out in the buildings in which this business is conducted. It is useless to create spacious entrances, staircases, and halls, in which public functions can be performed with a stately dignity and a symbolic decorative grouping typifying their importance, if all those who have to take part in the function feel miserably self-conscious and unhappy, and shuffle through it awkwardly, with the sole idea of getting done with it as quickly as possible—any sort of shed is good enough for that. If a judge of the high court is intent to arrive surreptitiously at a back door, slink up a back stair, and creep into court through a hole in the panelling behind his seat, and if we feel that his procedure is in accord with the dignity of the duties he performs and the sublime idea of divine justice which he typifies, of course we do not want him to be received with stately ceremony and conducted in solemn procession through a grand processional avenue to the seat of judgment. The practical Englishman may say that he gets there in the end, and that the criminal gets hanged all the same, and that that is the essential thing. It may be the essential, but it's not the only thing. If it were so, why not adopt the procedure of some of the backwood despots in America, where the judge lounges in his shirt sleeves and smokes a big cigar behind an upturned packing case in the back yard of the local saloon? There the criminal gets hanged all the same, generally on the nearest tree, while the court adjourns for drinks, and the procedure is altogether as effective and in every way more practical, expeditious and economical than ours, but they do it without ceremony, and they get no building.

Decency and Order.

The general sense of civilised humanity, however, demands that such proceedings shall take place with at least some decency and order; so decent and orderly procedure in our courts produces decent and orderly buildings. But there is something more even than decency and order, and that is the point I want to make.

If we regard the administration of justice from the practical point of view alone, the mere extermination of criminals for the public convenience—an affair as disgusting and prosaic as the extermination of vermin—the procedure in our courts and the attitude of mind and behaviour of those engaged in them tends to become prosaic also, and decency and order in your building may be sufficient to express adequately the function, and to satisfy your ideas. A sessions house or assize court may be the fitting name for it. But if you regard justice as something more than this: if you see in it a sbulime moral idea worshipped in greater or less degree by the whole of mankind, something that appeals most powerfully to the spiritual side of your nature, the whole tone and temper of the procedure in your courts are changed; the attitude and actions of all those engaged in it, influenced by the gravity of their duties and their sense of the immanence of the spirit of Justice, take on a different aspect; the spontaneous expression of their natural feelings tends to a more expressive symbolism of grouping and arrangement, a more characteristic and stately ceremonial, which in its turn modifies the general conception of the plan, the relative sizes and position of entrances, corridors, and halls, and moulds the form of the building to permit that ceremony to be properly performed, and to be aptly and truthfully expressed in the whole structure. You have now a building which has been influenced in arrangement and general lay-out by an abstract idea; you have taken all practical and material considerations, and lifted them up into the realm of the spiritual; you have arrived at a poetic conception: Justice enthroned—you express it in a moment—a Palace of Judgment.

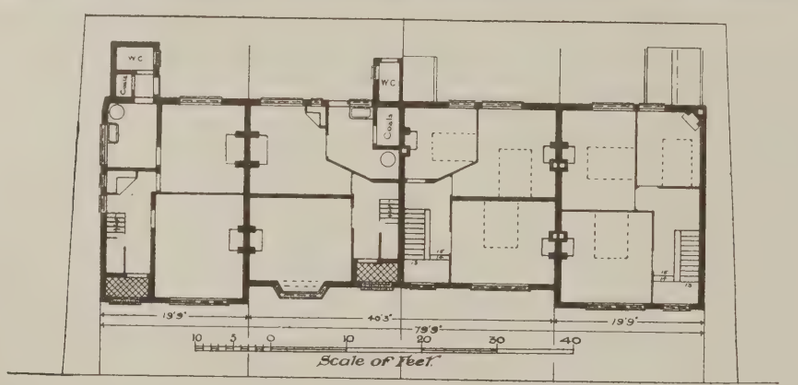
The Frankness of the French.

This is, to my mind, the one great distinction between French and English public buildings—French buildings are monuments, ours are not; they express abstract ideas, ours do not.

I would not infer from this that the

*Paper by A. R. Jemmett, F.R.I.B.A., read at the Architectural Association Debating Section on Friday, November 27th, 1908.





GROUP OF FOUR COTTAGES ERECTED AT MERRY HILL MOUNT, BUSHEY, HERTS.
G. M. McCORQUODALE, ARCHITECT.

The material used is brick, rough cast. The roof is covered with red sand-faced tiles with half-round ridges and hips. Part of the partition walls are half-brick in cement, and part plaster slabs. The windows are wood casements, glazed with leaded glass. The hill slopes steeply, and the floors are at different levels. The two centre cottages have floors at the same level, while one end has floors 18-in. higher and the other end 18-in. lower than centre two. The builder was Mr. F. P. Bliss, Bushey.

French feel more deeply than we do, though they probably see the poetic side of more aspects of life, but only that they are not ashamed to show their feelings and express them by acts and ceremonies. If we were not ashamed to show ours, what a monument we might raise to Justice; for so sincere is our worship of this idea that a temple rather than a palace might more fitly express our feelings; but so pitiful is our self-consciousness, so abject our fear of ridicule, that our feelings never find expression in any spontaneous acts or ceremonies that would supply the architect with the necessary *motif*.

While we, as a nation, continue to make a boast of the suppression of our feelings, and pride ourselves on preserving in each and every circumstance of life, and in every public act we are called upon to perform, the same calm, unruffled attitude of dignified reserve and aloofness, or (as I might put it for my purpose) the same blank expressionless aspect of wooden jointed automata, we may do great things, but not in architecture; we may build empires, but not monuments; a sessions house, perhaps, but not a palace of justice.

Palaces of Justice.

As an example of a palace of justice I would cite that at Brussels, and ask you to compare it with any law court in England. This building is not French, perhaps, in the technical sense, but it is French in spirit and inception, and was designed by a man who had been trained in France, and its fundamental qualities are to be found in greater or less degree in all French palaces of justice. I instance it because it is the best known example, because it most forcibly illustrates the point, and, I suppose, because I have recently seen it and retain a vivid impression of its effect. I am not asking you to consider its immense size or cost, or even the artistic qualities of its features or detail, but to note the general conception and lay-out, the relative positions of the courts grouped in accordance with their relative importance and the approaches to the same. If this building were a mere brick shell without features or detail, it would still be a monument, and would express in its general arrangement and the resultant grouping and outline the idea of justice, although robbed of much of its proper impressive effect. Now here again our unfortunate temperament comes in from another point of view. This building is really most impressive—to the impressionable. The cumulative effect on the imagination, as one mounts the broad flight of steps to the immense central entrance, flanked by open-air colonnades and staircases on either hand, and passes through the great central hall, and so directly on, slightly rising as one goes, finally to find oneself face to face with the judgment seat of the supreme court of assize, is really tremendous. One enters the court with the mind attuned; one feels it must be really quite difficult for an impressionable witness to perjure himself in that court. But when you are dealing with a people so stubbornly individualistic and self-centred as to regard impressibility as a weakness, what can you do? What is the good of creating impressive effects for people who will not be impressed, who refuse, on principle, to be impressed?

Sessions House!

I have purposely contrasted these titles, a sessions house or a law court, with a palace of justice, as the very names express the different point of view; and I would add by way of further contrast a picture gallery and a palace of art—Covent Garden Opera House and the National Academy of Music (Paris Opera House), municipal offices and Hotel de Ville; and this last title brings me to my last illustration. I would like to relate an incident which seems to me to illustrate most aptly French ideas of the value of ceremony, and how they may affect the lay-out of a building to express an idea.

The Hotel de Ville.

It concerns the Hotel de Ville at Paris. This, as its name implies, is the house or the home of the city, and as such it is laid out with a due regard to the dispensing of the city's hospitality and the proper reception of its guests. Although accommodation for this purpose is most lavish and magnificent, and its arrangement, therefore, modifies the general conception to some extent, yet this idea of hospitality does not entirely dominate the general lay-out of the building; it is only allowed to assert its relative importance.

For many years after its re-erection this building was considered to be entirely adequate for the reception of the most exalted guests; but now comes an unusual circumstance.

After a period of national isolation and depression, France concludes a treaty with Russia which relieves her of anxiety and reaffirms her position among the nations. To crown the event, the Czar comes to Paris and is to be received at the Hotel de Ville. The occasion is altogether of exceptional national importance: enthusiasm is at fever heat, and Paris rises to the occasion.

Now the interesting point is that it was not so much the size or the decoration of the reception rooms of the Hotel de Ville which were felt to be inadequate, as their arrangement and the method by which they are approached; not so much the spaciousness of the entrances and stairs (which are quite in proportion to the magnificence of the reception rooms) as their arrangement their position in the peneral lay-out of the whole building. They are arranged more for the reception of a great number of persons than for one august personage. It was not in acordance with the sentiment of the occasion that the Czar should enter anywhere but by the main entrance front to the Place de l'Hotel de Ville, or that he should use either of the two archways on this front (why one more than the other?), and cross a court diagonally, to be set down under the archway and one end of the Salle St Jean, from which he would have to take too many turns and destroy the dignity of his progress to the centre of the reception rooms on the first floor. It was felt that the Place de l'Hotel de Ville was naturally the place for a grand spectacular climax to the outdoor procession—the culminating point in the whole ceremony to the man in the street—and that the Czar must be taken direct from this square by a straight processional way to the centre of the Salle des Fetes on the first floor on the opposite side of the building. This was effected by making the Salle des Prévots the entrance hall, roofing in the central court and building a staircase to land in the central committee room on the first floor (which was redecorated as a reception room), and so through the hall of the caryatides to the centre of the Salle des Fetes.

We have now a principal reception entrance to the whole building—for the use of the guest of the evening—while the two permanent entrances become secondary ones for the use of the company assembling to receive him, and we get a building whose general lay-out is entirely dominated by the arrangements for reception, by the idea of civic hospitality.

The Guildhall.

Contrast with this the reception arrangements at our own Guildhall, where for centuries we have made a speciality of the reception of foreign potentates and the most famous of our citizens, and have made this so prominent a feature of our civic life that the fame of it has spread abroad to all lands, and the Guildhall stands as the symbol of civic, or even national, hospitality. How do we find this expressed in the building? It is not expressed at all. We cannot consider the arrangements, for there are none. But what does it matter? By using a library as a reception room, a Guildhall as a banqueting room, and a picture gallery as a retiring room, we are able to offer just as good a dinner—the lack of arrangement does not affect the cooking, and the guest is not supposed to mind how he arrives to his seat so long as he finds a good dinner when he gets there. But it is curious that during all the years in which alterations and additions have been made from time to time to council chamber and offices, that no attempt has been made to bring the reception arrangements more in accord with the national sentiment.

If you compare the importance, in the popular imagination, of the civic hospitality with the relative insignificance of its administrative functions, you would expect to find a building entirely dominated by this idea of hospitality and with a permanent Sovereign's entrance such as was created in Paris for a special emergency.

Now I don't suppose for one moment that if we had such a magnificent building as the Hotel de Ville in which to receive a specially honoured guest, such an idea as I have described would ever have occurred to us; or if it had occurred to some official accustomed to ceremonies, that the public would have approved such expense in structural alterations for one night only and for a mere sentiment. It is not our way of looking at things. I do not mean that we would grudge expense on such an occasion, but we should have spent the money another way—flowers, gold-hangings, and tapestries, or something especially nice for dinner; but, if I understand the French point of view aright, they would have brought their guest in a direct line from a central entrance if they could only have afforded a rough deal stair with a strip of red baize down the centre. It is the arrangement of the ceremony, the method of receiving him, that does honour to the guest, not the costliness of the surrounding. It is the arrangement of a building that expresses their sentiments, not merely its features and details.

An Instinct for Ceremonial Grouping.

It seems to me that it is this instinctive sense of the need of ceremony, of spontaneous grouping and arrangement, that supplies the *motif* for the more gracious and artistic lay-out of their plans. The plan alone rightly handled, has feeling and expression, and this brings us to the technical aspect of our subject, in which the proper imaginative handling of the *motif* is everything. Here they have the advantage of us. They have been taught how to take any *motif*, and from it build up a monument that expresses or elaborates the *motif* by the logical application of a systematic method of architectural expression, which is the outcome of a respect for the principles of architecture.

It seems to me that until we study these principles and upon them build up for ourselves a method of expression suited to our national character, that we are not in a position to make a true comparison possible. We are groping about without method or system to find a language of expression; they possess one in which they are writing poems. So the matter would seem to stand thus: not only has the Frenchman a finer *motif* to work from, but he also knows far better how to develop it.

The Philosophy of the Matter.

Taking into consideration, then, these various aspects of the case, I am reluctantly forced to the conclusion that the whole philosophy of the matter might be summed up in our well-known proverb: "You cannot make a silk purse out of a sow's ear." If you want gracious and stately and beautiful public buildings, you must lead a gracious and stately and beautiful public life; but if from peculiarities of character and temperament such life is impossible, then so are the buildings. If we, as architects, from the same reasons, are not content to work freely within the limits of a principle, and cannot rise to the conception of architecture as an impersonal art, and adopt the impersonal attitude in which all great monuments have been created, we shall never create monuments except to our own limitations.

NEWPORT'S PROPOSED NEW TECHNICAL INSTITUTE.

The site of the new Technical Institute, Newport, Mon., for which tenders were recently called in, is situated at the corner of Clarence Place and Rodney Road, and has three important street frontages. The exterior of the building is in a severe modern classic style. The principal entrance will be approached through a portico built in Cornish granite, with massive Doric columns. The building will have a granite plinth, capped by a granite sill course round the main street frontages. The art rooms, on the second floor, lit by large windows in a Mansard roof, will have embossed copper panels between the necessary large plate-glass windows. Above the main entrance there will be a large reinforced concrete dome, 26ft. in diameter, covered with copper. The walls of the building will be built with local stock bricks, with external facings of pressed brick.

The entrance hall will be octagonal in shape, and the main corridors leading from three sides of the octagon will give immediate access on the ground floor to the pupil teachers' centre, engineering workshops, and class-rooms. The main staircase will be so arranged as to give easy access to the various floors and departments. Near the main staircase are the cloak-rooms.

The building will be constructed of fire-resisting materials throughout. On account of the nature of the site, the building is placed on a concrete raft reinforced with expanded steel. The raft is so arranged that, as far as possible, hard clay will be the subsoil. The walls throughout will be constructed of good hard, sound local stock bricks. The floors will be constructed of coke-breeze concrete and rolled steel joists.

The cubic content of the building is 1,121,414 cubic feet, measured from the bottom of the footings to half-way up the roof. The architect's estimate for the building, as approved by the Board of Education and Local Government Board, was £36,500. The Council have now accepted a tender for £36,130, and it is anticipated that the whole of the buildings will be erected within the original estimate.

The building has been designed by Mr. Charles F. Ward, A.R.I.B.A., borough architect, and the building contractor is Mr. W. E. Blake, of Plymouth.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 14	BLACKPOOL. CENTRAL PUBLIC LIBRARY.—Premiums of £52 10s., £31 10s. and £21. Particulars and site plan from T. Loftos, Town Clerk, Town Hall, Blackpool. Deposit £1 1s
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50. £20 and £10. Premium for successful design to merge in Commission. Particulars from C, L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.,
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W.T. Postlethwaite, Council Offices, Swinton, Manchester.

* *This competition has been unfavourably reported upon by Correspondents.*

Brighouse New Secondary School.

Two days after the announcement of the result of the competition for this building, reported in our issue of November 25th, we received a letter from one of the competitors complaining of the almost indecent haste with which the drawings submitted were assessed. Fifteen sets were received, each comprising eight double-elephant sheets, and our correspondent very rightly observes that it is hardly to be believed that the merits of the respective designers could be fully appreciated in two or three hours. We learn from the report of the Education Committee meeting in the Brighouse "Echo" the same idea occurred to one of the Councillors; but the assessors stated that the same decision would have been reached even if they had taken more time. Acting on this complaint, we sent our Special Northern Commissioner to examine the drawings, and we have received from him a serious report, not dealing, however, with the assessment of the designs, but disclosing in connection with this competition certain matters which seem to us to call for careful investigation by the proper authority. We have accordingly handed our Commissioner's statement and the papers forwarded by our correspondent to the R.I.B.A. Competitions Committee for consideration.

Cardiff: Glamorgan County Hall.

The result of this competition, assessed by Mr. W. D. Caröe, was received by us on Friday last. The design placed first is that of Messrs. Harris and Moodie; that placed second is by Messrs. Pearson and Milborne, and the design placed third is by Mr. Henry T. Hare, of London. We are informed that 198 sets of designs were received.

Poster for Building Exhibition, 1909.

In this competition, promoted by Mr. H. Greville Montgomery, M.P., about 200 designs have been received. The assessors are Sir Aston Webb, R.A., Sir George Frampton, R.A., and Mr. Ernest George, Pres. R.I.B.A. We are informed that yesterday (Tuesday, December 8th) was

the day appointed for judging, though, when the information was given, it was not certain that all the assessors could attend on that day. If the designs were not assessed then it is probable that the result will not be known before Christmas.

Bakewell Baths.

The accepted plans for the proposed new baths and pump-room are those submitted by Messrs. Boyden and Walton, of Buxton. At a meeting of the Urban District Council at which this announcement was made, it was stated that applications had been received from several newspapers for loan of the plans for reproduction. Several councillors objected to the plans being lent pending further consideration, but the representative of a Sheffield newspaper informed the chairman that he had already photographed them. The objection to publication is not easy to understand.

EARLY STUDIES & FUTURE PRACTICE.*

By William Dunn, F.R.I.B.A.

Studying Old Buildings.

I do not think I need urge you to study old buildings; the young architect takes to that as naturally as a duck to water. But in your study do not waste too much time in making sketches and views. Rather measure and plot in the field what you measure; by that means you come to learn scale, one of the chief, as it is one of the most subtle, factors in our success. You will learn the relation between the scale drawing, by which we must express ourselves, and the actual building.

*Abstract of a paper read to the Architectural Association on December 4th.

Need for Width of Knowledge.

Our profession is so wide-reaching and so multifarious in its ramifications that there are few branches of useful knowledge which you won't find use for. But whether you study water-colour drawing or drainage, modelling or mathematics, surveying or sanitation, or even read law cases, or become acquainted with machinery or gardening, your future work will find use for such learning.

Making Sections.

I would have you never take your section through that part of the building which shows least, but through the part which shows most; make sections and elevations of every part upon which there is the least uncertainty; leave nothing to be settled by the builder, and if you do not know how to construct this or that part, find out from your seniors or from the builder or the clerk of works, or the foreman, or your books, how it should be done, and show it on the drawing. You may at first err by putting in unnecessary detail, and make mistakes which will give you trouble, because you have not judged rightly, but these errors will correct themselves.

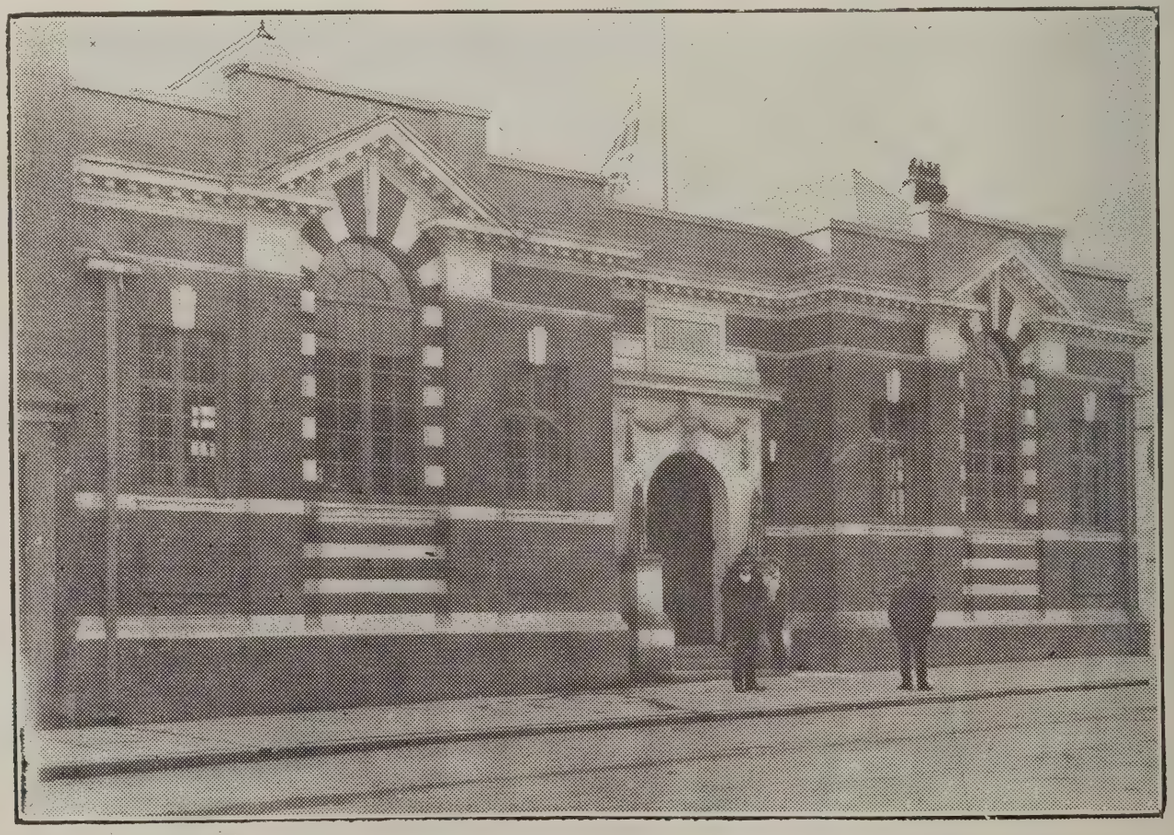
Theory and Practice.

I am amazed by the opinion of the Board of Architectural Education, which I find in the Institute Kalendar, that while the rudiments of mathematics and applied science should be taught to architectural students, no more than is necessary should be given. But what differentiates our practical knowledge from that of the contractor, if it is not in the application of theory? However much we may advocate the learning of a craft, or actual handiwork at the bench or on the bank, we cannot hope to have that intimate knowledge of the actual processes which the workman's years of training have given him. We cannot equal a good house painter in the understanding of the workmanlike quality of his work; we cannot rival the bricklayer or the mason in a knowledge of what constitutes good mortar, save by the application of that science of which we are told we require but the rudiments. I say emphatically that we require much more than the rudiments if we are to be really architects. The builder has an accumulated store of experience to tell him whether this construction is safe or that is unsafe; but with a good knowledge of mathematics and applied science the architect can transcend experience in a large degree, and proceed to combinations beyond experience with confidence and safety.

I have no scruples in asking advice from builder, foreman, or clerk of works as to practical processes; these men must know more than I do in their own lines. But I must be capable of dealing with the larger problems of design and construction.

Practical Knowledge.

When you have arrived at the stage of starting practice, you will find that practical knowledge seems much more important to your happiness and welfare than all your artistic powers. Your powers of design are certainly important, as enabling you to scheme out your plans for varying requirements and in cultivating that invention for which there is con-



NORTH BRANCH CARNEGIE LIBRARY, BIRKENHEAD. A. W. STREET, ARCHITECT. *Liverpool Post.*

This Library, recently erected at the corner of Price Street and Pensby Street, is faced with Ruabon bricks, and Storeton stone dressings. The squ entrance hall has a panelled ceiling and a centre glass dome; the newspaper and reference rooms on either side are well-lighted, and the distribution counter, which is immediately opposite the main entrance, has the usual provision for book indicators. The vestibule and hall floors are laid with Italian marble; the woodwork is of mahogany, oak, and pitch-pine; and the floors of the inside rooms are of wood blocks. The contractors were Messrs. Hall & Sons, Liverpool.

stant scope in your work. One may grieve to see the blatant and vulgar work of successful men, and wonder how the world can confer the title of architect on them, but you will find it withheld from you unless you study drains and hot water and how to make a house dry. I believe that a thorough knowledge of the principles and practice of sanitary science could be acquired by any smart junior who could draw, in about three months' study, in making drawings of drainage schemes and plumbing details. There is nothing very abstruse or difficult in the subject until we come to the higher branches, such as sewage disposal on a great scale, and a knowledge sufficient for the smaller problems is simply invaluable to us.

Hot Water Work.

With hot-water supply and hot-water heating it is the same, and I suggest to those who have not yet done so that they should take a set of plans for a moderate-sized house, say, and make drawings to one-eighth scale, showing the position of the boiler and the runs of pipes for both supply and heating, adding to it sketches of the boiler and main connections, then submit such drawings to any hot-water engineer of your acquaintance, and discuss the proposals in detail. You will, in a few such lessons, learn enough about it to enable you to form an opinion on, perhaps enable you to discover defects in, the schemes submitted to you.

The Constructive Instinct.

All manner of construction should be the object of your attention. The right use of the material is essential to every artist, but I do not limit this to debating on the proper design of plaster mouldings or the difference in the planning of ornament in cast metal or in wrought. I say that in your beams and your roof trusses there is a right and there is a wrong use of the material, which takes a great deal of thinking to discover. A great mind like Wren's or like Da Vinci's or like Brunelleschi's has a fine constructive instinct, but in every case this must be sedulously cultivated.

Glorious Discontent.

I want specially to remind you that in thus urging on you the importance of what is called practical knowledge I do not wish you to become only what is called *practical men*. Unless you have that love of all things good and beautiful —that glorious discontent with the gross, the ugly, and the mean, which impels you in your day and generation to make them better, and make the hut of the labourer or the mansion of the rich man fit settings for noble lives—unless you cannot help but throw yourself heart and soul into architecture, as the art of making kirk, or mill, or mansion, or all that man builds for use or pleasure, and all the accessories in gardens, furniture, hangings, no amount of practical knowledge will avail you.

Inertia of Men and Things.

Everything seems arrayed against the architect. The inertia of men and things which is so appalling must be overcome; you have to go out to do battle with your human material, which is as hard and stubborn as your brick and stone. Your county councils and local authorities rise up against you, with their universal objection to everything that makes for beauty. When you feel that oak is the right material your purse keeps you to deal; or when you want for grouping and composition a high-tiled roof, a certain noble lavishness of brick and mortar, the quantity surveyor reminds you of the increasing cube; when you want a cornice of 5 ft. projection to make that deep shadow on your street front, the charm of which you had brought from Florence, the county councils, treating you like a child, says you can't have it, and that's enough. But it is in this kicking against the pricks that the value of our early studies as well as our late practice comes in.

Let your early studies be so directed that prospective employers may instinctively realise "Here is a man whom I can trust, who is in such sympathy with my own ideas that I can trust him as myself," and you find, sooner or later, that future practice will justify them.

Meeting.

Sir Brumwell Thomas presided, in the absence of Mr. Walter Cave. Before Mr. Dunn's paper was read, the following gentlemen were unanimously elected:—A. E. Maxwell, 109, Uxbridge Road, W., proposed by H. L. Samson and A. Potter; C. Rowntree, 11, Hammersmith Terrace, W., proposed by A. Potter and H. L. Samson; A. C. Harbottle, County Chambers, Exeter, proposed by E. J. Harbottle and hon. sec. (by order of the Council).

Discussion.

Mr. Gerald Horsley, in proposing a vote of thanks, congratulated Mr. Dunn upon producing such a very human, sympathetic, and kindly paper.

Mr. H. P. G. Maule hoped that he could say without impertinence that they had listened to an eminently sane paper; a paper that not only preached commonsense, but held up an ideal.

The following gentlemen joined in the discussion:—Mr. Walter Millard, Mr. Curtis Green, and Mr. Louis Ambler. Sir Brumwell Thomas having summed up the discussion generally, Mr. Dunn briefly responded.

Correspondence.

Advice to Patentees.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I would like to give those of your readers who are interested in patents a word of warning with regard to the specious tales which some patent agents tell. I came across an instructive case a week or two ago. A young man, who had invented an article, had written several patent agents asking their best terms for the disposal of the patent. Each agent replied (with one exception) that they could not guarantee the disposal of the patent; the exception being an agency who replied that they were intensely interested in his patent, and that they thought they had a client who would give him £400 for the patent rights for Germany, £400 in France, and several other large amounts for other countries, subject to the patent being patented in these countries. They also stated that they did not want the job of procuring the necessary patents, but he could have it done through his own agent. This I consider was a subtle touch, because it was only natural for any man who is about to procure £2,900 (which is the amount these patent agents held out to him for the sole right of this simple device), that he would in that case place it with the agent who was going to get him this amount.

If any such hopes are held out to any of your readers who are inventors, I trust that they will reply that they are quite prepared for the agents to take out the patent abroad if the agents pays the fees himself, and deducts same from the amount to be paid for the patent rights. This young man had actually paid £70 for fees and patent rights.

I have personally invented and patented an article, and know what I had to go through, thinking that I should startle the world with my invention; but I was glad to sell it for £200 after working it myself two or three years. This was more years ago than I care to remember, but it exists very vividly in my memory, and I never come across an inventor but what I feel the greatest sympathy for him.

I remember ten years ago two young men came to see me with a model of a lift. These men were joiners employed at a flour mill, and as there had been an accident or two owing to men falling down the lift shafts, they had invented automatic doors which opened and shut as the lift went up and down the shaft. They had spent about £100 in making and patenting this lift, and the model they brought with them was about six feet high and made most elaborately of polished mahogany. They had a small arrangement by which they could fix it on to a gas engine, and it worked splendidly. They asked me whether I could undertake to put it on the market, which I had to decline to do, for as some of your readers are aware, my business is that of a builder and building material merchant, but I was so much in sympathy with these joiners that I sent the model to London and showed it to some of the bigger lift manufacturers. The manager at one place appointed an interview with us. He explained that most of the lifts nowadays were worked by electricity, and would be more and more so as time passed, and that speed was the desideratum; which would necessitate the gates opening and shutting so quickly as the lifts flew past that they would knock over anyone standing near to them, and that the gates would be very soon smashed to pieces by their own velocity. I could see at once when he said that the patent would be of no use to them, that he was correct, especially after our interviews with the other lift makers. It was most pathetic to see these two joiners. They could see that their savings of years had vanished. They had hoped that this lift would put them out of the reach of want and bring them a nice little competency in royalties. Altogether, I hope I shall never again have such a disheartening experience.

My object in writing this is to warn others to be careful of the agents—*i.e.*, always to choose a reputable agent of some standing, and to not let enthusiasm for their inventions carry them beyond the bounds of common sense.

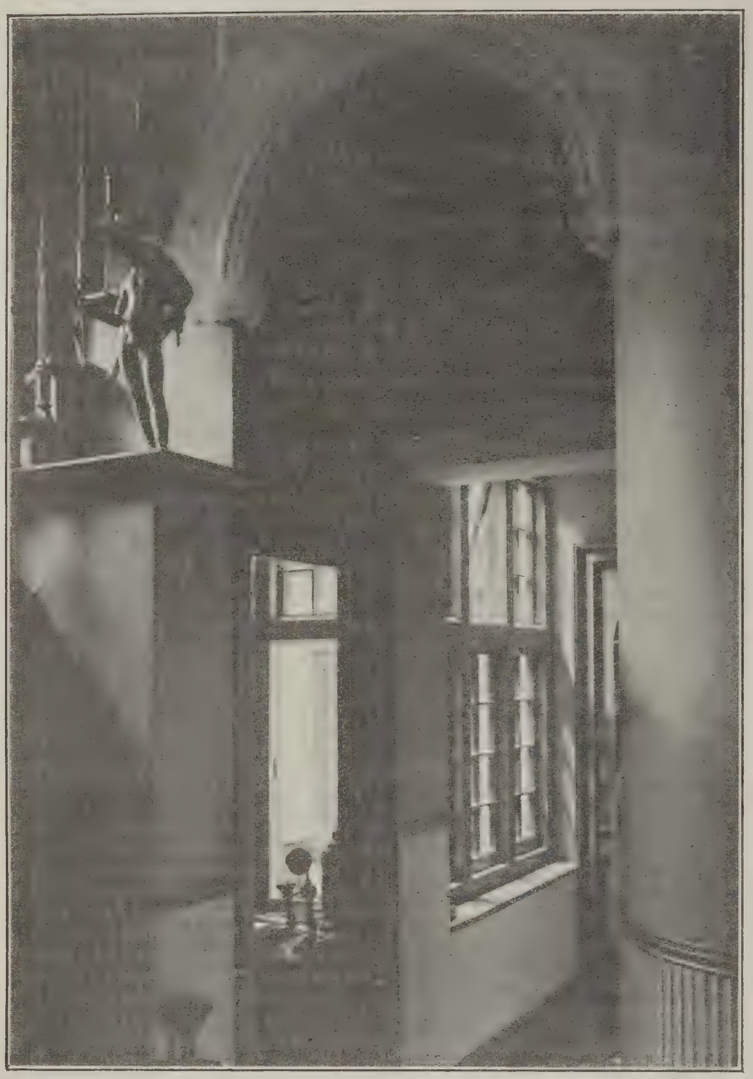
J. H. KERNER GREENWOOD.

King's Lynn.

The Architectural Profession of To-day.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I heartily agree with "Registrationist" (writing in your issue of November 18th) in praise of the series of articles on the architectural profession, and further, I should suggest that these articles most certainly be continued. Results may not come at once, but they are certain to come in the end if we are only content to await the natural course of events. These articles,



ALTERATIONS TO NO. 19, UPPER BERKELEY STREET, LONDON, W. ALAN E MUNBY, M.A., A.R.I.B.A., ARCHITECT.

unlike fiction, do not only retain their interest while they are fresh; they gather interest as they go on, and when sufficient interest has been aroused we may expect to see the fruits beginning to show. Why, at present interest is only just awakening. Surely (when our expectations have been aroused) it would be a pity to damp them at so early a stage.

The subject is of such great width that the series of articles, able as they are, do not, I venture to think, cover more than a portion of the ground. The proper education of architects in matters of architecture is of primary importance, but it is certain they will not succeed unless they also know how to manage the business side of their profession. The public, too, will be influenced much quicker by business qualities than by probably any others, and the influence of an unbusiness-like minority would doubtless outweigh the counter-influence of the majority of business-like men. One notices defects so much more easily than good points. The public to-day, as we all know only too well, generally speaking, more or less ignore architects, and clients often treat them almost like a higher class of servants.

I am sure, therefore, that articles on the business aspect would be greatly welcomed. Architecture has got a value like any other calling demanding skill, talent, intellect, etc., though, of course no one can rightly estimate the true value of art. However, architects have as much right to their commission as the stockbroker to his, and yet, with all due deference to the stockbroker, the architect does infinitely more work for his money. When one thinks of the tremendous number of drawings which are got out in an office (some of which being for jobs which never go forward) and the large staff which is often kept, clerical and architectural, it is a marvel, especially in the face of bad debts also, that architects succeed so well as they do.

What it amounts to is this, that while there is a well-defined agreement between the client and the contractor, there is no provision whatever as between the architect and the client. I do not say there should be a similar agreement, but that the requirements of the client and the obligations of the architect should be made clear. Some clients are always calling at the office or writing, and generally making work or wasting time. We must not forget that each time a design is altered at the client's caprice, the result, as a rule, is not for the better, and that a house thus built simply brings discredit, not on the client, but on the unfortunate architect. True, he can always refuse such jobs; but, as a rule, that is just what he does not wish to do. If he did, it would not be a real remedy, but only a "get-out" expedient. An article which would throw light on this subject and make clear how far an architect is liable regarding a client, and how to deal with trying cases, would do much to place matters on a firmer business basis. Architects do not exist to be used as tools by those who often do not want to build at all, or if they do, have not the funds necessary to do so. Neither do architects supply plans and estimates free.

Another article which undoubtedly would be of use is one on the law in relation to the architectural profession. Most people, even the legal profession, seem to regard it as an exceedingly obscure question altogether. Perhaps someone may be found who will make clear to us the rights, status, and responsibilities of an architect. A selection of law cases might prove instructive in this connection. Yet another article, dealing with by-laws, might well be written. To urge the necessity of an entire revision of these and reconstruction on altogether new and progressive lines is to urge a commonplace. It is also unnecessary to say that building and architecture will not be stimulated till it is done. Apologising for the length of this letter, and trusting, if indeed I dare trust, that it may meet with some slight response.

A REGULAR READER.

Cleaning Down Old Stone Buildings.

To the Editor of THE BUILDERS' JOURNAL.

SIR.—We have read the correspondence appearing in your journal on the above subject, and we notice that Mr. Bishop, who is presumably an architect, seeks advice as to whether or not he should recommend his client to clean an old stone building (which, judging by his description, has a decayed outer skin) by either of the processes where a considerable amount of force will be used. We feel tempted to offer him Mr. Punch's advice to those about to marry—"Don't!"

Our connection in the West End is considerable, and we are frequently consulted as to the advisability of cleaning down a front in the condition suggested, and our usual answer is "Don't." Nevertheless, we are strong supporters of the preservation of stone buildings when this is done properly. But there is a vast difference between "preserving" and "destroying," although we are sorry to observe that there are apparently large numbers of people who seem unable to make the distinction. BYWATERS AND SONS, LTD.

London, W.

SIR,—I have served about thirty years as clerk of works in various parts of the country, and have been employed on buildings which have been cleaned down by the steam brush, as well as the sand-blast processes, and my experience is that, provided the stone shows no signs of decay, no apparent damage is done to the face of the stone beyond making it more spongy; but that where decay has already commenced the cleaning shows up the bad spots very prominently, and then the trouble begins about who recommended it, and how the repairs are to be effected.

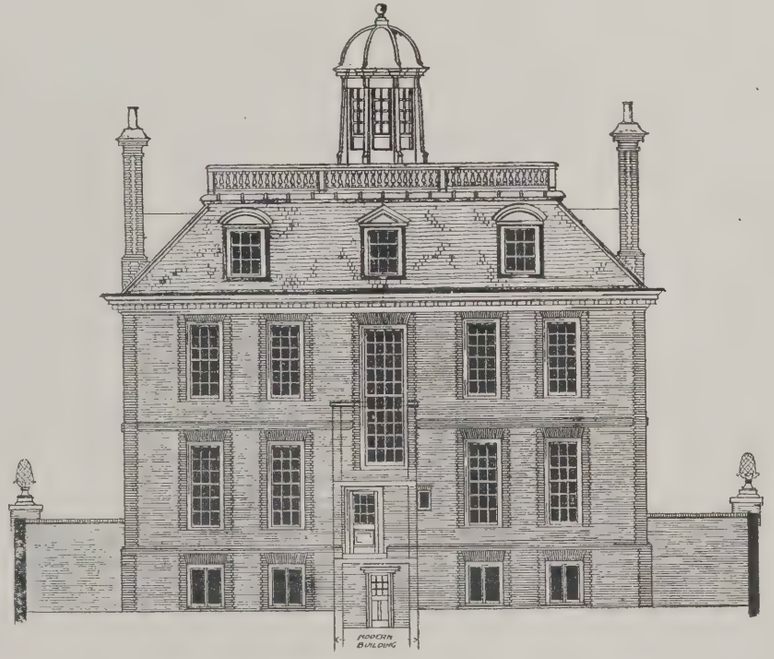
There is, however, one very annoying aspect of some of these cleaning-down jobs. I think I can safely say that on



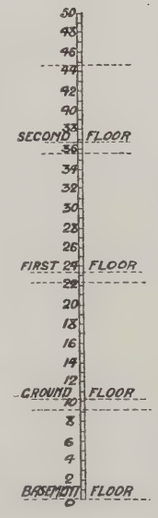


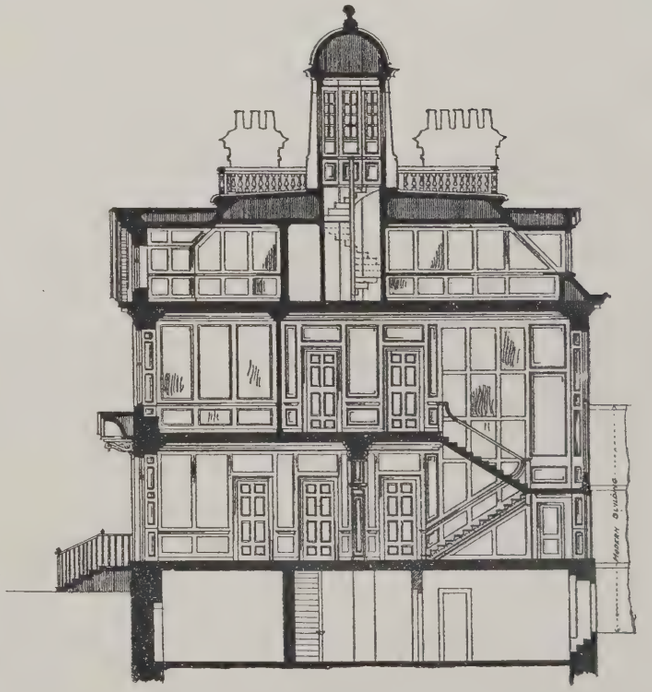
NARTHEX, CHURCH OF THE HOLY ANGELS, HOAR CROSS. CECIL G. HARE. ARCHITECT.

EAGLE HOUSE LONDON ROAD MITCHAM



WEST ELEVATION





SECTION A·A·

Measured and Drawn by Joseph Seddon
August 1907







MEASURED DRAWINGS. No. 2. EAGLE HOUSE, LONDON ROAD, MITCHAM, SURREY (CONTINUED).

MEASURED BY JOSEPH SEDDON AND L. F. JONES. DRAWN BY JOSEPH SEDDON.

every job with which I have had to deal, I have had to bear a large amount of abuse from the public, who either complained of being blinded with sand or of having their hats and coats damaged by the steam and dirt. Demands for redress and threats of law suits generally followed.

With respect to preservatives, I have seen many preparations that were so-called; but I am convinced that oils are of no use. The effect disappears very soon, and the stuff usually discolours the stone.

If there is in existence a perfect system of cleaning and preserving stonework, I, for one, would be very glad to hear of it. N. BAKER.

London. N.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Referring to a letter from Mr. Hungerford in the current issue (November 18th) of your excellent journal, I venture to send you a leaflet dealing with the preservation of stone by the Baryta treatment. This is a process which has now been in use for some years, and has proved very successful. The solution penetrates into the stone from 2 to 4 inches, and is not a mere wash for the surface, as are most so-called stone preservatives.

This treatment is inexpensive to carry out, and is not protected in any way by patents. You will, no doubt, recollect that it was referred to in the report of the Committee of Architects upon the condition of St. Paul's Cathedral.

I shall be pleased to give your correspondent any further information should he require it. HAROLD E. CHURCH.

130, Temple Chambers,
Whitefriars, E.C.

[The leaflet mentioned, of which copies have been kindly forwarded to us, is signed by Dr. A. H. Church, Professor of Chemistry in the Royal Academy Schools, Shelsley, Kew Gardens. In this it is explained that the baryta water is a solution in distilled water of barium hydrate, also known as barium hydroxide, and as hydrate of baryta.—ED.]

To the Editor of THE BUILDERS' JOURNAL

SIR,—With reference to the letter by Mr. Campion in your issue of November 11th, will you allow us to endorse his opinion that it does not do to clean stonework without covering with a protective coat or solution? We are using on many buildings in London a special preparation, which is apparently a great success, and we shall be pleased to send particulars of it to any one who so desires.

MARKHAM AND MARKHAM.

79, Essex Road, N.

Our Plates.

New Narthex Church of the Holy Angels, Hoar Cross.

Our illustrations show the elevations of the new narthex which has been placed at the West end of the Church of the Holy Angels, Hoar Cross. The late Mr. G. F. Bodley, R.A., made the rough sketches for this, which have been worked and carried out by his partner, Mr. Cecil G. Hare, 7, Grays Inn Square, W.C.

The narthex leads into the church with three arches pierced into the west wall, these being filled with very rich iron grylles, relieved with gilding. It is executed in red stone like the rest of the church, and the pavement is of black and white marble. The roof is of English oak, richly carved. The two figures on each side of the west entrance are St. Gabriel and the Blessed Virgin. The windows are filled with stained glass, with the family coats of arms.

A memorial has been placed inside to the late Mr. G. F. Bodley, R.A.

Measured Drawings, No. 2, Eagle House, Mitcham, Surrey.

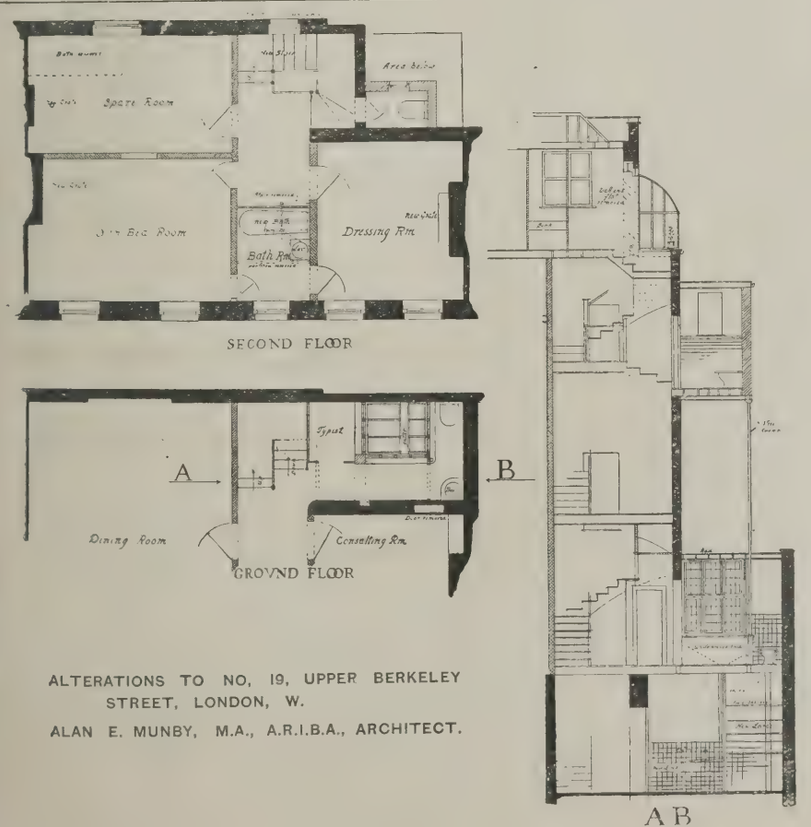
We give this week the second plate of the measured drawing of Eagle House, particulars of which we published in our issue of November 25th. A photograph of the house is also given in the text. The interior panelling and details will be given in subsequent plates, accompanied by photographic views.

Alterations to No. 19, Upper Berkeley Street, London, W.

It often happens that professional considerations demand continued residence in houses in which space requirements have much outgrown accommodation, providing some interesting problems for solution by the architect. Such were the circumstances in this alteration. The problem to be solved was the provision of a bathroom proper which should release the bedroom so used, a ground floor lavoratory, and space for cloaks, a small typist's room, and improved sanitary accommodation.

Adjoining the approach to the new lavatory and under the stairs a typist's room was obtained. This enclosure ran out very awkwardly from under the stair soffit and cut into this rapidly rising soffit in a manner which made some treatment essential. The illustration shows the concealment of this soffit by a plaster arch.

By the removal of part of the main stair wall, the introduction of girders at two levels and the use of an iron framed skylight, it was found just possible within the light and air angle to continue the main staircase to the top floor and thus do away with the separate attic stair, which, while gutting one top floor room, provided two new rooms on the street elevation. That on the second floor, conveniently situated between the principal bedroom and dressing-room, provided the much needed bathroom. Other difficulties appeared, however, for all the internal walls of the house were mere partitioning, some of which was composed of 3in. by 2in. studs. As a fireclay bath weighing (empty) over seven cwt. was very much desired for electric bathing, this matter required consideration. Eventually a separate floor was made for the bath itself, and this was slung by steel rods concealed in the partitions and running up through two storeys to a steel joist in the roof spanning the space from wall to wall, which it had been found necessary to insert to carry a water tank displaced by the stair alteration. Finally the top rooms were remodelled and space found for a housemaid's closet on the top landing. The net additions to the house within the original area were thus a lavatory, cloak lobby, typist's room, bathroom, and housemaid's closet, while the top floor was converted from an attic into a suite with a well lighted landing on a par with the floor below. The whole alteration, which was carried out by Messrs. T. Henwood and Son, 7, New Quebec Street, Portman Square, W., and which included a hot-water installation and entire redecoration of the house, was completed in seven weeks under a penalty and bonus, part of which latter was earned. The architect was Mr. Alan E. Munby, M.A., F.R.I.B.A.



ALTERATIONS TO NO. 19, UPPER BERKELEY STREET, LONDON, W.

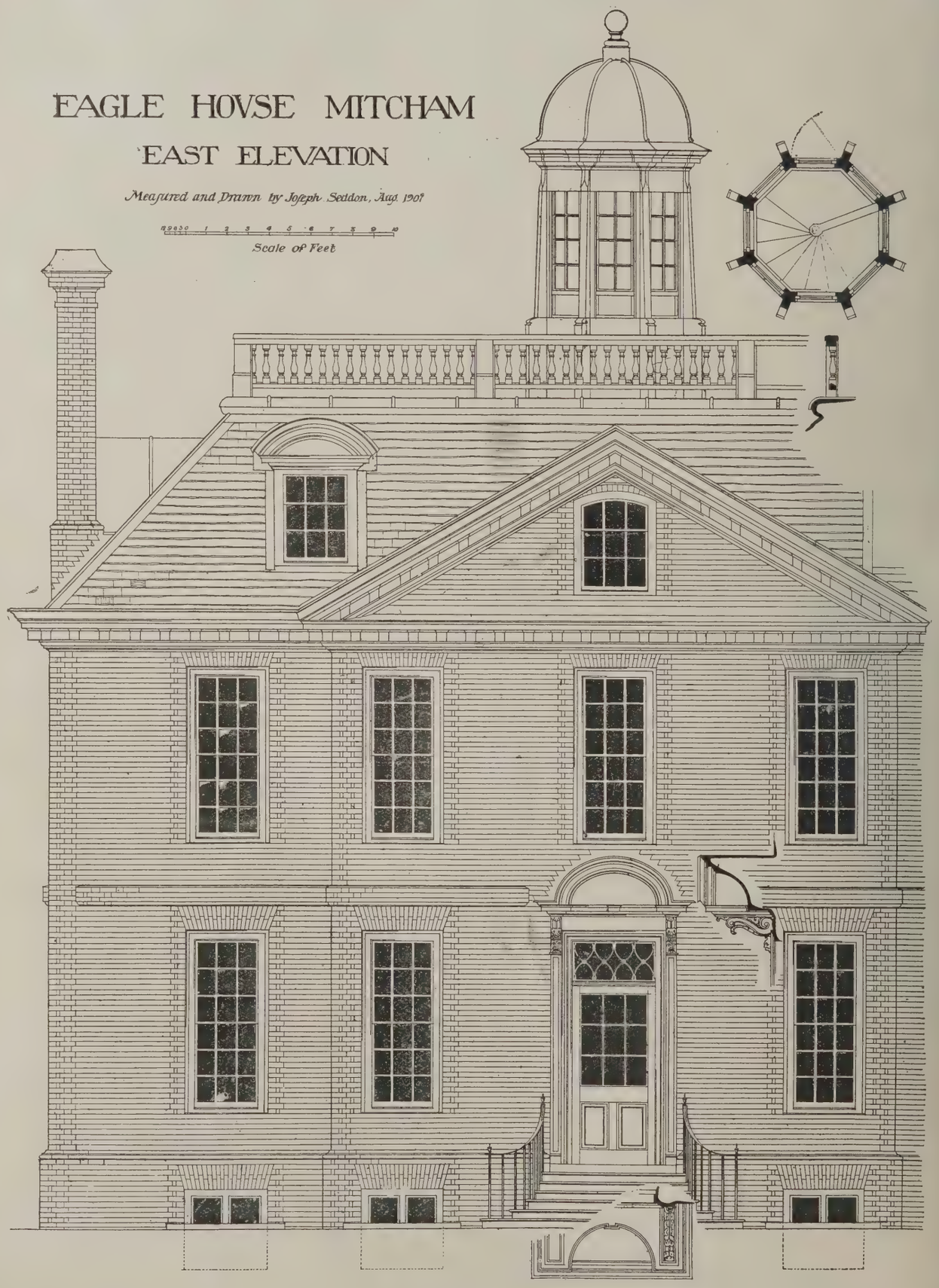
ALAN E. MUNBY, M.A., A.R.I.B.A., ARCHITECT.

EAGLE HOVSE MITCHAM

EAST ELEVATION

Measured and Drawn by Joseph Seddon, Aug. 1907

Scale of Feet



MEASURED DRAWINGS. NO. 2. EAGLE HOUSE (*continued*). MEASURED BY JOSEPH SEDDON AND L. F. JONES, AND DRAWN BY JOSEPH SEDDON. (*See also Centre Plate*).



Photo] [*Darien Photo Co.*

MEASURED DRAWINGS. NO. 2 EAGLE HOUSE, MITCHAM, SURREY (*continued*). EAST OR ENTRANCE FRONT. [*See also Centre Plate.*]

Notes and News.

Scottish Ecclesiological Society.—A joint meeting of the Edinburgh and Glasgow branches of this Society was held at Paisley Abbey the other day, when Mr. Macgregor Chalmers, architect, delivered an address upon the history of the building, describing the various changes which had been made upon the fabric in mediæval times. The origin of the plan was traced to Cerisy Abbey, in France, and the treatment of the transepts compared with that at Winchester and Ely Cathedrals. The party was then conducted round the Abbey, and the various periods of the existing structure explained by the lecturer.

* * *

The North-Eastern Centre of the Sanitary Inspectors' Association has held a general meeting at Cleckheaton, at which the chairman of the General Council of the Association (Mr. G. H. Anderson) made a statement as to the progress of a scheme for the establishment of an examining body other than the Royal Sanitary Institute, with whose position the association is dissatisfied.

* * *

The Bishop of London's fund for church extension has, the bishop stated the other day, built, during the past forty years, 220 churches. At least five new churches every year, he said, are required within his diocese in order to keep pace with the growth of population. At the present time, he added, forty new churches are in course of erection in London.

* * *

A stained glass window of unusual interest has been unveiled in the north aisle of the parish church of St Stephen's-by-Saltash, Cornwall, corn and birds in a beautiful landscape being represented with more than ordinary success in form and colouring. It is erected to the memory of the late Mr. George Adams, J.P., and has been designed and constructed by Messrs. Fouracre and Son, of Plymouth.

* * *

The Royal Sanitary Institute has just issued a list of the Fellows, Members, and Associates elected in November of the present year, from which it appears that there are six new Fellows, seventeen new Members, and ten new Associates.

* * *

The old Tudor House from Ipswich, which was erected in the grounds of the Franco-British Exhibition, has been purchased by the Hon. Ivor Guest for re-erection at Ashby St. Ledgers. The house bears the date 1563, and is regarded as a typical example of a well-to-do merchant's house of the days of Elizabeth.

* * *

London's New County Hall formed the subject of an interesting question at last week's meeting of the London County Council. The chairman of the establishment committee was asked whether, in view of the interest being taken outside in the matter, anything had been done to modify the plans already presented. The chairman (Mr. R. C. Norman) said the architect was at work on the plans, but the committee had not received a report from him.

* * *

Mr. W. Harvey Brown, M.S.A., has resigned his position as permanent architect to Messrs. Rowntree, for whom he has completed new factories at the cost of more than one hundred and twenty thousand pounds sterling, and also the redrainage of the Cocoa Works. Mr. Harvey Brown is now commencing practice at Standard Buildings, Leeds.

* * *

It is stated that by adopting reinforced concrete for their new 9-mile line of pipes, the Clydebank and District Water Trust will effect a saving of £550 per mile as compared with the cost of cast-iron pipes.

* * *

The coming timber famine, it appears, is to be considerably relieved by exploitation of the forests of Uganda and of Dominica. Concerning the latter, which is one of the larger islands of the British West Indies, it is announced that a company is being formed to erect there some sawmills and a railway. The forest lands of Dominica cover about 120,000 acres, and half of this may eventually be available as a source of supply.

* * *

The condition of many of the buildings in the Temple is said to be giving considerable uneasiness to the Benchers. The signs of decay are attributed to movements in the subsoil, and it is stated that many of the buildings will have to be either under-pinned or pulled down. A building in Essex Street, which is on the west boundary of the Temple, has had to be shored up.

* * *

"Nine sons and a father, builders," is the title to an interesting family group depicted in the "Daily Chronicle" of December 2nd. When the photograph was taken, Mr. Walter Ward, of Hammersmith, and his nine sons, were all working on one job.

* * *

At the recent bye-election to fill the vacancies on the Council of the Metropolitan Borough of Shoreditch, Mr. G. H. Lovegrove, of the firm of Messrs. Lovegrove and Papworth, 374-8, Old Street, E.C., architects and surveyors, was elected for the Moorfields Ward by a large majority.

* * *

Junior Institution of Engineers.—A large number of members of this Institution availed themselves of the invitation to visit Messrs. Siebe Gorman and Co.'s Submarine Engineering Works, in Westminster Bridge Road. After being received by Sir Richard Awdry, K.C.B., one of the directors, they listened to an address by Dr. Leonard Hill, F.R.S., on the physics and physiology of diving, caisson disease, etc. Demonstrations were then carried out in the large experimental diving tank to illustrate the following: diving apparatus as used in the British Navy, fitted with telephone, and electric lamps; self-contained diving apparatus employed in cases where the ordinary apparatus with pumps and air pipes would be impracticable; the Hall-Rees self-contained dress, enabling men to escape from disabled submarines. A glass-fronted, air-tight chamber, fitted with dense fumes, was brought into use for demonstrating the method of operating with the self-contained breathing apparatus in irrespirable atmospheres, for rescue work in mines, etc. Mr. H. A Fleuss, the inventor of the first apparatus of this description, also spoke, giving an account of his experience in connection with the flooding of the Severn tunnel, and other particulars of much interest. Some of the members donned the diving dress, and made descents into the tank; and at the concusion of the visit, on the proposal of Mr. J. Wylie Nisbet, seconded by Mr. Geo. T. Bullock, vice-chairman, a cordial vote of thanks was passed for all that had been arranged to render the occasion interesting and agreeable, Sir Richard Awdry responding.

* * *

A new lych gate at St. Andrew's Church, Ham Common, Surrey, which has been erected in memory of Queen Victoria's reign, from a design by Mr. George Widdowson, of Richmond, Surrey, was dedicated by the Archdeacon of Kingston, on Sunday, November 29th.

* * *

The Carpenters' Company, having in view the decadence of apprenticeship, has decided to give, in its Hall, a series of lectures on preliminary design in the constructive arts, in accordance with its ancient traditions, for the advancement of the best work in the arts connected with building. The lectures will, in the first place, be for all craftsmen and those engaged in actual trades in connection with the constructive arts, but all of either sex and of any trade or profession are invited to attend. Admission will be free by ticket. The lectures will each last about three-quarters of an hour, and at the close questions on them may be asked. At the end of the course, prizes will be offered to those who have attended not fewer than eight lectures. Between January and April next the following gentlemen will give lectures on the various arts connected with building:—Messrs. Weir Schultz, Guy Dawber, Romney Green, Troup, Voysey, Baillie Scott, Spooner, Laurence Turner, and Starkie Gardner. Tickets of admission to the lectures can be obtained from Mr. J. H. Freeman, clerk, Carpenters' Hall, London Wall, E.C.

* * *

At the ordinary meeting of the Institution of Civil Engineers, held on Tuesday, December 1st, Mr. James Charles Inglis, president, in the chair, it was announced that 182 candidates had been admitted as students.

* * *

Doulton's patent pneumatic water-waste preventing valve for water-closets, as approved by the Metropolitan Water Board, is shown in various adaptations in a special illustrated pamphlet issued by the firm (Doulton and Co., Ltd., Albert Embankment, London, S.E.). Among the advantages claimed for the valve are: noiselessness; absence of chains, pulls, and ball-valves, which are all more or less likely to get out of order; automatic closing, whether or not the handle is kept raised; regulation of the amount of water passing each time; ease of operation, either by push-knob or lever handle; simplicity, so that no special knowledge is required for the fixing; and compactness, enabling it to be placed in positions that are insufficient for the accommodation of the ordinary flushing apparatus.

Mr. R. G. Kirkby, A.R.I.B.A., of Cardiff, has been appointed city architect for Bradford, in succession to Mr. F. E. P. Edwards, who is now city architect of Sheffield. It is stated that Mr. Kirkby is thirty-three years old, and is architectural assistant to the Glamorganshire County Council. There were 115 applicants for the post, of which the salary is £300 a year.

CONTRACTORS' SECTION

(MONTHLY.)

THE ARCHITECT'S CERTIFICATE: SOME LEGAL ASPECTS.*

By A. M. Brice.

(*Continued fom page* 426, *No.* 721.)

III.—The Conclusive or Final Certificate.

What manner of writing, then, may be necessary to make a certificate valid, and, in the case of a final certificate, conclusive? In the first place, any conditions imposed by the terms of the contract must be complied with. If the certificate is to be one of satisfaction, or of payment, or both, then one or the other or both it must be. But if one of payment is required and given, it will imply satisfaction; and if one of satisfaction is required, a certificate of satisfaction will secure payment. It will do this, although no balance is struck, and no particular amount is specified. Any payment for extra work, and, indeed, any amount that may be outstanding may be left for ascertainment, either by the method indicated in the contract, or failing any such, by the ordinary computations for quantity or value, and yet the certificate will be conclusive.

In Pashby *v.* Birmingham Corporation [1856, 18 C.B. 2], where the contract stipulated that certain payments should not be made "until within three months after the architect should have certified the completion of the whole work to his satisfaction, it was held that the architect's certificate of final completion was sufficient, without mentioning the amount remaining due in order to enable the contractors to recover what was right and proper." In delivering judgment, Chief Justice Jervis said: "I do not think that the architect's final certificate of the completion of the work need contain any mention of the amount; but I think that the plaintiffs may recover on a general certificate. . . . It seems to me that it is not a condition precedent to the plaintiffs' right to recover what may be due to them for the balance, that such balance should be ascertained and mentioned in the certificate of the final completion given by the architect." The three other judges forming the court concurred, Cresswell J. pointing out that "the certificate of final completion is clearly sufficient, without reference to the amount that may be due to the contractors, whether in respect of work done under the contract or of alterations or additions."

So, too, it has been held that the certificate that the last payment is due will satisfy the contractual requirement of a certificate; but if the contract in this case had required that the certificate should be couched in a specific and different form, it would have been inadequate. The terms of the contract, in fact, are the determining factors in all questions affecting the certificates, always supposing, of course, that the terms exist and are explicit.

*Substance of a paper read before the Institute of Builders, on November 11th, by Mr. A. M. Brice, of the Middle Temple, and Oxford Circuit, Barrister-at-Law; author of "The Legal Liability of the Architect."

The Right of the Builder to Recover Payment without a Certificate.

There is no proposition in building law laid down more clearly than that generally a builder is unable to recover payment from the building owner without a certificate from the architect, if it is a term of the contract that the issue of such certificate shall be a condition precedent to such payment.

The great exception, of course, to this rule is that if the certificate has been fraudulently withheld, and the building owner has either colluded with the architect in such withholding. or had made use of the architect's fraud to commit a breach of the contract, then the builder may dispense with the certificate and bring his action against the building owner.

In addition to this general rule, too, there are other grounds on which recovery can be had without a certificate—the prevention of the employer by the dismissal of the architect, the prevention by the employer of the performance of conditions imposed by the contract, prevention by the employer by failing to appoint an architect with power to certify, and, of course, recovery of payment without a certificate may be obtained when the employer consents to waive the condition which was clearly inserted for his own benefit and protection.

But the general rule remains. If the parties have agreed to be bound by the certificate of a third person on whom they have also agreed, it is not ordinarily competent for a court of law to intervene if that person should neglect to certify.

This was well stated by Lord Justice Mellish in Sharpe *v.* San Paulo Railway. "Whenever," he said, "according [1873, L.R. 8 ch. p. 612] to the true construction of the contract. the party only agrees to pay what is certified by an engineer, or what is found due by the arbitrator, and there is no agreement to pay otherwise, that is to say, in every case where the certificate of the engineer or arbitrator is made a condition precedent to the right to recover, there the court has no right to dispense with that which the parties have made a condition precedent, unless, of course, there has been some conduct on the part of the engineer or the company which may make it inequitable that the condition precedent should be relied on. If nothing of that sort has happened, then the parties are bound by that which they have made a condition precedent."

So, too, in the case of Scott *v.* Liverpool Corporation [(1858), 27 L.J. Ch. 641], where it was held by Chief Justice Erle that in law, where the engineer is interposed between the parties and made the absolute judge of the performance of the contractors, and where the contract gives no right to the contractors to demand payment and places no liability on the employers to pay unless the condition of obtaining the engineer's certificate has been fulfilled, the obtaining of such a certificate is a condition precedent to payment—save in the case of the agent's incapacity through collusion, corruption or otherwise. Similarly, in the same case, Vice-Chancellor Stuart held that neither was there in equity any right or power to impose on either of the parties to the contract any other terms than those they had prescribed for themselves, and by which they had agreed to be bound. "It is of the very essence of the contract," he said, "that no sum shall be considered due and owing to the plaintiffs on account of any of the works executed by them, unless the engineer shall certify the amount.'"

It is clear, however, if the employer has been guilty of any action which would amount to a prevention of the performance of the conditions of the contract affecting the delivery of the certificate, that the certificate may be dispensed with. It does not matter in such a case whether such action be in collusion with the architect or not. So, too, even where the architect be alone fraudulent in withholding the certificate, the employer can be proceeded against when it can be shown that he is utilising the fraud, or even the mere misconduct of the architect, in order to commit this breach of contract. Thus, in Smith *v.* the Howden Union [1890, Hudson, vol. II., p. 151, 3rd ed.], Lord Justice Vaughan Williams said: "The certificate of the engineer seems by the contract to be a condition precedent to the right to payment of the price and every part of it, and I find no case in which it has ever been held, either at law or in equity, that where a contract provides that the contractor, as a condition precedent to the right to payment, whether of intermediate instalments or of the final balance, must obtain the engineer's or the architect's certificate in writing, the price can become payable as such without the production of such certificate.

"The case of refusal by the engineer in collusion with the building owner to grant certificates is spoken of as an exception. It is not, however, really an exception. In such a case, the building owner and engineer fraudulently prevent the contractor from doing that which is necessary to obtain the price—namely, from getting the certificates, and what is recoverable by the contractor in such a case is not really the price, but damages." And the court held that while the employers had not colluded with the engineer they had adopted his acts, and the contractor's remedy was damages against the employer for wrongfully preventing the contractor from completing the contract work by wrongfully taking possession, the measure of damages being the amount to which presumably the contractor would have been entitled if the work had been completed, and had the engineer thereupon issued such a certificate as he ought to have issued.

But, passing from the cases where the employer is originally or becomes subsequently in fault, and those in which the architect acts fraudulently either by himself or in collusion, we reach the not unfamiliar case where, without evidence of fraud, the architect unreasonably or negligently fails to certify. It has been repeatedly said that in such a case the builder has no right of action against the building owner. Law insists upon the production of the certificate, and so does equity.

In Emden's text-book on "Building Contracts" (4th Ed.) it is stated on page 105 that "in cases where the certificate is negligently withheld by an architect, the usual clause, making his certificate a condition precedent to payment, places the builder in a very unfair position. It is always very difficult to prove collusion between the employer and the architect, and unless this can be done, or the particular case can be brought within the cases referred to at page 104 supra [of the text-book], the builder is practically left without a remedy."

The cases referred to at page 104 of the book do not deal with the point, but those on pp. 102 and 103 do; these are cases of collusion, fraud, or other prevention by the employer, which do not cover the case where the architect is not alleged to be acting fraudulently. This statement undoubtedly embodies the general impression, and it has been brought to my notice on several occasions in the course of my professional experience. I may add, too, that Hudson, in the 3rd (and latest edition of his work on "Building Contracts," states, on p. 418, that "mere unreasonable refusal of the architect to certify, acting on his own judgment without interference by the building owner, gives no ground of action to the builder against the employer."

From these statements it would seem that English law provided no relief for a person so hardly situated as a builder be if, owing simply to a negligent failure and omission on the part of the architect to certify, he should be unable to recover payment otherwise properly due and payable from the building owner. Somewhat curiously, however, amongst the cases collected in the 2nd vol. of Hudson's valuable work, but not included in Emden, is a case which appears to provide the remedy—Kellett *v.* New Mills Urban District Council, and it will be of interest to members of the building and allied industries to have this case brought to their notice.

In Kellett *v.* New Mills Urban District Council, the plaintiff had agreed to perform certain work for the defendant Council to the approval of the defendants' engineer, and it had been agreed by the defendants that they should pay the plaintiff upon the certificate of that engineer. Time went on, and the engineer never addressed himself to certify as to certain stages completed and amounts due, but, said the plaintiff, wrongfully refused or wrongfully and unreasonably delayed so to certify. The defendant Council was alleged to have taken advantage of their agent's refusal or his delay, and themselves deferred payment. No fraud was alleged. The case was heard on April 4th, 1900, and was tried by Phillimore J. and a special jury at the Manchester Assizes.

The defendants pleaded (in addition to other pleas) that by a clause in the agreement payments were to be made on the recommendation of the engineer only, at certain stated intervals and at an agreed ratio of the contract price, and the balance was to be paid after certificate of final satisfaction had been issued by the engineer; but no final certificate had been issued, nor had the engineer certified that the whole of the work was in a good and substantial statte of repair, and had been delivered up to his satisfaction as required by the contract.

The plaintiff's reply to this was that he had done all the work he had agreed to do; the engineer was the agent or servant of the defendant Council for the purpose of certifying; the engineer had not addressed himself to discharge his duty as such agent or servant by certifying what was the date of the completion of the work, and what was due to the plaintiff on such completion; but the engineer wilfully, arbitrarily, and persistently refused to so certify, and thereby became and was discharged from his position as engineer under the contract; and the defendants, knowing of such refusal, took advantage of it so as to prevent the plaintiff from recovering the amount due on such completion of the work. The plaintiff, while not alleging fraud, submitted that this conduct of the defendant Council amounted in equity to a fraud upon the plaintiff's right under the contract, and entitled him to the relief claim.

It was found by the jury that the plaintiff completed the work in December, 1897; that no certificate of completion had been given; that the engineer had not addressed himself to determine and certify, but had wrongfully refused or wrongfully and unreasonably delayed so to do; that the defendant Council was aware of such refusal or delay, and took advantage of the same by refusing or unreasonably delaying payment.

Phillimore J., in giving judgment for the plaintiff, pointed out that "the decisions are clear where the employer colludes with the engineer, surveyor or valuer, it is right to pass the engineer, surveyor or valuer by, and seek the determination of the courts as in an ordinary contract; and I see no difference between the misconduct of the engineer, surveyor, or valuer being procured by the employer, and by the employer knowingly taking advantage of the man's original misconduct. . . . I think they (the defendants) knew here not merely that their man was not certifying, but that he was going through the process of pretended enquiry, which was almost worse than his refusing to enquire; and I think that they were bound in those circumstances to have taken some very decided action on their part. I may add that it does not at all follow that the plainttiff is as well off if they do appoint another surveyor, because he may get his money, but get it only after very much greater delay. One of the grounds of complaint is the delay. One of the great grounds is that he does not get his money when he ought to get it and, at any rate, I think the verdict of the jury was right and that the answers of the jury are right."

Mr. Justice Phillimore, in his judgment, practically adopted the language which was made use of by Lord Chancellor Cottenham in 1850 in Macintosh *v.* The Great Western Railway [19 L.J. Ch. 374].

In that case the plaintiff could not obtain payment because the certificate of the engineer was a condition precedent and the engineer had refused to certify. "Their inability to do so," said Lord Cottenham, "has arisen from the acts of the defendants or their agent; and whether acts arose originally from any fraudulent motive or not, I think that to use them for the purpose of defeating the plaintiff's remedy would constitute a fraud which the court will not permit the defendants to avail themselves of, and that therefore they are precluded from raising any objections they rely upon to the plaintiff's equity."

It would, therefore, seem that where an architect unreasonably refuses or delays to determine and certify, and where, in consequence, the building owner also refuses or delays to make the payment which would have been due and payable according to the contract upon the issue of the architect's certificate, it is now possible in equity, if not in law, for a builder to plead that such refusal or delay on the part of the building owner amounts to collusion with the architect in that the building owner is knowingly taking advantage of his agent's misconduct and to a prevention by the building owner of the builder's right to receive or recover payment for the work done in accordance with the contract.

This decision is of great importance to the building and the allied industries, and, although Mr. Justice Phillimore pointed out that in a sense Kellett *v.* New Mills Urban District Council was a new case, and that he anticipated its going further, his judgment has not been taken to the Court of Appeal, and it stands to-day.

SCUMMED OR WHITENED BRICKS.

A Curious Preference.

By A. B. Searle.

In the course of an arbitration case, in which the evidence of a number of architects of good local reputation was taken, it was astonishing to find how many of these gentlemen believed that scummed or whitened bricks are harder than other bricks with a clean surface.

I am not prepared to specify the precise district where this opinion is rife, except by stating that it extends over almost the whole of one of the largest counties in England, but the facts are so interesting as to be well worth notice outside the limits of the arbitration case itself.

In the district referred to, the bricks are almost invariably produced in a slightly scummed condition, and this scum during the firing produces a thin glaze on the surface of the bricks, giving them a vitrified appearance, though on breaking them this vitrified portion is found to be about the thickness of a fly's wing. One enterprising firm installed a kiln of an entirely different pattern from any others used in the neighbourhood, and found to his dismay that the bricks produced in it were refused by a local architect, on the ground that their appearance showed them to be insufficiently burned. An investigation followed, in which it was shown that the bricks from the new kiln were actually harder and more completely fired than were any other bricks made within a twenty miles radius. They were also stronger, in spite of their not having this pseudo-vitrified appearance, which gave them a false resemblance to vitrified bricks.

The architect still persisting in his opinion, various others were called in, and the amazing opinion was elicited from almost all of them that "it was commonly understood among architects and builders that bricks having the appearance of the samples under discussion were harder than those having a dull face, like the bricks from the new kiln"! When the matter was explained to them more fully, they agreed that they were misled by appearances, but still held that most architects would have expressed a similar opinion.

If this is the case, it points to a curious misconception on the part of architects and builders generally on the relation between a slight glaze on the surface of a brick and its strength. To de-

termine whether a brick is partially vitrified, it is not sufficient to see that the surface is non-absorbent; the brick must be broken so as to expose a portion of the interior, and this must be examined before a definite opinion can be rightly expressed. It may frequently happen that with certain clays a slight scum of various salts will form on the brick during the drying or earlier stages of firing, and this is due to the soluble matter in the clay being drawn to the surface, and deposited there by the evaporating water which is removed from the bricks by the heat. This thin scum, on further heating, attacks the clay on which it is found, and produces a glaze not unlike the well-known "salt-glaze" on drain-pipes, but very much thinner. In some cases this glaze is so thin as to be unmeasurable. When it occurs in patches, no one is deceived, but when the scum-glaze is spread fairly evenly over the surface, it may mislead those who have not studied the subject fully, and may in some cases lead to serious injustice to the brickmaker or merchant. By chipping off a large fragment from a brick, and examining the fracture, the difference between a vitrified or partially vitrified brick and one which is merely surface-glazed in parts can be readily seen.

FRENCH SCAFFOLDING.

By A. G. H. THATCHER.

(*Concluded from page* 370.)

Painters' boats are constructed similarly to ours, but again with an important difference. The iron strap to which the hoisting fall is hooked is made much lower (Fig. 19) than with us. Consequently, when the boat is occupied, the point of support being lower in relation to the centre of gravity, it had an increased tendency to roll. Messeiur is, however, ready with an ingenious remedy. By fixing a padded arm, as shown in the diagram, to press against the building, the rolling tendency, which is increased when the workmen are on the inner side of the boat, actually keeps the whole arrangement steadier than it otherwise would be.

Fig. 20 shows a method of erecting raking shores. Each system is cross-braced with that adjoining, but it possesses a peculiarity which is novel to us. Each shore butts at its top end against a needle, but the wall plate is dispensed with.

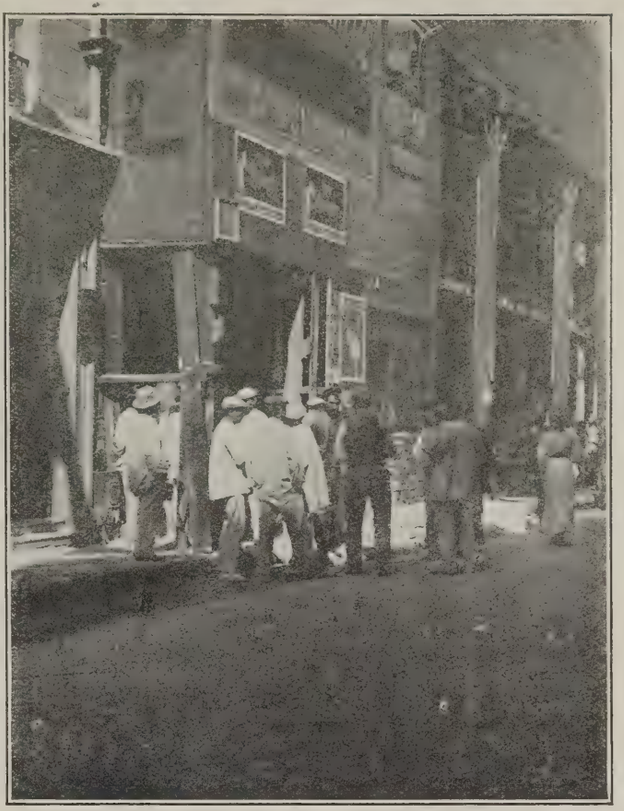


FIG. 21.

Fig. 21 shows a typical group of French workmen, taken during the dinner-hour. Notice will be taken of the blouses and overalls, a custom which bespeaks tidyness, if not cleanliness, and which is worthy of more general adoption.

In reviewing generally these details, one thing particularly impresses the observer. Although the dangers which always exist with temporary structures, such as scaffolding, cannot be greater in France than in this country, one fact is certain—that when calculating for the safe conduct of building operations a considerably less margin of safety is allowed for than with us. It is difficult to know why this should be so. Building accidents, which always draw attention to these matters, have been considered in France, and regulations provided to minimise the dangers. Nevertheless, materials are lighter and methods are not so finished. It leads, perhaps, to some extent, to the idea that building regulations should aim largely to prevent actual defined risks, such as men falling, than interfere with the more scientific side of the question. Scaffolding in France, whether or not it is governed by the rule of thumb methods which so largely obtain here, shows an observance to scientific principles which must be sufficient, or else the actual collapse of such structures would be more frequently heard of.

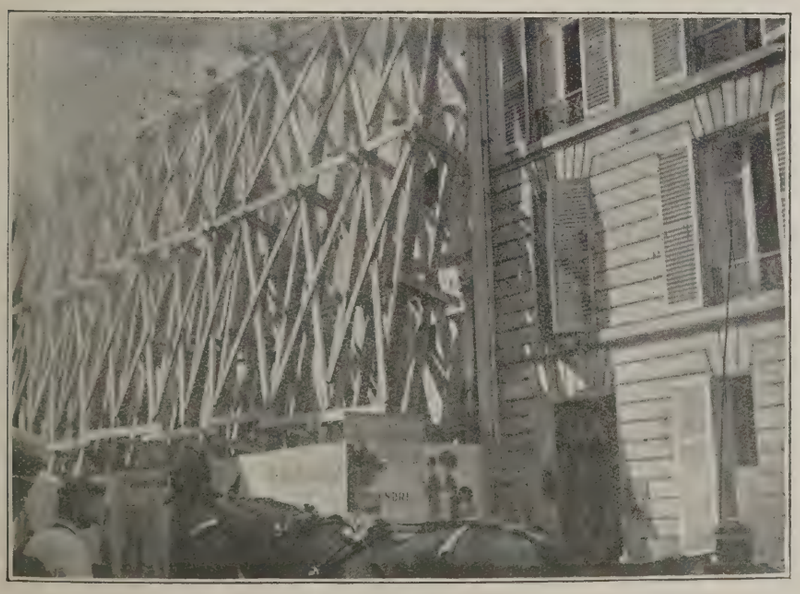


FIG. 20.

Law Case.

School Buildings and Notice to Surveyors.

At the West London Police Court, on November 24th, Mr. Garrett gave his decision in the case in which Thomas William Willis, district surveyor for Putney, summoned the London County Council for failing to give him notice of intention to erect a school building in Hotham Road, Putney. The defence was that the school building came within the exemption clauses of the Act dealing with public buildings, and that the district surveyor, being the servant of the Council, could not be in a position superior to his employers. The magistrate was of opinion that the County Council were bound to give notice, and he therefore imposed a nominal penalty of 20s., to enable the opinion of the High Court to be taken on a special case.

LABOUR CO-PARTNERSHIP & THE BUILDING TRADE.

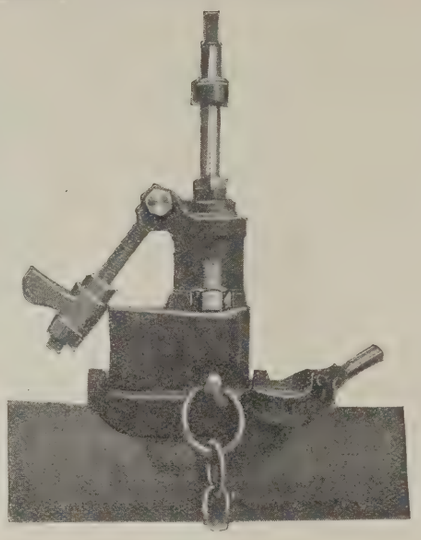
The annual meeting of the Labour Co-Partnership Association was held on December 1st at the Church House, Westminster. Mr. Shackleton, M.P., presided. Mr. Vivian, M.P., the secretary, referred to the numerous letters approving of the objects of the association received from Cabinet Ministers, members of Parliament, dignitaries of the Church, and others. Mr. Balfour, as president, in his address, dealt with the value of labour co-partnership in not only removing the antagonism so often existing between labour and capital, but in going deeper than this by increasing the worker's interest in what was essentially his life's work. He was convinced that the real interest of a man's life was not in the money he earned by his work, but in the satisfaction he had in the general result of that work. The actual processes might be monotonous, and indeed the necessary sub-division of labour in modern productive methods made them so; but if a man could feel that he had an interest in the general result, and could take pride in it, that man felt a satisfaction which no mere money payment could afford him. In his opinion, this could be best done by means of co-partnership. He was also desirous of seeing the principle applied to agriculture, so that the agricultural labourer might be admitted to co-partnership with his employer.

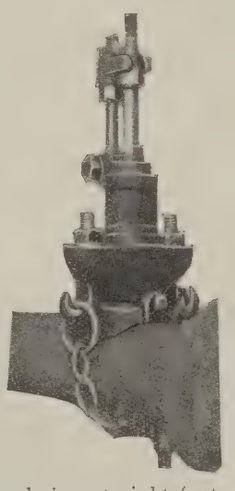
Sir Christopher Furness, in moving a vote of thanks to Mr. Balfour, stated that as the result of an investigation in the concerns with which he was connected, the wastage in one year, due to sectional strikes in which the emloyers were not really concerned, amounted to 21¼ per cent. of the wages paid, and represented a loss of 9¼ per cent. on the capital employed. It was a consideration of these facts which had led him to propose a scheme of co-partnership to his workpeople. The annual report refers to some 28 industrial concerns which have adopted co-partnership arrangements of one kind or another with satisfactory results. Two of the concerns are engaged in the building trade. The building trade would appear to present unusual difficulties to the adoption of co-partnership because of the fluctuating character of the personal employee, and yet there is no industry where some system of interesting the men in the quality and quantity of the product is more needed. At this time, when many building businesses are being converted into limited companies, it might be well if this question of labour co-partnership received the careful attention of building trade employers.

CONTRACTORS' PLANT.

The "Donnelly" Under-pressure Gas and Water Main Tapping Appratus, with Ferrule.

This machine is very small, size of body, 8in. by 6½in. by 3½ins.; light, and handy; being of less bulk and weight than the ordinary "non-pressure" apparatus, the total weight, including saddle and bolts, being less than 22lbs. Notwithstanding that the casting is in ⅜in. cast-iron at its weakest point, it is exceptionally strong, on account of its small size and special construction, and is tested to over 300ft. head of water. It has fewer parts than any other "under-pressure" machine, there being no valve or lever to operate when placing the ferrule in position, the whole operation being actuated by the drill spindle. Any unskilled workman can use it without difficulty. The attachment for putting on pressure to drill spindle is handier and less cumbersome than the usual methods in vogue. The reduced size, and fewness of parts, makes it possible to place the machine on the market at a very low cost, it being unnecessary to use special metals to secure lightness. It is especially advantageous for gas tappings, an ordinary tapered gas nipple with a plug of cotton waste or hemp being used in place of the stop ferrule, or a stop nipple in "wrought iron" can be supplied at about 50 per cent. on the cost of ordinary W.I. nipples.





The ferrule is a straight (not a branch) full-way ferrule. It has no loose parts, (beyond the union for connecting to service pipe), at which leakage can occur. It is impossible for a careless workmen to leave the valve partly turned on. It must be on full to complete connection to service pipe. It can be used with equal facility for tapping either on side of main (which most engineers now favour) or on top, and gives a straight lead for service pipe in either position. Can be used at any time for repairs to service, and no special key or cover is needed in connection with the ferrule.

A demonstration of the apparatus, which has been invented and protected by Mr. S. H. Donnelly, one of the engineering staff of the First Garden City Co., Ltd., Letchworth, was given recently, in the presence of Messrs. H. D. Pearsall, M.I.C.E., W. W. Parkinson, A. W. E. Bullmore, W. E. Wort, E. Underwood, C. F. Ball, and a representative of the Metropolitan Water Board. A 4in. main was tapped and a connection made in 30 minutes.

SELF-SUPPORTING CURVED IRON ROOFS.

By T. McGill.

Iron roofs of this type, called "self-supporting" because no complete trusses are used, form a very economical covering where cheapness is desirable, and are largely used where temporary coverings are required, also in all classes of farm work, such as hay barns, shelters, etc. It will be observed that no rafters are used in the construction of these roofs, the galvanised corrugated sheets, together with light bracing bars, being all that is necessary for stability; special care, however, must be used during erection to ensure that the sheets are properly fixed, otherwise a very unsightly appearance will be given to the roof, owing to the sheets not being level.

Limitations of this Type of Roof.

Roofs of this type have been erected up to spans of about 60ft., but cannot be recommended beyond spans much exceeding 30ft., as it is better in such cases to use a proper truss or principal with curved rafter member, the sheets being used only as a covering. In "self-supporting" roofs, the "rise," or height from springing to the underside of the sheets at crown, is usually made 9-40ths of the span (*i.e.*, between 1-4th and 1-5th), and the "rise" or camber of the main tie-rods, about 1in. per foot of sloping tie, or, say, a total camber (measured at centre of span) of 1-30th to 1-40th of the span. The radius of the curve for the sheets may be found as follows:—Let

Let R = radius of curve; r = versine or rise; s = chord or span; then $R = \frac{S^2}{8r} + \frac{r}{2}$

Example: Span = 20ft. 0in., then $\text{rise} = \frac{20 \times 9}{40} = \frac{9}{2} = 4\text{ft. } 6\text{in.}$, and $\text{radius} = \frac{20^2}{8 \times 4\text{-}5} + \frac{4\text{-}5}{2} = 11\text{-}112 + 2\text{-}25 = 13\text{-}36 = 13\text{ft. } 4\frac{5}{16}\text{in.}$

Details of Construction.

A simple rule for finding the length round the curve where the rise is 9-40ths of span, quite near enough for all practical purposes, is l = span x 1.13, where l = length round curve from springing to springing. The spacing of the bracing is usually from about 8ft. to 9ft. centres, and should never exceed 10ft. for ordinary cases; the arrangement and sections of the various members being as given in Table No. 1.

The method of fixing the tie-rods to the sheets is shown in Figs. 1 and 2; the tie being passed through a hole in the sheets and fitted with double hexagonal nuts and two large galvanised corrugated washers curved to fit the corrugations, one outside and one inside the roof. The struts are fixed in much the same manner. The strut itself being what is termed "cut-kneed" to suit the curve of the roof, a large galvanised corrugated washer is placed on the outside, and the whole is bolted together with two ordinary hexagonal bolts and nuts, as shown in Fig. 3. The centre joint for the three different forms of bracing is shown in Figs. 4, 5, and 6, respectively, where two alternative methods are given,

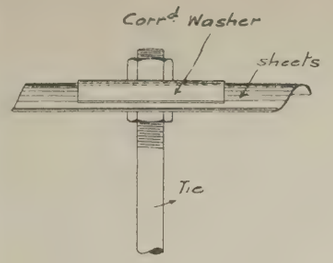


Fig 1.

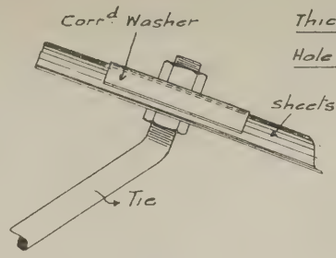
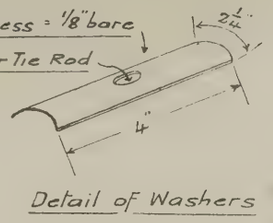


Fig 2



Detail of Washers

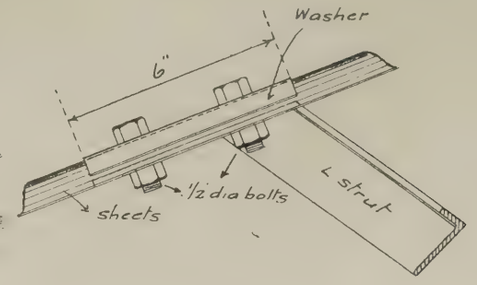


Fig 3.

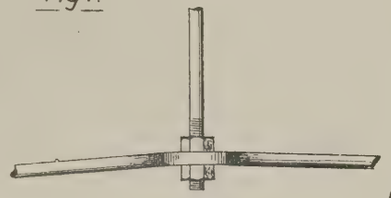
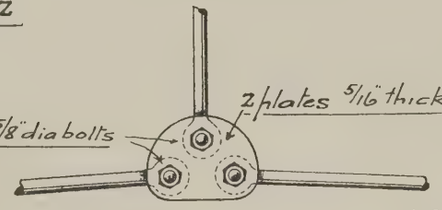


Fig 4.



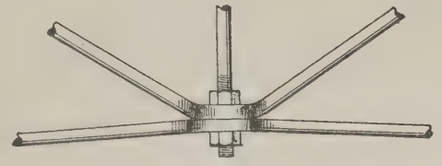
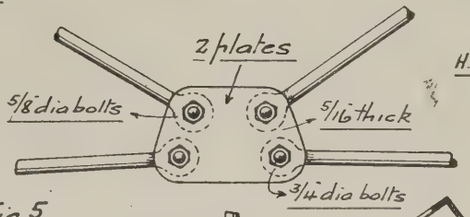


Fig 5



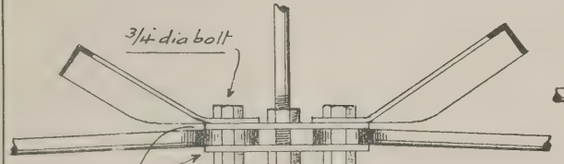
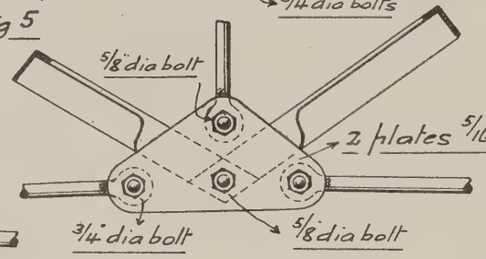


Fig 6.



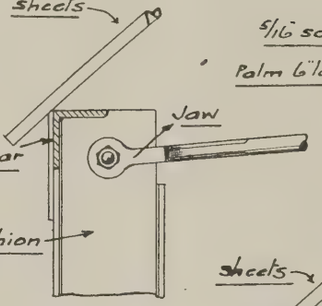


Fig 7

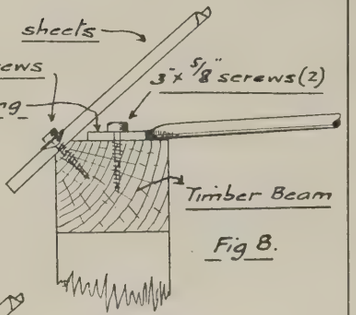


Fig 8.

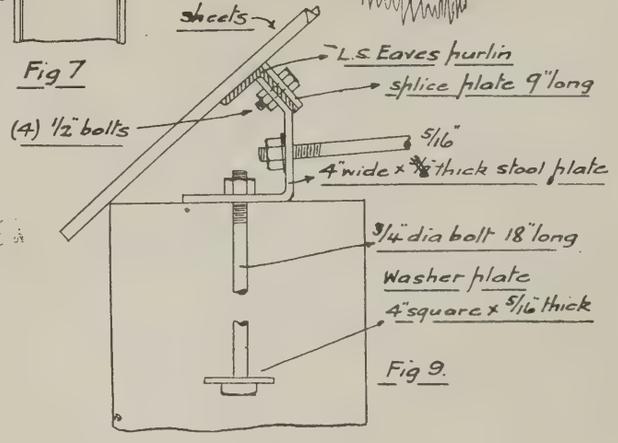
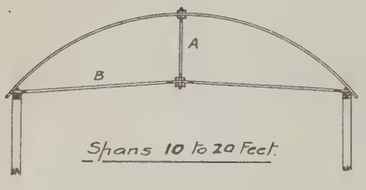


Fig 9.

SELF SUPPORTING CURVED IRON ROOFS. DETAILS.

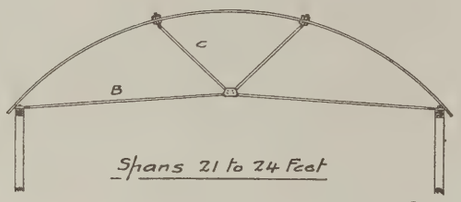
Types of Bracing

No 1.



Spans 10 to 20 Feet

No 2.



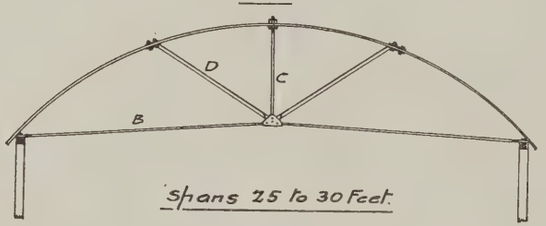
Spans 21 to 24 Feet

Table of Scantlings. No 1

Span in Feet	Type	Bracings				Guage of sheets
		A	B	C	D	
10 to 15	No 1	5/8" dia	5/8" dia	—	—	No 24
16 to 20	No 1	5/8" dia	3/4" dia	—	—	No 22
21 to 23	No 2	—	3/4" dia	3/4" dia	—	No 22
24	No 2	—	7/8" dia	3/4" dia	—	No 22
25 to 27	No 3	—	7/8" dia	3/4" dia	$1\frac{3}{4}" \times 1\frac{3}{4}" \times \frac{1}{4}"$ L	No 20
28 to 30	No 3	—	7/8" dia	3/4" dia	$2" \times 2" \times \frac{1}{4}"$ L	No 20

Note :- Above scantlings suitable for all spacings of bracings up to and including 12'-0" centres.

No 3.



Spans 25 to 30 Feet

the joint being formed either with or without plates. A good method of fixing the main tie-rod to rolled steel joist stanchions is shown in Fig. 7, the inner flange of the joist being cut away for a depth of 4 or 5 ins., and a jaw formed on the end of the rod, which is bolted to the web of the stanchion. Where the main tie is fixed to a timber eaves beam, a flat steel palm is welded on to the end of the rod, and screwed to the beam, as shown in Fig. 8; and in the case of a roof on brick walls, the main tie is passed through a steel plate bent to form a kind of stool, and fixed with a nut on the outside, the stool plate being fixed to the wall by means of an anchor bolt and washer plate, which is at first built in loosely, and afterwards grouted up with cement. The stool-plate also forms a support for the angle-steel eaves purlin to which the sheets are fixed, the purlin being broken over the centre of the plate and spliced at the joint, as shown in Fig. 9.

(To be concluded.)

SCALES FOR ENGLISH & METRICAL MEASUREMENTS.

By W. E. Barker.

It is now becoming a general practice in modern engineering drawing offices to prepare all drawings for export work with the dimensions clearly figured thereon both to English and metrical scales.

The usual method of calculating metrical equivalents is not only irksome, but takes up a good amount of time. Tables, of course, can be referred to, and this, perhaps, is what is generally done. Referring to tables, however, is not nearly so direct nor so handy as scaling from the drawing and reading the result either to English or metrical scale from the scale itself.

With the scales at present in use, this cannot be done, but by making two scales, one to metrical and the other to English measurements, both reduced, say, to 1/100 to 1/50 full-size, all difficulty disappears.

Suppose, for instance, that we decide to make a drawing 1/50 full size—which will mean drawing to a metrical scale of two centimetres equalling one metre. Plot a scale to this on the drawing, about 12in. long, then plot another scale underneath exactly 12in. in length. Divide this second scale into 50 equal parts, which parts will represent English feet 1/50 full size, *i.e.*, to the same scale in fact as the metrical scale, which is also plotted 1/50 full size.

Further divide the first foot and the first metre on the left-hand side of the scales into 12 parts and 10 parts respectively. The scales are now ready for use.

If a smaller scale is required, all that is necessary is to increase the scale values. For example, to make the scales read 1/100 full-size, each foot on the English scale will read as two feet, and each metre on the metrical scale as two metres, and so on.

If a larger scale is necessary, say, 1/25 full size, the process is reversed. Two feet on the English scale will then represent one foot, and two metres on the metrical scale will read as one metre.

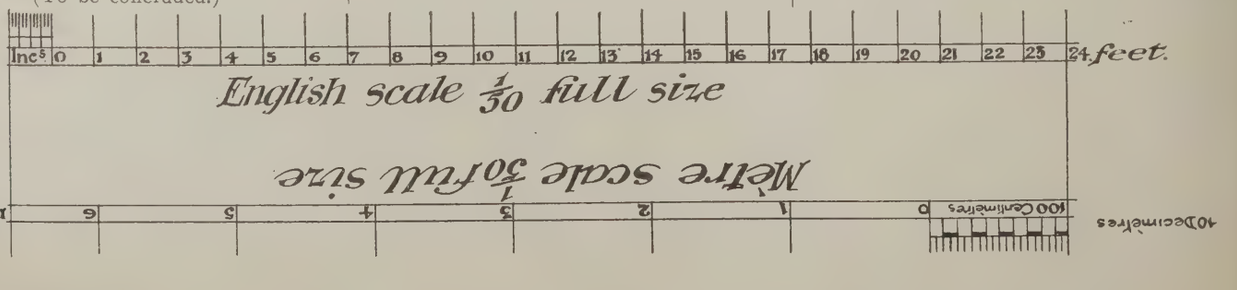
The accompanying scale, drawn to a 1/50 full-size, clearly explains the scheme, which should prove useful to draughtsmen.

LIVERPOOL SCHOOL OF ARCHITECTURE.

The Council of the University of Liverpool had laid before them at their meeting on December 1st a generous offer made by Mr. W. H. Lever, M.P.

The object is to facilitate the study of town planning, and Mr. Lever offers to provide annually, for three years, a sum of not less than £500, and, subject to the needs of the case, not more than £1,000, to be expended on instruction and research as to methods in town planning and architectural landscape. It is suggested that, for the first year at any rate, the greater portion of the grant will go towards a commission of investigation, nominated partly by the University and partly by Mr. Lever, who will visit those countries where the subject has already made any progress. It is then believed that lectures, embodying the report of the commission, and treating of the subject generally, will be instituted. The conspicuous examples of successful town planning in our own country, in addition to Port Sunlight, are, of course, Bournville and Letchworth, and on a smaller scale the schemes of the Normanton Colliery Co. and Sir William Hartley at Aintree, near Liverpool.

The appeal for funds for the preservation of the ancient entrance to St. Bartholomew-the-Great, West Smithfield, is meeting with a fairly liberal response, £600 having been already subscribed towards the £2,075 needed.



Matters of Opinion.

No. 1 (continued).—The Increased Employment of Specialist Contractors.

The following opinion has been received from the BURY AND DISTRICT MASTER BUILDERS' ASSOCIATION:—

In connection with the above question, and the employment of specialists in architectural work, this is a matter that does not affect the town of Bury to the same extent as it probably affects very large towns. Nevertheless, it is a matter about which builders here, at times, get very sore. For instance, it is manifestly unfair to any builder to find items like the following in a set of quantities:—"Allow the p.c. sum of £50 for sanitary fittings, and allow for carriage of same, cartage, unloading, and return of empties."

"Add builders' profit and attendance on workmen fixing same."

Or, again, "Allow the p.c. sum of £50 for carving, and provide all scaffolding and protection to workmen engaged on the work, and add builders' profit."

The same remark applies to fibrous plaster work, electrical installations, etc. Many other parts of the building trade which in days gone by were all part and parcel of the craftsman's business, are to-day put under the name of "Specialists' Items."

If architects are determined to employ these specialists, then what we say they ought to do is, to make the p.c. sum cover the whole of the work in connection with such specialists' items, and not let the specialist go scot-free, as it were, and the builder have to guess at what he considers is a suitable allowance to make. The builder should be paid in the same way as the specialist for what he does. That is to say, the amount of p.c. items should cover all the work in connection with the particular item, and the specialist, if nominated by the architect, should be responsible for his own work.

Many other cases could be mentioned, all coming into the same category of objection, but these, we think, are sufficient for the present.

On the other hand, in the North of England the question of proper quantities often enough puzzles the builder—as, for instance, "One tracery window to detail, complete." Or, again, "One oak entrance door, with frame, casings, lock, etc., complete."

This is also a matter the builders think should be taken up if equitable and reliable tenders are to be obtained.

IN PARLIAMENT.

(By our Press Gallery Representative.)

Durability of Norwegian Timber.

A question recently addressed to the Postmaster-General with regard to telegraph poles has elicited the answer that experts support the view that home-grown is not more durable than Norwegian timber, and cannot be creosoted to the same advantage.

Composition of Royal Commission on Ancient Monuments.

Major Anstruther-Gray asked the Prime Minister whether he was aware that while societies, such as the Royal Archæological Institute, the Royal Institute of British Architects, and the British Archæological Association were formally invited to submit names to serve on the English Historical Monuments Commission, no such invitation was sent to the Society of Antiquaries of London. Mr. Asquith, in reply, said:—"As I was unaware who among the members of the societies referred to by the hon. member was best suited to assist on the Royal Commission on Ancient Monuments, I invited those societies to submit names to me. The prominent position of the Society of Antiquaries made it necessary for me to follow the same course in their case, and, in accordance with usual practice, I used my own discretion in the selection of members from the body to serve on the Comsion. The fact that out of eleven members of the Commission five are Fellows of the Society of Antiquaries, one of them having been President of the Society for many years, should, to my mind, be sufficient proof that neither in intention nor in practice has the Society of Antiquaries been ignored.

Extension of the Law Courts.

Mr. Bowles again raised the question of building additional law courts at an estimated cost of £95,000 on the open space at the western side of the existing Law Courts, and the consequent destruction of the open space in consequence. He wanted to know what circumstances had arisen which rendered the immediate erection of the new buildings necessary.

Mr. Harcourt, who has frequently stated the determination of H.M. Board of Works to carry out the scheme referred to, replied that the necessity arose owing to the inadequate accommodation afforded by the existing Law Courts. The open space had always been reserved for the purpose of erecting additional Law Courts.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.
Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Right to Erect Hoarding.

KINGSTON-ON-THAMES.—A. G. T. writes: "A is leaseholder of ground occupied by premises shown on sketch plan (not reproduced). He is also owner of premises 1, 2, 3, etc. B is tenant, and has recently acquired the leasehold of corner premises. He has since erected the advertisement hoarding shown. Can A, by virtue of being ground landlord, legally compel B to remove this hoarding, or must he prove that light to rear windows of premises has been interfered with?"

The question is unfortunately not very clearly put, but I conclude that the premises marked "1, 2, and 3" are held by A *as leaseholder* (under another and superior landlord, who owns the freehold), and that A lets all three of the premises to B at rack rental. B has acquired the lease of the adjoining premises X, and holds them quite independently of A. If this be a true statement of the case, it follows that B holds two quite distinct properties, and each must therefore be dealt with as though belonging to, and as occupied by, two different persons; and it will be necessary to prove a substantial loss of light to the windows of premises No. 1, before the hoarding can be removed. The only other chance A has of remedying the nuisance is to appeal to the freeholder (if all the properties should happen to belong to one man); and even he cannot deal with it, unless the terms of the lease are violated by the erection of the advertisement hoarding. F.S.I.

KENT.—BROBEAT writes: "Please favour we with particulars as to climate, cost of living, etc., in the Argentine."

Salaries in the Argentine Republic are, we are given to understand, equal in purchasing power to about two-thirds of the same amount here. The extra cost of living and house rent makes the difference. There are a very large number of British, particularly Scotch, people living in the Argentine, mostly professional men. We believe that the climate is good. At Rio de Janeiro there are occasionally epidemics of yellow fever; but since the advent of European engineers, the sanitary condition and equipment of the Argentine towns has been greatly improved. These are all the particulars we can furnish our correspondent with at the moment. Perhaps some of our Argentine readers will oblige in greater detail.

Duties of Estate Steward.

MANCHESTER.—CONSTANT writes:—"What are the qualifications and duties of an estate steward? Please indicate a course of study to enable one to take a situation in this capacity. What are the prospects?

This is a very wide question, because the management of landed estate covers the whole range of the control of property of every kind, and it refers as well to the highly-trained professional man as to the working farm bailiff. Narrowing the question to refer to the control of a small country property, the duties of a steward would include the management of land in hand, as well as the control of the men employed in the woods and other departments, and possibly the game and park-keepers, gardeners, etc., etc., the purchase and sale of supplies and of produce, and the hundred and one things that are always occurring round and about a house in the country. In addition a steward will probably have to deal with the tenants of the farms that are let, and to receive the rents and pay the outgoings, and to do the repairs and so forth—a position calling not only for business training, but also for great tact and discretion. The course of study depends a very great deal on the exact position that is required, but, speaking generally, the only way to learn is to become actually engaged in the work itself—in the higher grades it is usual for a learner to enter the office of someone managing estates, either as a pupil or as a clerk; and in the lower capacities, one must engage as an assistant farm bailiff or wood reeve, etc., working one's way up as occasion serves. The Surveyors' Institution is the highest professional body which undertakes this educational work, and the syllabus of examination may be obtained from the Secretary, at 12, Great George, Street Westminster, on payment of one shilling and sixpence. There is work for really good men in all grades, but unfortunately there are numbers of "misfits" in other callings engaged in crowding this calling also. F.S.I.

THE ARCHITECT'S BUREAU.

Standardising Manufacturers' Circulars.

At the Holborn Restaurant, on November 24th, an interesting selection of building specialities was inspected by the committee of the Architects' Technical Bureau. A new feature is being inaugurated by the bureau for the purpose of alleviating to some extent the difficulty experienced by architects endeavouring to keep in touch with manufacturers' circulars sent through the post. It is recognised that more than three parts of these are consigned to the waste-paper basket without perusal. This waste represents not only a dead loss of money to the manufacturers, but it also implies that articles of considerable interest to an architect are frequently passed over. Even in those cases where the architect endeavours to read all the matter placed before him, the entire want of standarisation in shape and size makes it almost impossible to keep it in any form handy for reference. His difficulty in coping with manufacturers' circulars is further increased by the absence of samples or models, and also by the tendency of manufacturers to express themselves somewhat too freely as to the merits of their goods.

The bureau is adopting a standard form of circular, and providing its subscribers with loose-page filing folios for the various trades, to aid classification. Manufacturers submit the proposed form of circular, and also a sample or model to the committee, and are in attendance to give explanations. Should it be considered of sufficient interest to an architect, the circular bearing the bureau badge is sent out to all the subscribers. The manufacturers supply the circulars, and defray the cost of the postage. Twelve articles were in this way passed by the committee, the circulars of which will shortly be despatched to the subscribers, together with the folios for filing purposes

The subjects passed are, briefly, as follows:—

1. *"Burmantoft's Marmo Terra Cotta."*—Manufacturers, Messrs. The Leeds Fireclay Co., 2 and 3, Norfolk Street, Strand. This is a terra-cotta faced with an impervous leadless glaze, giving an appearance akin to marble. It can be produced in a variety of colours, and lends itself especially, though not necessarily, to ornamental work, in which case a considerable saving in the case as against stone would be effected by its use. The material is described as practically imperishable, its impervious nature rendering it not liable to be affected by weather or atmospheric conditons.

2. *"The Honeycomb" Draughtless Inlet Ventilator.*—Messrs. Comyn, Ching and Co., Ltd., 54-58, Castle Street, Long Acre, are the manufacturers of this ventilator. It is claimed to be draughtless, hygenic, and cleansing, and is made in pottery ware, with cast-iron frame and rim, and can be obtained in various colours. The air is split into fragments on passing through the ventilator, and is directed upwards. The fitting is easily taken out for cleaning purposes.

3. *"Moule's Earth Closet."*—Manufacturers, Messrs. Moule's Patent Earth Closet Co., Ltd., 5a, Garrick Street, W.C. This fitting is now made in thirty different forms, suited to various classes of users and the exigencies of position and required cost. They can be placed wherever a closet is desired. Absolute sanitation is claimed even where a water supply cannot be had, or where no drains exist.

4. *Silent Electric Clocks.*—Maker, Mr. G. B. Bowell, Terminus Chambers, Holborn Viaduct, E.C. This system is suitable for any building having a large number of rooms where uniform and correct time is desired, and is said to be the only make of electric clocks where complete silence is obtained in the movements. The system, we understand, has been installed in the Piccadilly Hotel (amongst other buildings) with 300 dials.

5. *The "Guild" Gas Stove.*—Manufactured by Messrs. the Birmingham Guild of Handicraft, Ltd., 7, Newman Street, W. It is a small, convenient fitting, in bronze or iron, of artistic design. It stands 16½in. high by 12in. wide, and is especially suitable for bedrooms, studios, or small rooms, where an occasional fire is required.

6. *Solignum Wood Preserving Stain.*—Messrs. Major and Co., Ltd., of Hull, supply this stain in a variety of colours. It is stated to be a sure preventive of decay, dry-rot, or fungoid growths in wood, and also renders stone or brickwork waterproof.

7. *Breeze Partition Blocks.*—Makers, Messrs. S. and E. Collier, Ltd., Reading. These blocks are suitable for partition walls, are light, easily fixed, and will hold nails, and are economical in construction.

8. *Patent Interchangeable Key Lock.*—Messrs. the Ratner Safe Co., Ltd., 51, Moorgate Street, E.C. This is a lock with nine levers so arranged as to change automatically the combination on being operated by a new key, said to be absolutely unpickable and secure. Many thousands of keys can be made to this lock, all differing, and any one of these keys will lock it, but no key except the one in use will unlock it.

9. *Luxfer Fire-Resisting Glass.*—Manufactured by Messrs. the British Luxfer Prism Syndicate, Ltd., 16, Hill Street, Finsbury, E.C. This system of glazing, consisting of plates of small squares of polished plate or other glass, ¼in. thick, is glazed in copper ribbon cames, and the plate made up in a metal channel frame. It is accepted by the L.C.C. where fire-resisting glass is required, will resist over 1,500deg. F., and is very strong and firm.

10. *Free Flow Drain Pipe.*—Messrs. John Knowles and Co., 38, King's Road, St. Pancras. These drain pipes are formed with a double rebated socket, which preserves the true alignment of the pipes when laid.

11.—*"Marmocrete."*—Manufactured by Messrs. Arthur Lee and Bros., Ltd., Hayes, Middlesex. This is a patent system under which building blocks are made of concrete with an outer casing of hard material, such as marble. The casing is made with dovetail grooves, which ensure a perfect key with the inner mass of concrete. Considerable economy in cost, especially in situations where iron girders play an important part in construction, will be effected, as the wall veil can be made to fit round stanchions without waste of material or cost of cutting stone.

12. *"Fluate."*—Supplied by Messrs. the Bath Stone Firms, Ltd., Bath. "Fluate" is a clear, colourless liquid, which is applied to building stones, marbles, bricks, etc., for the purpose of waterproofing and preserving. The effect is permanent, and does not require periodical renewal.

The "Edwardian" chimney pot is to be fitted to all chimneys at the New General Hospital, Ramsgate, the London Hospital Convalescent Home at Walton-on-the-Naze; and is to be substituted for the existing pots at the Hydro, Skegness.

Proposed New Works.

Aberystwyth.—The sanction of the Local Government Board to a loan of £3,000 having been obtained, it has been decided to invite tenders for the erection of eighteen houses for workmen, in Skinner Street and Poplar Row.

Blackrock, Co. Dublin.—Blackrock U.D.C. has given notice of a large improvement scheme involving demolition and reconstruction in the following areas: Temple Road and Sweetman's Avenue, 32 houses; courts off Sweetman's Avenue, 53 houses, and other houses adjoining; and 16 houses and premises in George's Avenue, and court off same.

Bootle.—A scheme for the erection of from twenty-four to thirty-six working-class dwellings to cost £7,000, has been passed by the Town Council.

Carlow.—Resolutions have been passed, at an influential meeting, in favour of constructing of line of railway from Castlecomer to Carlow, to open up the colliery districts of the Queen's County. A strong committee was formed and a guarantee fund opened and subscribed to for the furtherance of the project.

Dublin.—The paving committee of the Dublin Corporation are arranging for a loan of £100,000, for paving and repairs in the city.

Hull.—Mr. H. R. Hooper, an inspector for the Local Government Board, has concluded an enquiry with respect to the application for sanction to a loan of £24,000 for electricity undertakings, and to another, of £73,550, for the completion of the scheme for rebuilding and extending the town hall.

Inverurie.—For a new post office to be built here, the design by Mr. G. Bennett Mitchell, of Aberdeen shows a building of granite, with polished facings.

London, S.E.—The sorting office at the South-Eastern District Post Office is to be carried out at once, at a cost of £1,100.

Liverpool.—The City Council has passed a scheme for the formation of an athletic ground or "city stadium" on the Edge Lane estate. The stadium, as planned by the city surveyor, is to be 670 ft. long and 370 ft. wide. The total cost is estimated at £50,000, and is made up of £18,000 for the land, £7,000 for excavation, and £25,000 for the structure. "Twenty-three years ago," said the chairman in submitting a report on the scheme, "the Corporation spent £9,000 on filling-in the ground, and now it was proposed to spend £7,000 in excavating it again."

Rastrick, Yorks.—The Bishop of Wakefield's scheme for church re-organisation includes the division of the parish of Rastrick, and the erection of a church for the St. John's portion of the parish, with a new church on a site already secured near Brighouse railway station.

Stourbridge.—The Urban District Council have decided to apply to the Local Government Board for sanction to a loan of £3,700 for street improvements in Stourbridge

Scorton, Yorks.—The work of rebuilding of the House of St. John of God, is to be put in hand early in the new year. The cost is estimated at £10,000.

Totnes.—The Town Council is considering the desirability of erecting a town hall.

Walker-on-Tyne.—At a special meeting of the Estate and Property Committee of Newcastle Corporation, on Nov. 17, it was decided to make an survey of land at Walker, on which it is proposed to make two new roads, at an estimated cost of several thousand pounds.

Some New London Buildings.

The Building Act Committee of the London County Council recommended the Council, at its meeting on Tuesday last, to consent to the following works:—

Consent to an excess of openings on the Oxford Street and Duke Street and Somerset Street frontages of a building to be erected upon a site abutting upon Oxford Street, Duke Street and Somerset Street, St. Marylebone; to the erection of such building to the height, to the lines and with a projecting cornice, as shown on the plans, dated 6th June, 1907, submitted with the application of Mr. R. F. Atkinson, on behalf of Selfridge and Waring, Ltd.

Erection of a building on the south-eastern side of Orchard Place, Poplar, and erection of a boundary wall at less than the prescribed distance from the centre of the roadway of Trinity Road, as shown on the plan, dated 12th October, 1908, submitted in connection with the application of Messrs. W. Dunn and R. Watson, on behalf of Messrs. Donald Currie and Co.

Erection of buildings abutting upon Azenby Road, Camberwell, to the lines shown on the plan, dated 13th November, 1908, submitted with the application of Messrs. Deakin and Cameron, on behalf of Mr. G. H. Stelling.

Erection of wooden bay-windows, porches and barge-boards to twenty houses on the southern side of Wendell Road, Hammersmith, between Rylett Crescent and Hartswood Road, and three houses on the western side of Rylett Crescent, as shown on the plans, submitted with the application of Mr. F. E. Rosser on behalf of Mr. W. Binfield.

Erection of a building on the northern side of Hanover Square, Westminster, to abut also upon the eastern side of Harewood Place, with Oriel windows, balconies and bay-windows, as shown on the plans, dated 10th November, 1908, submitted with the application of Mr. G. D. Martin.

Views and Reviews.

Structural Design.

This book is a very valuable one for giving data upon many aspects of the determination of stresses in various parts of structures. Unfortunately the majority of books on applied mechanics do not deal with the architectural or civil engineering side of practice. Mr. Andrews has kept this aspect before him first and foremost, and he has tackled many of the difficult problems that arise in practice, and dealt with them on a thoroughly theoretical basis. Many of the little difficulties that we find glossed over or entirely avoided in the majority of books are here dealt with at length, and the book will undoubtedly be of great value to all those who study it carefully. Mr. Andrews, however, deals with each problem so liberally, often resorting to higher mathematics, that, for many engineers in practice, we are afraid the book is not quite arranged in a manner to be of the greatest service to them. In offering this criticism we do not wish to decry the great value of the work which Mr. Andrews has performed; we feel that he has done great service; but we wish that that service could be more appreciated by the architectural and engineering profession. The book, in its present form, is a little too theoretical, if we may so call it. It has not quite sufficient practical or commercial value. Another point, too, although apparently a smaller one, lowers its value, namely, the fact that the illustrations are not drawn and lettered so clearly as we are accustomed to expect in books on engineering theory. The book, just issued by Prof. Morley, is much better in this respect, though even in that work the lettering is not so clear as it is in many American books. A standardised form of lettering seems to be current in the United States, and unfortunately our authors do not pay sufficient attention to such little details. A crude diagram is very difficult to interpret; spidery lettering is not clearly read, and clearness of expression and economy of time are not to be lightly disregarded by an author. The problem may appear very clear to him, but these little set-backs weary the reader. However, the book is extremely cheap, considering its large size. Reinforced concrete, as well as steelwork, is dealt with, though it is treated rather in a summary fashion. The practical aspect of modern structural steelwork in buildings—i.e., as applied to the steel-frame building, is illustrated by photographs and drawings of recently executed works, several of the illustrations being borrowed from this journal. A special feature is made of dealing with problems by graphic construction, as many engineers have not grasped the principles of the infinitesimal calculus, and even for those that understand that method of mathematical reasoning, graphical construction leads to a very clear realisation of the nature of many problems, and a better understanding than would be obtained from a higher mathematical treatment. We may, in this connection, draw the attention of authors of engineering text-books to the great clearness which can be obtained by the drawings of stress strain diagrams in isometrical or geometrical projection. By these means the geometrical nature of moment of inertia can be shown and grasped more obviously. By Mr. Andrews' elaborate treatment we see that clearly there are certain aspects in the modern theory of subjects which raise grave doubts as to its fitting in sufficiently accurately with actual conditions. Also many deficiencies in regard to information on important points become noticable; for instance, the strength of slabs or plates, shear stresses and beams.

"The Theory and Design of Structures," by Ewart S. Andrews, B.Sc.Eng. (Lond.). London: Chapman and Hall, Ltd., 9s. net.

Weighty Work on Cranes.

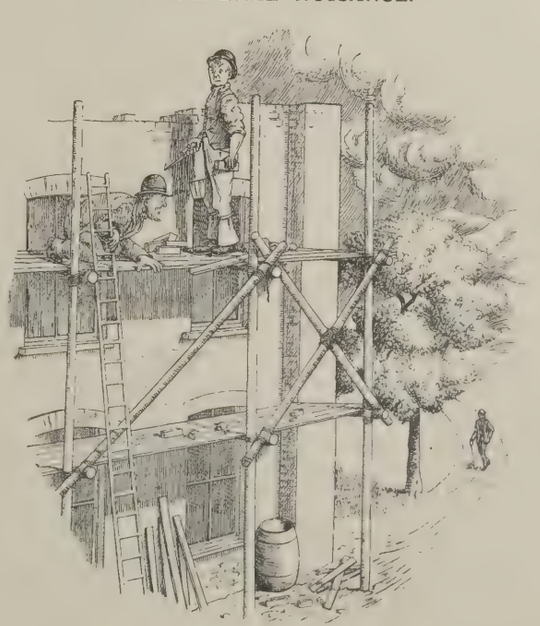
Such a colossal monograph as Böttcher and Tolhausen on Cranes could only have been produced, one may suppose, by German thoroughness, industry and patience. It contains 510 pages, and its mere bulk emphasises the utility of cranes. Doubtless it deals with the subject most scientifically and most exhaustively, and is a work that most engineers and contractors, and some few architects, will find of inestimable service. The chief author, Herr Anton Böttcher, enjoyed exceptional opportunities for investigation. When the Stettiner-Vulcan workshops were converted to electric driving, the firm carried out the rebuilding of a large number of cranes of different systems, and a close examination of the construction and particulars of working, down to the smallest detail, and therefore, provided a rich fund of experience, of which Herr Böttcher appears to have availed himself to the fullest possible extent. But he extended his investigations much further afield. In the summer of 1902, he tells us. he "took a holiday," visiting the principal seaports and industrial centres to gather information; which strikes us as being a distinctively German idea of a holiday. English, American, and Continental practice are dealt with by the translator, Mr. A. Tolhausen. No phase of the subject seems to have been neglected, and the result is a truly monumental work, for which engineers will doubtless be grateful. Plates, diagrams, tables, a bibliography of important articles and papers on cranes, and a full index enhance the value of a work that reflects great credit on publishers as well as authors.

Cranes: Their Construction, Mechanical Equipment and Working. By Anton Bottcher. Translated and supplemented with English, American, and Continental Practice by A. Tolhausen, C.E. London: Archibald Constable and Co., Ltd., 10, Orange Street, Leicester Square. Price 42s. net.

The Heating of Habitations.

As M. Debesson remarks in his introduction to this stout volume, although heating and ventilation are among the most important of the problems that the architect and the engineer are called upon to solve in collaboration, and although from the remotest times man has felt the necessity for artificial heating, nevertheless, it was not until the middle of the eighteenth century that these vital needs were treated at all scientifically. Until then the means of supplying warmth had remained barbarously primitive. Nowadays we are perhaps nearing the opsite extreme; for means or systems of heating, as the 711 diagrams and 670 pages of descriptive matter in this book attest, exist in almost bewildering variety. There is therefore the greater need for such guidance as M. Debesson affords as to principles, systems, and details. The book contains thirty-one chapters, of which only the last is concerned with ventilation, which is dealt with in a gossiping and superficial manner. There are, however, a few general observations on the subject in the "preliminary notions" that occupy Chapter I. These notions strike one as being somewhat elementary. Take, for example, the following passages: "In 1789, Lavoisier wrote: 'Respiration is simply a slow combustion of carbon and hydrogen, entirely similar to that which occurs in a burning candle or in a lighted lamp; and, from this point of view, animals are veritable combustible bodies, which burn and are self-consumed.'" To this the author rather superfluously adds, "In respiration, as in combustion, it is

THE GENERAL NUISANCE.



First Workman to second ditto: "'Ullo, 'ere's the Architect a-coming. Let's 'eave a brick at 'im."

the atmospheric air that supplies the oxygen; but, as it is the organic substance itself that is the combustible material, therefore, if animals did not, by absorbing aliment, habitually feed the vital flame, it would die out like that of a lamp that lacked oil." It is a pity to burden so good and useful a book with such crude commonplaces of the elementary school. Then, again, in the "History of Heating," which forms the subject of the second chapter, the perhaps appropriately primitive pictures showing how primitive man kindled his sticks to set his pot a-boiling could well have been spared. These and other superfluities, however, may be indulgently regarded as evidence of the author's desire for thoroughness. Chapters III. to VII. deal mainly with the theoretical physics of heating, and except that Chapter V. contains a collection of formulæ, it is not until the eighth chapter that the author really settles down to practical work. Here his remarks on the construction of chimneys and fireplaces may be read with attention, if not always with profit. Thenceforward the book becomes more pertinent to practice, and affords, it may be supposed, a very complete account, which is at all events very copiously illustrated, of what is being done in France in the heating of buildings, whether by grate or stove or steam, by high-pressure or low-pressure, by gas or by electricity, by petrol or by alcohol. M. Debesson seems to be very well acquainted with what has been done by his predecessors in the same field, but he has not always got their names exactly right. We note, for instance, "Farenheit," "Frédérick Dye," and "l'Anglais Trégold." The book would gain greatly by compression, and by the rigorous rejection of every item of which the practical value is not obvious and indubitable. It is too comprehensive and diffuse for the heating specialist, but it may well serve the purpose of the architect who desires an all-round general collection of principles and practice in the various systems of heating.

Le Chauffage des Habitations. Etude théorique et pratique des Procédés et Appareils employés pour le Chauffage des Edifices, des Maisons des Appartements. Par G. Debesson. Ouvrage contenant 711 figures intercalées dans le texte. Paris: H. Dunod et E. Pinat, éditeurs, 49, Quai des Grands-Augustins. 25 francs.

Cobham, Salop.—At a special meeting of Shrewsbury Town Council, it was agreed to accept the tender (£6,883) of Messrs. Treasure and Son, of Shrewsbury, for the erection of proposed new elementary schools in Cobham, and to make application to the Local Government Board for permission to borrow £10,633 in order to push forward public works in view of the present distress from unemployment.

Bankruptcies.

Ashforth, Geo. Hy., builder, 79, Scott Road, Pitsmoor, Sheffield. Adj., Nov. 26.

Broadhead, Jas. Wilson, builder and contractor, Westfield Terrace, Tanshelf Drive, Pontefract, late Featherstone. First meeting, O.R.'s, Wakefield, Dec. 7. P.E., C.C., same, Jan. 14, at 11.

Cayton, Thos., and Geo. Johnstone Cayton (trading as T. Cayton and Son), painters, decorators, and plumbers, 58, late 40 and 13a, Kensington Road, Southport. First meeting, O.R.'s, Liverpool, Dec. 10, at 2.30. P.E., C.C., same, Dec. 14, at 11.

Edwards, Thos., plumber and decorator, Newbury, Gillingham. First meeting, O.R.'s, Salisbury, Dec. 8. P.E., Council House, Salisbury, Dec. 10, at 2.

Hall, Saml., and Herbert Wignall (trading as Hall and Wignall), builders, 11, Boundary Street, Lostock Graham, Northwich, late 10, Clarence Road, Birkdale, and on the Shore, Southport (the said Herbert Wignall, also trading as Edwd. Clarke, on the Shore, Southport). First meeting, O.R.'s, Liverpool, Dec. 8. P.E., C.C., same, Dec. 21, at 11.

Hodgkinson, Rchd., plumber and decorator, 25, Kenworthy Street, and Kay's Yard, off Kenworthy Street, late 37, Grosvenor Street, all Stalybridge. First meeting, O.R.'s, Manchester, Dec. 9, at 2.30. P.E., Town Hall, Ashton-under-Lyne, Dec. 17, at 12. R.O., Nov. 25. Adj., same day.

Hope, H., builder, Holly House, Farnborough Road, Farnborough. R.O., Nov. 21. First meeting, 132, York Road, S.E., Dec. 7. P.E., Town Hall, Guildford, Dec. 8.

Moore, Ralph Edwd., painter and decorator, 4, Ferndale Avenue, late 147 and 149, High Street East, and Eden Street, Wallsend. First meeting, O.R.'s, Newcastle-upon-Tyne, Dec. 9, at 12. P.E., C.C., same, Jan. 14, at 11. R.O., Nov. 25. Adj., same day.

Osborne, Hy. Jno. (described in R.O. as Osborne and Co.), builder and contractor, Hammond Road, Southall, late Briardale Road, Wavertree, Liverpool. Adj., Nov. 21.

Pillar, Herbert Stanley, builder, late Poplar Cottage, West End Lane, Pinner, and 8, Ross Parade, Ross Road, Wallington. First meeting, 14, Bedford Row, W.C., Dec. 9, at 12. P.E., C.C., St. Albans, Dec. 15, at 10.30.

Reed, Fredk. Hy., architect and surveyor, 9, John Street, Adelphi. R.O., Nov. 25. First meeting, Bankruptcy Court, Dec. 9, at 11. P.E., same place, Jan. 29, at 11.30.

Rhodes, Geo. Thos., builder, Lake Road, Portfield, Chichester. First meeting, O.R.'s, Brighton, Dec. 10, at 10.45. P.E., C.C., same, Dec. 10, at 11. R.O., Nov. 27, Adj., same day.

Seddon, Jas., sen., builder and contractor, 5, Clegg's Lane, Little Hulton. First meeting, 19, Exchange Street, Bolton, Dec. 8. P.E., C.C., same, Dec. 16, at 3. R.O., Nov. 24. Adj., same day.

Selby, Frank Anthony Smith, builder, Portland Road, Wyke Regis. First meeting, Crown Hotel, Weymouth, Dec. 7. P.E., County Hall, Dorchester, Dec. 18, at 12.30.

Sheppard, Thos., and Herbert Gordon Packham, builders and contractors (trading as Sheppard and Packham), 1, Quinton Street, Earlsfield the former residing at 27, Kyrle Road, Clapham Common, and the latter at 157, Brixton Hill, trading also as Humphrey and Turner, clothiers and outfitters, 573, Garratt Lane, Earlsfield. Adj., Nov. 27.

Staley, Wm., builder, 78, Brincliffe Edge Road, Sheffield. First meeting O.R.'s, Sheffield, Dec. 9, at 12.30. P.E., C.C., same, Dec. 17, at 2.

Stedman and Co., builders, 1 and 3, Shrewsbury Road, Romford Road, Forest Gate. R.O., Nov. 26. First meeting, Bankruptcy Court, London, Dec. 10, at 11. P.E., same place, Jan. 12, at 11.30.

Webb, Arthur Harry, builder, North View, New Street, Lutterworth. R.O., Nov. 26. First meeting, O.R.'s, Leicester, Dec. 9, at 3. P.E., The Castle, Leicester, Dec. 11, at 10.

Yeoman, Wm. Thos., painter and decorator, Perretts, Batson, near Salcombe. R.O., Nov. 28. Adj., same day.

Coming Events.

Thursday, December 10.

Edinburgh Architectural Association.—Prof. Charles Gourlay, A.R.I.B.A., on "Rheims Cathedral, and Some French Mediæval Churches," 8 p.m.

Friday, December 11.

Birmingham Architectural Association.—Mr. Edward S. Prior, F.R.I.B.A., on "English Parish Churches, chiefly of the Fifteenth Century."

Saturday, December 12.

Junior Institution of Engineers.—Visit to the Garage and Shops of the London General Omnibus Co., Black Horse Lane, Walthamstow, 3 p.m.

Saturday, December 12.

Northern Polytechnic Architectural and Building Students' Association.—Annual Dinner.

Monday, December 14.

Royal Institute of British Architects.—Mr. T. R. Spence on "The Elements of Design in Internal Decoration," 8 p.m.

Monday, December 14.

University of London.—Mr. Banister Fletcher, F.R.I.B.A., on "French Renaissance (and Modern) Architecture."—XI., 8 p.m.

Tuesday, December 15.

National Federation of Building Trades Employers.—Meeting of the Journal Committee, and of the Administrative Committee.

Wednesday, December 16.

Glasgow Institute of Architects.—Annual Dinner.

Northern Architectural Association.—Students' Meeting. Mr. H. A. Wilson, A.R.I.B.A., on "The Transitional Period," 7.30.

Hampton.—The Bishop of London has just consecrated a new church which Prebendary R. Digby Ram, vicar and rural dean of Hampton, has built to serve the out-lying part of his parish, known as Tangley Park, situated two miles from the parish church, where there is a large and rapidly growing population. The owners of the building estate gave the vicar the site 18 years ago, and it is now valued at £600. The architects, Messrs. F. H. Greenaway and J. E. Newberry, AA.R.I.B.A., of Queen Anne's Gate, Westminster, have designed a church which represents an attempt to carry on the traditions of English Gothic architecture, and at the same time to make the building express not only its purpose but its date. The portion of the church at present completed consists of the chancel, the side chapel, three bays of the nave, the north and south transepts, and one bay of the aisles, giving accommodation for 400 people, including the choir; and the sum spent on it to date is £4,000. When finished it will be two bays longer and will seat 638 people. The vicar has found the money to enrich the communion table with an inlay of ivory and ebony. The memorial stone was laid by Princess Christian on June 13th, and it is estimated that to complete the building will require another £3,000. Prebendary Ram recently completed 25 years' ministry at Hampton, and was presented with a large sum of money by his parishioners. This money he has devoted to the work of putting in the south aisle of the parish church fine new stone windows of delicate tracery from designs by Sir Arthur Blomfield and Sons.

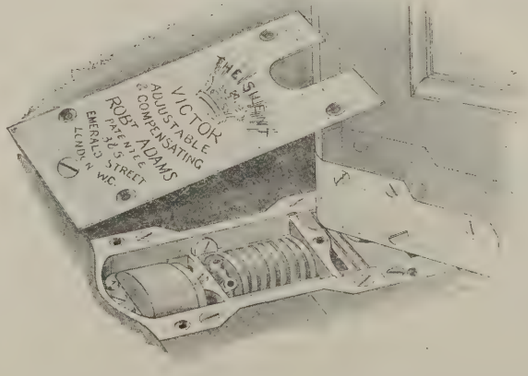
Ellesmere Port.—For the erection of new council schools for Ellesmere Port and Whitby, sixteen tenders were submitted, ranging from £7,337 to £9,500. The former tender, which was submitted by Messrs. Duthie and Dobson, of Liverpool was accepted.

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POINTS FROM THE FEDERATION, CENTRE, AND ASSOCIATION REPORTS.

The fair-wages clause in contracts has been the subject of special enquiry by the Secretary of the National Federation, who has collected information as to the forms in use by twenty-four London boroughs, and offers to place the information at the disposal of any association that may need it. The National form of contract has been formally introduced to the notice of the respective secretaries of the Builders' Institute and the R.I.B.A.

* * *

The Yorkshire Federation have had the pleasure of tendering to Councillor J. Birch, a member of the York Association, their felicitations on his having been unanimously elected Lord Mayor of York.

* * *

The Northern Counties Federation have agreed to draw up an appropriate form of sub-contract for members. The question of the direct tendering of electrical contractors has been under consideration, and a committee of this federation is prepared to meet a committee of the Electrical Association in order that the matter may be threshed out. Reference is also made to the correspondence in the "Builders' Journal" on the increasing employment by architects of specialist contractors.

* * *

The Midland Centre report considerable difficulties with respect to the question of area and radius.

* * *

The subject of the sub-contracting clause in the National form of contract has been very fully considered by the Bristol Association, whose views are to be placed before the National Federation.

* * *

The Plumbers' Committee of the Liverpool Association have succeeded in convincing the city water engineer that the water regulations should be altered, and a new code is to be drafted and submitted to the Association.

* * *

The Sheffield Association is able to report, in spite of the prevailing depression, a record amount of subscriptions and levies—£66 8s. 10d. more than for the whole of 1906, and nearly £30 in advance of last year. This success is partly attributable to the persuasiveness of the inter-trading rule, and partly to the personal magnetism of an exceedingly able secretary.

* * *

Sunderland and District Association, in view of the distress in the town, will not this year hold the usual annual dinner, but are looking forward instead to a summer excursion. The Barrow-in-Furness Association has also resolved not to hold the dinner this year, and instead will send a donation of £10 to the Mayor's distress fund.

MONTHLY OFFICIAL REPORTS.

THE NATIONAL FEDERATION.

Model Rules.

Following the wish of the Conference of Secretaries, the amendments suggested during debate have been made, and a copy of the rules as amended has been sent to each Federation secretary for consideration and report.

Several have replied approving of the rules as amended. The report will, if possible, be printed and presented to the next meeting of the Administrative Committee, and after approval by the Committee circulated among the associations.

Model Rules for a Federation

have been drafted, and are at present under consideration by one of the Federation secretaries. They will be submitted to each in turn.

Circulars to Federations.

Circulars relating to the Local Government Board inquiry on the use of intercepting trape, and on matters connected with the Journal, have been issued.

Fair Wages Clause in Contracts.

The Oldham Association, having this question under consideration, and having requested information as to the form of clause used by the various London boroughs, these were written to, and 24 of them replied. The information will be available later on for any other association that may need it.

International Congress of Builders at Paris.

The secretary, accompanied by Mr. E. Archer, of the Northampton Association, attended this congress, and were well received. The proceedings were interesting, and it is a pity more representatives did not avail themselves of the opportunity. A full report has already appeared in the Journal. (See the issue for December 2nd.)

Birmingham.

The secretary attended the annual dinner of the Birmingham Association. The most interesting incident was the announcement by Mr. Whittal that the inter-trading rule has been adopted by this association. It is expected that in the near future this association will show a similar advance in numbers to what has taken place in every other place where this rule has been adopted and acted upon.

Form of Contract.

A number of reports have been received from the Federations and local associations giving the names of public bodies, etc., to whom it is desired that representations in favour of adopting the above form shall be made. The secretaries of the Builders' Institute and the R.I.B.A. have been interviewed, a suggested letter to the aforesaid public bodies submitted, and support asked for. Further action will be taken immediately after the Administrative Committee meeting.

Conciliation Board.

The National Board has considered appeals from Manchester re joiners' demand, and from Leicester re dispute as to area in which the joiners, bricklayers, and labourers were interested. In the former case it was decided that the wages of Manchester joiners remain as at present, and that notice and counter-notice be withdrawn except as to clauses on which the parties are agreed. In the Leicester case, it was decided that the operatives' contention as to the area of Leicester was the correct one, and that a note should be added to the rules to make this clear for their unexpired time.

Meetings.

A meeting of the Journal Committee and of the Administrative Committee will be held on December 15th. The annual meetings will be held on January 26th and 27th, 1909. Secretaries are reminded that returns of elected members, resolutions for general meetings, particulars of demands and concessions for annual report, and nominations for National Board of Conciliation, should be sent in as soon as possible, and certainly by December 31st.—A. G. WHITE.

THE NORTHERN CENTRE OF THE NATIONAL FEDERATION

COMPOSED OF

The Lancashire, Cheshire and North Wales Federation, The Yorkshire Federation and The Northern Counties Federation.

Secretary: JAMES DENVER, Cromwell Buildings, Blackfriars Street, Manchester.

Northern Centre Conciliation Board.

The Northern Centre Conciliation Board met at the Employers' Boardroom, Blackfriars Street, Manchester, on Thursday afternoon, November 11th, to consider the appeals from the Manchester local board with reference to the joiners' overtime rule, and to decide a question that had arisen under the worked stone rule. The joiners' appeal was the first considered, the local operatives desiring a rule whereby employers would not be permitted to work overtime, except in cases of absolute necessity, such as breakdowns, etc. The evidence given by the operatives in support of their case was, that they were desirous of such a rule being adopted with a view to finding work for some of those unemployed. The local employers, in explaining their case, stated that it was impossible for them to agree to a rule placing such a restriction on overtime. The matter was given full consideration, and the board, after taking a ballot, decided that the rule should remain as present, with the addition of a clause for the employment of "night shifts," whenever found practicable, the men thus employed to receive 1d. per hour above the standard rate of wages. It was also decided to extend the discharge notice for joiners employed on outside jobs from one to two hours; for those employed inside, the shops to remain at one hour.

The appeal of the operative stonemasons was to decide whether the job of an Atherton firm of contractors was in the Manchester or in the Oldham district, and as the exact position of the job could not be pointed out on several maps produced, the chairman (employer) and vice-chairman (operative) were appointed to ascertain by surveying the district whether the job was in or out of the Manchester area, and the meeting terminated.

The court appointed met and surveyed the district the following day, together with the employers' secretary, a representative of the firm and of the local operatives' society, and declared the job to be outside the Manchester district, and the decision was given in the employers' favour.

THE LANCASHIRE, CHESHIRE AND NORTH WALES FEDERATION

Secretary: JOHN TOMLISON, Cromwell Buildings, Blackfriars Street, Manchester.

The monthly meeting of the Administrative Committee of the Lancashire, Cheshire and North Wales Federation was held in the Boardroom, Manchester, on Friday, November 13th, at 2.30 p.m., the president (Mr. William Bullen) being in the chair. Thirteen representatives were present.

Communications were received and considered from the National secretary with reference to the Census of Production Act, and the Building Operations and Engineering Works Bill, and resolutions were passed thereon.

A lengthy discussion took place on the question of architects, Government departments, and large firms seeking to obtain tenders without supplying quantities, contrary to the usual practice in most towns in this district, and it was decided that, failing satisfactory assurances from the Government officials, the employers' Parliamentary Council should be approached in the endeavour to have the question raised in Parliament with a view to getting the practice discontinued so far, at least, as Government work is concerned.

A sub-committee was appointed to consider the question of "Architects and the Employment of Specialists," and no doubt their report will appear in these pages shortly.

The proposals of the Northern Centre for alterations to the Conciliation Board rules were agreed to.

The question of corporation fair contracts clauses was under consideration, and the secretary was instructed to obtain copies of the clauses in force in all the principal towns in the country for consideration at the next meeting.

The quarterly meeting of the Plasterers' Trade Committee was held at the "Café Monico," Oldham, on Wednesday, November 25th, when several matters of trade interest were considered, including the question of the fixing and finishing of plaster and other partitions, and a small sub-committee was appointed to consider and report on this subject. After the close of the meeting, the representatives were entertained to tea by the local employers, to whom a vote of thanks was recorded for their hospitality.—JOHN TOMLISON.

LOCAL ASSOCIATIONS AFFILIATED TO THE LANCASHIRE, CHESHIRE AND NORTH WALES FEDERATION.

ACCRINGTON AND DISTRICT.

Organising Secretary: R. Hall.

A very representative meeting of employers in the building trade of Accrington and district was held at the Railway Hotel, Accrington, on Wednesday evening, December 2nd. The meeting had been called and was held under the auspices of the Organisation Department of the Lancashire, Cheshire, and North Wales Federation, and was attended by Mr. Wm. Bullen, president of the Federation, who addressed the meeting on the advantages and benefits to be derived from an Association. Mr. Tomlison, the general secretary of the Federation, and Mr. Robert Hall, organising secretary for the district to the Federation, also addressed the meeting.

Considerable discussion ensued as to the advisability of forming an association, the members, amongst whom may be mentioned Mr. Jas. Waddington (who was appointed chairman for the evening), Mr. H. Ramsbottom, Mr. Richard Nuttall, Mr. R. Stewart, Mr. J. Cowell, Mr. J. Douthwaite, Messrs. Foden Bros., and Messrs. J. Berry and Sons, together with the rest of the employers present, expressed themselves unanimously in favour of forming an association.

It was then decided to appoint a committee of one representative from each branch of the building trade, together with Mr. Waddington as chairman, to draw up the rules and regulations, and issue summons for a general meeting for the purpose of adopting the rules, and for the election of officers to carry on the work of the association.

The chairman and committee fixed Wednesday, December 16th, as the date on which to hold their first meeting, the organising secretary promising to supply Mr. Waddington, the chairman, with copies of various rules belonging to other local associations.

On behalf of those attending, the chairman expressed his thanks to the president of the Federation, the two secretaries and all those who had helped to bring together so many employers in the building trade of Accrington and District, and hoped his expression of thanks would be communicated by the general secretary to the president and members of the executive of the Federation.

ALTRINCHAM, SALE & DISTRICT ASSOCIATION.

Secretary: W. Moody.

The ordinary monthly meeting of the Altrincham, Sale, and District Association, was held on the afternoon of Thursday, November 26th, the date of meeting having been altered to suit the arrangements of the Lancashire, Cheshire, and North Wales Federation.

The committee are supporting the action of the Federation in giving notice to the joiners, plasterers, and stonemasons for alterations to the working rules. They are also in favour of the proposed Board of Trade Court of Arbitration, provided the building trade is more adequately represented in the employers' panel.

The proposed alterations to the rules of the National Conciliation Board have the approval of the committee, who, however, think that the proposed majority of three cross votes, as defined in rule 13, will be difficult of attainment.

ASHTON-UNDER-LYNE, STALYBRIDGE, AND DISTRICT ASSOCIATION.

Secretary: G. H. Tonge, A.S.A.A.

The Ashton-under-Lyne Association has approved the scheme of proposed arbitration between sole and sub-contractors. The matter of the proposed Court of Arbitration to be formed by the Board of Trade has been discussed, but as it is understood that where trades federations have their own conciliation boards, the Board of Trade would not include them in their scheme, no action was taken.

Local builders report that there is no difficulty in getting architects to adopt the national form of contract. The Association approves of labourers being admitted to local conciliation boards, where rules are recognised and signed; but labourers should not sit on Centre and National Boards to adjudicate on cases from districts where their unions are not recognised. The proposals for amending rule 2 and rule 13 (made by the Lancashire, Cheshire and North Wales Federation) of the National Conciliation Board rules have been supported by resolution of the Executive.

Notice has been received from the Amalgamated Carpenters and Joiners for an increase in wages and alterations in working rules, and the matter is to be dealt with early in the new year. A deputation of the local master plumbers has met the association executive, and as a result it is very probable that a scheme will be completed for the admission of plumbers as members of the Builders' Association.

BARROW-IN-FURNESS ASSOCIATION.

Secretary: J. Baker.

At the November meeting of the association, it was resolved not to hold the annual dinner this year, owing to the prevailing distress in the town, but to send a donation of £10 to the Mayor's distress fund instead.

In order to meet with the views of the Lancashire, Cheshire, and North Wales Federation, *re* the simultaneous holding of monthly meetings of local associations, it was decided to change the

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Per inch	6 0
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date of the monthly meeting from the second Tuesday in the month to the fourth Tuesday. Matters relating to employers' liability insurance were also under consideration.

BLACKPOOL ASSOCIATION.
Secretary: W. A. Clarke.

Trade in the Blackpool district still keeps very slack, yet notice has been received from the operative carpenters and joiners demanding an increase of 1d. per hour; an increase in overtime pay; and various alterations to the present rules. After most careful consideration of these demands by the master carpenters and joiners, it has been decided to send in a counter-notice for a reduction of ½d. per hour, leaving the rules practically as they are at present.

The master slaters have formed a local association extending from Lytham to Fleetwood, and to be called "The Blackpool and District Branch of the Lancashire and Cheshire Federation of Slaters." The secretary pro. tem. is Mr. W. A Clarke.

BURY AND DISTRICT ASSOCIATION.
Secretary: R. Hall.

The monthly meeting of the Bury and District Association was held on Wednesday evening, November 25th, the president, Mr. John Inman, in the chair. There were also present eleven members of the committee, as well as Mr. J. E. Tinline (a past president), the past presidents of the association, under the new rules, being ex-officio members of the committee. The minutes of the previous meeting having been read and confirmed, the question of a Shipley firm of painting contractors who are doing work in the neighbourhood of Bury, and for a member of the Bury Association, was discussed at considerable length, it having been reported to the association that they were members of the Shipley Association for local purposes only. The matter having been taken up with the contractors by whom they are employed, it was reported that they had now joined the Federation.

The question of the proposed arbitration boards, as suggested by the President of the Local Government Board, was discussed.

A further question affecting the members of the association, with respect to the inter-trading rule, was that of members from outside districts coming into the town and giving tenders and doing work for people (employers in the trade under the new rules), who are not members of the Bury Association, and it was decided to approach the Federation on the matter, to see whether something could not be done.

The item of specialists, so often found in builders' quantities, was under discussion, and it was decided that a small committee, consisting of the president, Mr. Tinline, and the secretary, should draft a letter to be sent to the BUILDERS' JOURNAL in accordance with the request of the Federation.

Amongst matters under discussion by the committee was the issuing of a small pocket diary to members of the association, containing the new rules, as well as a list of members' names, their telephone numbers, and the whole of the operatives' rules. It was decided that the new rules, as adopted at the annual general meeting, together with a new list of members on a card suitable for hanging in an office, be issued as early as possible, and that one hundred copies of the pamphlet on "Municipal Trading," as issued by the Yorkshire Federation, be obtained and distributed amongst the members.

A general discussion followed respecting the arrangements for the annual dinner, after which the meeting terminated.

LIVERPOOL ASSOCIATION.
Secretary: Bertram B. Moss.

Referring to the report in the last issue relating to the notice given by the Liverpool Association to the operative bricklayers, it is now to be added that a counter-notice has been received from the operatives' societies giving notice for an increase in wages of 1½d. per hour, and several alterations to the rules.

The plumbers' committee have had a very satisfactory interview with the city water engineer, who, after discussing all the suggestions raised by this association with a view to altering the water regulations, admitted that the time has arrived when the water regulations should be altered, and is going to draft out a new code and submit same for consideration by this association.

MANCHESTER, SALFORD, AND DISTRICT ASSOCIATION.
Secretary: J. Tomlison.

It is pleasing to report that since the last Federation issue the re-organisation of the Manchester, Salford and District Association is progressing very favourably, and there is now no doubt that within a short time a strong general association will be established.

The half-yearly general meeting was held at the Boardroom, Blackfriars Street, on Thursday, November 12th, when the president (Mr. George Macfarlane) presided over a fairly large attendance of members.

The half-yearly report, which dealt with the re-organisation scheme, and the very disturbed relations with the operatives during the past six months, was adopted for circulation amongst the members.

Mr. William Tinker was nominated as a candidate for the National and Northern Centre Councils, in the place of Mr. Walter Marshall, who has signified his intention of retiring from business. Mr. H. Matthews, J.P., was also nominated for re-election. It was agreed to adopt the Federation's proposed arbitration rule between sole and sub-contractors

The Plasterers' and Painters' Branch of the association held their usual monthly meeting on December 1st; it was largely attended. Matters solely affecting their trade were chiefly the questions under discussion.

The Stonemasons' Branch also met on December 1st to consider counter-proposals received from the operatives to their notice for alterations in the present working rules; but as the proposals had been received after the date provided for in the rules, it was considered that they were not in order.

The questions of the Manchester joiners' wages and of the grinding and overtime rule have now been settled. The National Board have decided that the wages remain as at present, and the overtime rule was settled by the Northern Centre Board.

OLDHAM AND DISTRICT ASSOCIATION.
Secretaries: Cowper and Dean.

The number of members of the Oldham District Association to date is 180.

The Finance Committee of the Oldham Corporation, after considering the points raised by the deputation from the Oldham and District Association, have requested the master builders to confer with the Oldham Trades and Labour Council with a view to submitting a fair contracts clause which shall be mutually satisfactory to both parties, before the Oldham Corporation consider the final adoption of same.

The quarterly meeting of the Master Plasterers' Trade Committee of the Lancashire, Cheshire and North Wales Federation, was held at the "Monico Café," Oldham, on Wednesday evening, November 25th, when matters of interest to the trade were discussed. The representatives from various towns were afterwards entertained to tea by the Oldham Master Builders' Association. At the last monthly meeting, the proposed arbitration rule between sole and sub-contractor received approval.

The circular from the Board of Trade *re* the Arbitration Court was also considered, and the general outline of the scheme was duly approved. The best method of securing the general adoption of the National form of contract was considered, and the names and addresses of all the officials of public bodies in the town were sent to the National secretary, so that the latter might communicate with them on the subject.

The secretaries reported on the small number of returns of men and apprentices employed that had come in from members in response to a special appeal from the National Federation, and a further effort is to be made to secure the whole of these returns.

PRESTON ASSOCIATION.
Secretary: John Tomlison.

The Preston Association having opened their new offices and boardroom in Mount Street, just off Fishergate, Preston, it is proposed to hold the annual dinner in the new premises on December 16th, when the formal opening will take place.

WARRINGTON AND DISTRICT ASSOCIATION.
Secretary: Bertram B. Moss.

The Warrington Association have had under consideration the advisability of altering the joiners' rules, and at their last meeting decided to send a notice for a reduction in wages of ½d. per hour, and slight alterations to the rules. This notice has been sent.

WIGAN AND DISTRICT ASSOCIATION.
Secretary: R. Hollows.

A special meeting of the master joiners of the Wigan Association was held on November 10th, to consider the notice of alterations to working rules received from the operatives' society. After discussion, it was decided that a counter-notice be sent in to the following effect:—"That wages be reduced from 9d. per hour to 8½d.; that the working hours in the summer months remain as heretofore, but as regards the winter months they be made to coincide with those of the operative bricklayers, for inside as well as outside men."

A demand was made that the several starting places be increased, and that those stated in the operative bricklayers' rules be agreed upon. This will extend the boundary radius by more than half-a-mile. In addition to the extended boundary, the operatives were requested to grant "that should any employer require his men to travel by tram or train to a job within a 3½ miles radius, the workman shall, on payment of the fare by the employer, travel by the car or train leaving the terminus or station at the first time immediately preceding the starting time. With respect to the railway train, this clause to apply only to those starting within twenty minutes preceding the starting time."

The question of limitation of apprentices as demanded by the operatives was not entertained at all. With regard to the rule respecting piecework and the importation of prepared woodwork, this association has demanded that the present stringent rule be relaxed a little, and that whereas no imported woodwork is now allowed to come into the town from a greater distance than five miles, any prepared woodwork must be allowed to come in from any place in Lancashire where the rate of wages paid is not less than that paid in this district.

The operatives were also requested to grant that "should a Wigan master have a job exceeding 3½ miles from the Wigan Market Place, he shall be at liberty to start men on the job."

The date of the joint meeting of masters and men has not yet been fixed upon.

The annual meeting of the Association was held at the Clarence Hotel, Wallgate, Wigan, on Thursday, November 19th. Mr. Councillor Alfred Higham was in the chair, and about 22 other members were present. The secretary's report stated that the association still continued to prosper, and that the finances were in a healthy condition. Mr. William Webster (Messrs. Webster and Winstanley) was elected president for the ensuing year, and Mr. John Smith, vice-president. A copy of the pamphlet on "Municipal Works Departments," published by the Yorkshire Federation of Building Trade Employers, was ordered to be sent to all the borough officials, aldermen, and councillors, and also to the members of this association.

The policy of the Corporation undertaking the building of workmen's dwellings to provide work for unemployed workmen in the district was deprecated, and the matter is to be pressed further in the town council.

The annual dinner of the association was arranged to be held on Tuesday, December 8th (yesterday).

There is nothing to report from the Northern Centre, nor from the following associations affiliated to the Lancashire, Cheshire and North Wales Federation: Birkenhead and Wirrall, Bolton and Farnworth, Burnley, Chester, Crewe, Darwen, Heywood, Lancaster, Leigh, Llandudno, Longridge, Macclesfield, Middleton, Radcliffe, Rochdale, Rossendale, Southport, St. Anne's-on-Sea, St. Helens, Stockport, Wallasey.

THE YORKSHIRE FEDERATION.

Secretary: J. DAVIDSON, 14, Park Row, Leeds.

The monthly meeting of the executive council of the Yorkshire Federation was held at the King's Head Hotel, Barnsley, on Thursday, November 19th. Mr. J. Biggin (president), occupied the chair, and was supported by 40 delegates from the affiliated associations.

The minutes of the previous meeting were read and approved.

Alderman E. J. F. Rideal, Mayor of Barnsley, was present during a portion of the proceedings, and received a most cordial greeting. He welcomed the Federation to the town, and stated that they felt they were honoured in receiving them from time to time. He also referred to the cordial relationship subsisting between the corporation and the local builders.

The president, in a few appropriate words, drew the attention of the Federation to the fact that Councillor J. Birch, a member of the York Association, had been unanimously elected Lord Mayor of York. He had the greatest pleasure in moving that the Federation tender to Councillor J. Birch their sincere and appreciative congratulations on the distinguished honour conferred upon him; their earnest hope that he and the Lady Mayoress may be blessed with splendid health during their period of office, and their unbounded confidence that they will worthily uphold the best traditions of the office. The motion was seconded by Mr. G. Sharp, of York, and carried with acclamation.

Apologies for absence were reported from Alderman W. H. Jessop, J.P. (Huddersfield), Messrs. T. Lindley (Barnsley), T. E. Taylor (Bradford), E. Quibell (Hull), W. Irwin and P. Rhodes (Leeds), and A. W. Sinclair (Scarborough).

The treasurer reported receipt of subscriptions amounting to £10 14s.; and of transfer from Insurance fund of £20. The finance committee reported that they had examined the accounts and recommended payment. On the motion of Mr. A. J. Forsdike, seconded by Mr. W. R. Thompson, the accounts, amounting to £45 7s. 4d., having been certified as correct, were approved, and cheques were drawn in payment.

The resolution of the Northern Centre was read and considered, that the labourers' union be admitted into the Local Conciliation Board of any district, and, should a dispute arise which they cannot settle locally, that the Northern Centre Conciliation Board be recommended to consider any labourers' question that might be referred to them on condition that the parties making the appeal shall meet all expenses in connection therewith. It was reported that under this resolution any local association which has mutually adopted rules with the bricklayers' labourers governing rates of wages and conditions of labour is at liberty to exercise a discretionary power, in conjunction with the other parties to the Local Conciliation Board, as to the admission of the labourers as members of such board.

The president reported that the deputation appointed by the Federation had interviewed the West Riding architect and engineer with respect to the National form of contract, and hoped to be favoured with his reply at an early date. With respect to other matters, Mr. Edwards promised to give special atention to such points as arbitration, workmen's compensation insurance, early notification to contractors, prime cost sums, etc. On the motion of Mr. W. R. Thompson, seconded by Councillor J. Dawson, the best thanks of the Federation were tendered to the deputation for the excellent report they have given, and the valuable concessions they have been promised by the West Riding architect and engineer.

Reference frem the Conference of Yorkshire Secretaries and Representatives as to revision of Federation rules was considered. The secretary stated that Mr. White, the National secretary, was

preparing a model set of Federation rules, and it was hoped that these would be available for consideration in the course of a week or two.

At the recent conference, it was obvious that different customs were obtaining among the local associations with respect to Federation subscription for associate members. Some associations are paying 4/- for each associate member, while others are not paying anything for such members. It was resolved, on the motion of Mr. G. Rayner, seconded by Mr. G. Sharp, that the local associations be requested to kindly contribute 4/-, for each associate member for the year closing on November 30th, and that in future the amount payable to the Federation be 25 per cent. of the subscription paid to the local association.

The finance and emergency committee recommended that a further issue of the Directory should be made as early as possible in 1909. On the motion of Mr. A. J. Forsdike, seconded by Councillor J. Dawson, the recommendation of the committee was approved, and the secretaries of local associations were cordially invited to favour the Federation by their valued co-operation in furnishing lists of members and obtaining advertisements.

On the motion of Councillor J. Dawson, seconded by Mr. J. T. Levitt, the president, vice-presidents, treasurer, and secretary, were appointed an arbitration committee to consider any disputes or differences which may arise between members and which it is mutually agreed shall be referred to the determination of such committee.

It was reported that the Local Government Board had appointed a departmental committee to inquire and report on the use of intercepting traps in house drains, and the question was considered as to whether any evidence should be tendered by the building trade. The members of the Federation were of opinion that the matter should be dealt with in the first instance by the National Administrative Committee.

The alterations in the National Conciliation rules, of which notice had been given by the Northern Centre, were read and considered. The representatives of the Federation were requested, on the motion of Mr. W. R. Thompson, seconded by Mr. A. J. Forsdike, to support the adoption of the amendments both by the National Federation and also by the National Conciliation Board.

The chairman reported that the emergency committee had carefully considered a case with respect to the liability of one of their members who had been a sub-contractor on works completed some time ago. The matter was referred to the finance and emergency committee, with full power to take all necessary action as eventualities arise.

The recommendations of the emergency committee with respect to officers and committees for the ensuing year were considered, and nominations were made for consideration at the annual meeting.

The arrangements for the annual dinner were referred to the emergency committee with full power to add to their number.

Mr. T. Lee, president of the Wakefield Association, invited the Federation to hold the December meeting in that town. Mr. J. T. Levitt stated that the Hull Association were willing to postpone their invitation, and indeed preferred that the visit of the Federation to Hull should take place during the summer. On the motion of Mr. A. J. Forsdike, seconded by Councillor J. Dawson, it was resolved to accept the invitation to hold the next meeting at Wakefield, and Thursday, December 17th, was selected as the date.

The Council were afterwards entertained to tea by the president and members of the Barnsley Association, to whom a hearty vote of thanks was accorded for their generous hospitality.—J. DAVIDSON.

LOCAL ASSOCIATIONS AFFILIATED TO THE YORKSHIRE FEDERATION.

BARNSLEY ASSOCIATION.
Secretary: F. Denton.

The number of members of the Barnsley Association to date is 50.

The monthly meeting was held at the King's Head hotel, on Wednesday, November 11th, the president, Councillor G. Haigh, in the chair. There was an attendance of 16 members. The president was congratulated by the members of the Federation on his re-election to the town council. After the usual routine business, the secretary submitted his report of the Conference of Secretaries, held in London, and a hearty vote of thanks was accorded him for his attendance. The principal business of the evening was the election of officers for 1909, the result being as follows:—President, Councillor G. Haigh, re elected; senior and junior vice-presidents, Mr. E. Broley, and Mr. C. D. Potter, respectively re-elected; treasurer, Mr. H. Ashworth, re-elected; secretary, Mr. F. Denton, re-elected; delegates to National and Yorkshire Federation, Councillor G. Haigh and Mr. E. Broley. All the elections were unanimous. Mr. T. Lindley, the retiring delegate, has done yeoman service for several years past, but the increasing pressure of business claims prevented his standing for re-election.

The Yorkshire Federation were entertained by the Barnsley Branch on Thursday November 19th, before the meeting, to a visit to the local chrysanthemum show, and after the meeting, to a tea, at which the newly-elected Mayor and the ex-Mayor were both present.

BRADFORD ASSOCIATION.
Secretary: J. Davidson.

The monthly meeting of the Bradford Association was held on November 24th, and Mr. T. Taylor, the president, was supported by several members.

The minutes of the Yorkshire Federation were read and considered. The treasurer's account was presented, and several accounts were passed for payment. It was decided to hold the annual meeting on December 22nd, and nominations for officers and committees were received for consideration at the annual meeting.

DEWSBURY ASSOCIATION.
Secretary: E. B. Walmsley.

The number of members to date of the Dewsbury Association is 36.

The annual meeting was held on November 18th. The reports of the Yorkshire Federation meeting, and the conference of Local Secretaries recently held in Leeds were discussed. Mr. Sam Coop was again elected president of the Association.

The annual dinner took place on November 26th, and was well attended. In addition to the members, fifteen guests were present, amongst whom were Mr. Davidson (secretary to the Yorkshire Federation), Mr. Forsdike (treasurer), and the presidents of the Wakefield, Barnsley, Huddersfield, and Morley Associations.

LEEDS ASSOCIATION.
Secretary: J. Davidson.

The annual meeting of the Leeds Association was held on November 10th. Mr. Wm. Irwin was re-elected president for the ensuing year, and a most hearty vote of thanks was tendered to him for his valuable services as president during the past year. Mr. Osman Mawson was appointed vice-president. The auditors, Messrs. E. Umpleby and G. W. Nettleton, were thanked for their services, and re-appointed. The representatives to the Yorkshire Federation and the general committee were also re-appointed.

On the motion of the president, the association decided to order a copy of the BUILDERS' JOURNAL for the use of the secretary. A discussion took place as to the best means of enrolling merchants and manufacturers as members of the association.

It was reported that the directors of the Leeds Builders' Exchange, Ltd., were terminating their occupancy of the existing premises, by effluxion of time, on March 31, 1909.

A resolution of condolence and sympathy was carried to the relatives of the late Mr. John Ingleson, who, before his retirement from business, had been a member of the association.

The general committee considered a case in which an associate member had approached architects over the head of the contractors, for special works required for a contract which had been in progress for some little time. Without consulting the builder, the architect had accepted the tender, whereas the builder had already notified the specialists, when approached personally, that a tender had already been accepted by him for the work referred to. After explanations were given by the principal contractor and the firm concerned, the matter was settled to the satisfaction of the council by the firm undertaking, in view of the full explanation which had been made, to withdraw the tender which had been inadvertently accepted by the architect. The value of intervention of local associations in hearing differences between members was thus emphasised.

SHEFFIELD ASSOCIATION.
Secretary: T. Smith.

The monthly meeting of the Sheffield Association was held on November 12th, the president (Mr. Thos. Eshelby) in the chair. A letter was read from Sir Cecil Hertslet, British Consul at Antwerp, announcing the death of the Burgomaster at Antwerp, who had so cordially granted a civic reception to the members of the Sheffield and other Yorkshire associations who visited Belgium in August last. On receipt of the letter, the secretary, at the request of a few members of the association, had immediately written to Sir Cecil Hertslet requesting him, in the name of the association, to express their deepest sympathy and condolence in the proper quarter, and the sense of loss which must be felt so poignantly by the city of Antwerp, and more especially by the Master Builders' Association of Antwerp in losing a Mayor who was at one time one of their number, and up to the time of his death an honorary president of their association. Sir Cecil Hertslet had kindly done this, and forwarded a copy of the letter he had received from Mons. A. Hentogs, son of the late Mayor, a translation of which was read to the meeting.

With respect to the suggested preferential trading between builders' merchants and manufacturers, a letter was read from the secretary of the Builders' Merchants' Association asking what definite proposals (if any) the Builders' Association had to offer. To this the secretary had replied calling attention to a previous letter advising the appointment by the Builders' Association of a sub committee of five members to meet a sub-committee from the Merchants' Association to discuss and formulate a scheme for submission to both associations, and he now awaited a reply from the Merchants' Association as to the representatives they had appointed.

A discussion followed on the Workmen's Compensation Act, on a motion of Mr. H. H. Hodkin to the effect that the Act was working unsatisfactorily to both employers and employees, and requesting the Yorkshire Federation, through the National, to petition Parliament for a revision. The action of the insurance companies in making a dead set against insurance of workmen beyond certain ages was unnecessarily increasing the ranks of the unemployed, while, on the other hand, the Act had led to malingering, and was grossly unfair in regard to illegitimate dependents.

Mr. Biggin said the National were watching with interest the action of the Government in regard to compulsory State insurance, which would effectually remove the grievance. There was some talk of appointing a committee to bring in such a Bill, and he thought, therefore, Mr. Hodkin's motion could be deferred for a little while. Mr. Hodkin concurred, and the matter was allowed to drop.

The report of the meeting of the Conciliation Board, held the previous evening under the presidency of Mr. A. J. Forsdike, led to a lengthy discussion. At the meeting, the whole Board were represented, and there were also present the secretary of United Trades Committee of Carpenters and Joiners on the one side, and Mr. Chas. Boot (Messrs. Hy. Boot and Son) on the other. The matter arose out of the action of the Joiners Society in reporting an alleged breach of rules in regard to walking time on the part of Messrs. Boot and Son to the Sheffield Corporation, the result of which was that Messrs. Boot and Son had been fined £24, although the amount involved was only £1 7s. 5d. The association took exception to what they characterised as high-handed action on the part of the Joiners' Society, and pointed out that such action not only constituted a breach of Rule 2 of the Conciliation Board, but was in diametrical opposition to the joiners' working rules, which stipulated that in case of any alleged breach of rules the employees or their representatives should seek an interview with the employer, whereas in this case the matter was carried direct to the Corporation, not only without any intimation to the Conciliation Board, but without any intimation to the employers. A very lengthy correspondence had ensued, in which the operatives claimed that they were strictly within their rights in taking the action they had done, while, on the other hand, the Master Builders' Association claimed that it was a breach of the rules of the Conciliation Board, and that if the employees persisted in claiming that their action was correct the employers would refuse to act on the Conciliation Board, which must cease to exist if its prerogatives could be usurped at the will of a section of the operatives' side of the Board. The meeting was therefore called to consider the action taken in the matter by the U.T.C. of Carpenters and Joiners. Almost from the outset, the discussion became heated, and after two hours and a half spent in fruitless discussion, not the slightest progress had been made, and the meeting had every appearance of becoming abortive. The moment the first item on the agenda had been announced, the secretary of the operatives' section moved that, as the matter had not gone through the ordinary channel provided in Rule 2—that is, had not been discussed by the trade committee affected, it was therefore at the moment outside the jurisdiction of the Board. The operatives' section objected to the reading of the correspondence which had passed between the respective secretaries, and objected to the calling of the meeting and everything connected with it, which they claimed was out of order. This was naturally taken by the employers' section of the Board to be a move to burke discussion of the whole matter, and led the chairman to remark with some heat that the operatives had not come to discuss fairly a matter of the very gravest importance to the future conduct of the Board, about which the association felt most strongly, but merely to play a game of bluff. This remark raised a storm of words, and for the better part of two hours speeches more or less acrimonious followed from both sides in quick succession, and the whole matter which it was claimed by the blocking motion was out of order was actually discussed. Driven from their original stand, the operatives claimed that the matter was further out of order as the job was outside the area of jurisdiction of the Board, but this point was promptly disposed of by reference to the agreement, at a meeting in May of 1907, that matters outside the area should be considered. And so the discussion continued, with neither side prepared to concede a point towards agreement. At this juncture the employers' secretary pointed out that the motion that the matter on the agenda was out of order had no direct bearing on the purpose for which the meeting was called. He invited the operatives' chairman and secretary to read the item again, and they would then see that they were met to "consider the *action taken* by the Joiners' Society in reference to, etc." The operatives' motion was that the Board had no right to consider the case of Messrs. Boot, as it had not gone through the necessary preliminary channels. But he submitted they were not met to consider the case of Messrs. Boot's alleged breach of rules. The blocking motion had merely trailed the meeting along a false issue which was not on the agenda, and the item on the agenda was not at fault. What they were met to consider and adjudicate upon was the action taken by the Joiners' Society on their own initiative, without giving notice to the Board, and the employers claimed that no section of the Board had any right to take such action, and he asked again, as he had asked two or three times in the correspondence, if the operatives claimed the right to take similar action in any other case, irrespective of whether the job was one in which the City Council were the proprietors. As a matter of fact, a breach of rules had occurred on the job of another member since these negotiations commenced, and the same society who had taken the action complained of in this instance, promptly and very correctly brought the matter to the immediate notice of the association. Why had different action been taken in a job where the City Council were the proprietors? He held that the Conciliation

Board as a whole were the proper and *only* competent body to decide whether or not the action of a section of it, against whom a complaint was made, was justifiable. The merits or demerits of the case, although they had been discussed and were admittedly out of order at this meeting, was quite another question, which was not on the agenda. To this the operatives set up the plea of extenuating and justificatory circumstances in this special instance, but in reply it was pointed out that if the contractors broke the rules every day, that did not justify the operatives in taking action without the knowledge of the Board, which existed for the express purpose of settling any matter of dispute. Any resolution of the Board, said Mr. Biggin, did not preclude the operatives from subsequently bringing the matter to the notice of the Corporation; or if, as they claimed, their action in this particular instance was dictated by exceptional circumstances, no very great objection would have been taken to concurrent notification to the Conciliation Board and the City Council. They as employers did, however, claim as a right that if some matters were to be taken over the head of the Conciliation Board, the whole must be taken. He claimed that their demand for an explanation and an indication of the course to be taken in any similar case was of vital importance, and, to test the feeling of the meeting on the altered phase of the discussion, he moved that in future no action be taken against any member without notice being first given to the Master Builders' Association. After a few moments' private discussion in the operatives' section, Mr. Stone, of the Bricklayers' Society, seconded the motion, which was unanimously carried, and thus ended amicably a meeting which had threatened a serious rupture in the proceedings of the Board.

There is nothing to report from the following associations affiliated to the Yorkshire Federation: Barnoldswick, Bridlington, Grimsby, Halifax, Harrogate, Huddersfield, Hull, Malton, Morley, Scarborough, Shipley, York.

THE NORTHERN COUNTIES FEDERATION.

Secretary: W. H. HOPE, Solicitor, Post Office Chambers, 14, Norfolk Street, Sunderland.

Minutes of a meeting of the executive council of the Northern Counties Federation, held at Sunderland on Tuesday, November 24, 1908, at four o'clock in the afternon, when there were present: Messrs. Stephen Easten, R. Heslop (Newcastle-on-Tyne); John Proud (West Hartlepool); John Davison, W. C. Creasor (Stockton); John T. Scott, Joseph Pelton, John R. Hadaway (North Shields); W. S. Davison (Middlesbrough), J. More, Alex. Ross, W. J. Robertson (South Shields); John Simpson (Blyth); W. B. Cooper and R. J. Huntley (Sunderland).

The minutes of the executive council meeting held at Sunderland on August 11th, were read and signed by the president, Mr. Easten, as correct.

The secretary gave a report upon the negotiations with the Durham County Council. The buildings sub-committee have intimated that they will receive the deputation appointed at the last quarterly meeting at their next Committee Meeting in December on the Federation requirements in the form of contract.

A report upon the Conference of Secretaries held in London on October 20th was given by the secretary. Reports of the proceedings are being prepared by the National secretary for distribution.

The question of fixing the date of the annual meeting, which is to be held at Newcastle-on-Tyne within the first fourteen days of December, was discussed, and it was decided to leave the date in the hands of the president, who will confer with the Newcastle Association. It was mentioned that the annual dinner of the Tyne and Blyth District Federation would be held immediately after the annual meeting.

The financial statement was considered satisfactory, and accounts amounting to £97 17s. 4d. were passed for payment.

The question of the sub-contractors' position with respect to payment for their work, which had been referred to this Federation from the Teesside Association, was considered. It was stated that the sub-contractors did not receive payments as and when the contractors received their draws, even after the completion of the job and final certificate to the contractor of theirs. If the contractor assigns his retention money or becomes a bankrupt, the sub-contractor stands to lose very heavily indeed. The head contractor had security in the shape of his contract with the architect. The sub-contractor had no such guarantee, but depended entirely upon the contractor, which had caused considerable loss to the sub-contractors in that district. The president pointed out that these cases only occurred when the contract had been entered into with persons of no stability, and that perhaps a sub-contract could be drawn assuring payment to the sub-contractor in the same proportion as the head contractor received it from the architect, and at the same time. After a lengthy discussion, it was resolved, on the proposition of Mr. J. Proud, seconded by Mr. A. Ross: "That the secretary of the Federation be requested to have drawn up an appropriate form of sub-contract for the use of the members, and forward the same to the Teesside Association."

The president reported that, previous to the meeting, a deputation had been received from the Newcastle branch of the Electrical Contractors' Association, when the question of builders' commission was discussed. At the present time, architects invited the electrical contractors to tender direct, and in the majority of cases put the amount which was net as a p.c. sum into the builders' schedule. This very often led to friction among the parties concerned. The matter had been very carefully discussed, and it was proposed that a small committee from this Federation should be appointed to discuss the matter with a similar number of the Electrical Association, to decide upon the course of action to be pursued in approaching the architects, who are to be requested to meet the committees of the Federation and the Association to discuss the matter. The president moved the proposal, which was seconded by Mr. J. Pelton, and carried unanimously. On the proposition of Mr. A. Ross, seconded by Mr. R. Heslop, the following were appointed the committee: The president, W. T. Weir, J. W. White, and T. Wilkinson.

The question of the notice for the alteration of the working rules was discussed, as it is desirable when dealing with notices to or from the operatives for any alteration in the working rules, to endeavour to get a clause inserted in the rules so "That at least a fortnight shall be allowed to consider the same, and to send in a counter-notice." It is thought that the rule might do away with the necessity of either side giving to the other notice of alteration of rule, in anticipation of the other side doing likewise. If it is open to either side to give a counter-notice, neither side possibly would be the first to give notice, and hence none might be given, except in cases where a change of rule was really desirable. The associations within the Tyne and Blyth District have already this proviso inserted. The Teesside Association have no stipulated time for giving notice. As the Sunderland Association has stipulated times, it was decided to recommend to that Association the necessity of approaching the operatives to get this rule inserted.

The question of the operatives' wages, which recently received the attention of this Federation, has been before the Northern Centre Federation, who have also made inquiries of the associations within the centre; and as the feeling appeared to be against any reduction, it was decided to recommend that no action in the matter be taken.

The secretary drew attention to the fact that the Local Government Board had appointed a Departmental Commitee to enquire and report on the use of Intercepting Traps in house drains, and that the town clerks of the principal towns in England and Wales are to be asked to give evidence where necessary. It was thought that this enquiry would not trouble the members of this Federation, and that the matter should be dealt with in the first instance by the National Administrative Committee.

The National secretary has drafted a set of model rules for local associations, which were considered at the Conference of Secretaries, and, while they were generally deemed satisfactory, it appeared from the discussion that some slight amendments were desirable; and the consideration and final approval of these rules were left in the hands of the county and centre secretaries, prior to their being reported to the administrative committee.

The Northern Centre have given six months' notice for alterations to the National Conciliation Board rules, rules 2 and 13, and also for new rules dealing with "period for which a decision shall endure," and "Private consultation at Board meetings."

Reference was made to the correspondence in the BUILDERS' JOURNAL in reference to the increasing employment by architects of specialists for executing joinery fittings and other work. It was mentioned that the Lancashire and Cheshire Federation were dealing with the replies thereto. No action was recommended to be taken by this Federation.—W. H. HOPE.

LOCAL ASSOCIATIONS AFFILIATED TO THE NORTHERN COUNTIES FEDERATION.

HARTLEPOOLS ASSOCIATION.
Secretary: E. Moody.

The annual meeting of the Hartlepools Association was held on Monday evening, November 30th, in the Oddfellows' Hall, York Road, West Hartlepool, Mr. W. M. Thompson (president) in the chair. There was an exceedingly good attendance of members.

In presenting his report and balance sheet, the secretary pointed out that although the balance in hand had not increased to the same extent as in former years, the fact of the year's working showing a profit at all must be considered gratifying, bearing in mind the present very unsatisfactory state of the building trade, and the fact of closing up the accounts at the end of November, to allow of the various association and Federation meetings to be held in December, to comply with the new rules of the National, and further, the decision to allow the greater portion of the commission on workmen's compensation insurance premium direct to the insurers instead of crediting the association with the whole as heretofore.

The income for the year exceeded the expenditure by £1 4s. 9d. and the amount in hand is more than £225.

The election of officers, etc., for the coming year resulted as follows: President, Mr. Wm. Thompson; vice-presidents, Messrs. J. W. Moore, J. Proud; secretary and treasurer, Mr. E. Moody; auditors, Messrs. E. F. Jones and C. F. Lonsdale; general committee, Messrs. E. Barker, T. Corbett, R. Marshall, R. Mothersdale, E. M. Tweddle, J. A. Tweddle, A. Stephenson, F. R. Turnbull, J. B. Wilson; representatives to Northern Federation meetings, Messrs. W. M. Thompson, J. Proud, A. Stephenson, J. W. Moore, E. M. Tweddle and J. B. Wilson; Tees-side representatives Messrs. E. Barker, R. Mothersdale, T. Corbett, F. R. Turnbull, J. A. Tweddle, and W. M. Thompson.

Minutes of the Northern Centre, Northern Centre Conciliation Board and Northern Federation Executive meeting were read.

A long discussion took place upon the question of agreements between contractors and their sub-contractors, the latter taking up the question with a view to getting more satisfactory conditions as to their payments during the progress of contracts, and it was ultimately decided that the meeting be adjourned for a week, when it was expected a form of contract would be submitted.

MIDDLESBROUGH ASSOCIATION.
Secretary: Walter Rigby.

The annual general meeting of the Middlesbrough and District Building Trades Association was held in the Grand Hotel, on Tuesday, December 1st, the retiring president, Mr. W. S. Davison, in the chair. There was a good attendance of members. The Treasurer's report, showing a good balance at the bank, was read and adopted. The Secretary's report was read and adopted, and the thanks of the meeting were accorded him. The report showed that although the year ending November 30th had been a quiet one, the Association had grown financially, had increased its membership, and was arresting the attention, locally, of all interested in the building trade. The one thing to be regretted was the great slackness of trade. Contracts were few and far between, and consequently competition was very keen. Dealings with architects had been only too infrequent, but, on the whole, pleasant. There had been one or two little clouds on the labour horizon, but the only permanent one is the lack of employment. The inter-trading rule, which has operated so successfully since its adoption, has again been of great service. The rule pays well any care bestowed upon it. Attention was especially called to the arrangement made by the National Federation, by which the BUILDERS' JOURNAL becomes the official organ of the building trades. The Journal is of especial interest to builders, and publishes monthly reports of association work. To subscribers through the association, the journal can be delivered by post at less than the bookstall cost.

Executive meetings have been very well attended, and a marked improvement has taken place in the monthly general meetings. The following officers were elected: President, Mr. W. Masters (Messrs. Masters and Binning, plasterer contractors); vice-president, Mr. W. S. Davison (Messrs. Vinter and Davison, builders); treasurer, Mr. C. Griffiths; secretary, Mr. Walter Rigby, 17, St. John's Terrace, Middlesbrough; Executive Committee: Messrs. Davison, P. Bray, G. Hudson, E. Baker, S. Coates, W. B. Robinson, T. Wilkinson, H. McNaughton, H. Doughty, T. Metcalfe, J. Vinter, W. Bastiman and the officers; Representatives to Teesside Federation: W. Masters, H. McNaughton, P. Bray, W. S. Davison, W. Bastiman, T. Wilkinson, J. W. Vinter, W. B. Robinson, G. Hudson; representatives to Northern Counties Federation: W. Masters H. McNaughton, W. S. Davison, W. Bastiman, G. Hudson, T. Wilkinson, P. Bray, S. Coates, H. Doughty.

Messrs. Halliday and Platts, builders, and Messrs. Tattersall and Clarke, electricians and steeplejacks, were accepted for membership. A hearty vote of thanks was passed to the retiring officers. The next general meeting to take place the second week in January, 1909, to be followed by a smoking concert.

The interior of Messrs. Appleyard and Sons' business premises in the Albert Road has been reconstructed, and the front elevation has been completed in Burmantofts Marmo, with leaded casement and copper name signs. The work has been executed by Messrs. Allison Bros., contractors, Middlesbrough, from a design by Mr. W. G. Roberts, architect, Middlesbrough.

NEWCASTLE AND TYNE DISTRICT.
Secretary: Wilton A Rycroft.

The annual meeting of the Newcastle and Tyne District Association was held on Thursday, November 26th, Mr. R Heslop presiding over a fair attendance of members. The chairman having proposed that a vote of condolence be passed with the widow and family of the late Edward Weatherley, one of the oldest members of the association, in their loss, the business of the meeting was proceeded with.

The treasurer presented the accounts for the past year, showing a substantial balance in favour of the Association. The accounts were duly passed.

The following officers were appointed for the current year: President, Mr. Wm. Foster; vice-president, Mr. J. C. Hope; hon. treasurer, Mr. W. T. Weir; hon. auditors, Mr. A. Pringle, and Mr. J. C. Hope. A committee, and Representatives to the Northern Counties and the Tyne and Blyth District Federations were also elected.

Discussion on various matters included the taking of the BUILDERS' JOURNAL by all the members, the question of inter-trading, and the annual dinner of the Tyne and Blyth District Federation.

The meeting concluded with a hearty vote of thanks to the late president for the manner in which he had filled the chair in the past two years, and for the interest shown by him in the association during his membership extending over many years. Mr. Heslop, in reply, congratulated the association on its freedom from disputes with the operatives during his period of office, due in his opinion to a great extent to efficient organisation on its part, and thanked the past presidents and other members for the help and support extended to him. At the same time, he thought it might be as well to originate something to create more interest among the general body of members, instancing debates on matters of special interest to the trade. He regretted that the state of trade in the district was so bad, but felt that it could not continue in that condition indefinitely; he looked forward to a change shortly, and trusted that the association would continue to flourish, and that it would be even more successful in the future than it had been in the past.

The annual dinner of the Tyne and Blyth District Federation is to be held at the Royal Exchange, Grey Street, Newcastle-on-Tyne, on Thursday, December 17th, at 6.30 prompt, when a full attendance of members and their friends is expected.

SUNDERLAND AND DISTRICT ASSOCIATION.
Secretary: W. H. Hope, Solicitor.

The annual meeting of the Sunderland and District Association was held in the board room, 14, Norfolk Street, Sunderland, on Tuesday, November 24th, at 8 p.m., when a good attendance was present, with Mr. R. J. Huntley (president) in the chair, and Mr. J. Morice Wright in the vice-chair.

The minutes of the general meeting, held on October 6th, were read and signed as correct by the president.

The recommendation passed by the executive council *re* the notice for the alteration of the working rules was considered, and it was resolved: "That it is desirable, when dealing with notices to or from the operatives for any alteration in the working rules, that at least a fortnight shall be allowed to consider the same, and to send in a counter-notice if such notice or notices be received on the last day." Such a rule might do away with either side giving to the other notice of alteration of rule in anticipation of the other side doing likewise. If it is open to either side to give a counter-notice, none might be given, except in cases where a change of rule was really desirable.

On the proposition of Mr. W. B. Cooper, seconded by Mr. J. Morice Wright, it was resolved and carried unanimously: "That this Association approach the operatives with a view to their adopting this resolution without formal notice."

A notice of motion *re* the alteration of working hours (winter) of the bricklayers and joiners was carefully discussed. The proposed alterations are: (b) "From November 8th until November 20th (both inclusive), all men shall commence work at 7 a.m., and cease at 4.30 p.m. (instead of 5 p.m.), with half and hour for breakfast, and one hour for dinner, except on Saturdays, when work shall cease at 12 noon, with the usual half-hour for breakfast, making a total of 44½ hours per week (instead of 47). (c) From November 21st until January 31st (both inclusive), all men shall commence work at 8 a.m., and cease work at 4 p.m., with no time for breakfast and 30 minutes for dinner, except on Saturdays, when work shall cease at 12 noon, with the usual half-hour for breakfast, making a total of 41½ hours. (d) From February 1st until February 20th (both inclusive), all men shall commence work at 7.30 a.m., and cease work at 4.30 p.m., with 20 minutes for breakfast and forty minutes for dinner, except on Saturdays, when work shall cease at 12 noon with the usual half-hour for breakfast, making a total of 44 hours per week." To avoid working hours when it is impossible, through want of light, to see to work, it was further resolved: "That a copy of the notice of motion be forwarded to each member, asking for suggestions which would be considered at a special general meeting of the association."

In the absence of the hon. treasurer, the president presented a satisfactory balance sheet, and congratulated the members upon the sound financial position of the association. He had to regret that the income derived from the insurance commission was considerably below that of last year. This was owing to the large rebates due to the members; and in anticipation of this, the subscription for the year 1908 had not been reduced below that of the preceding year. He recommended that the sum of £100 should be placed upon deposit. This was seconded by Mr. James Taylor, and carried unanimously.

On the proposition of Mr. W. B. Cooper, seconded by Mr. James Taylor, Mr. Robert J. Huntley was unanimously re-elected president. In returning thanks for his re-election, the president said that during the past year his duties had been very light, owing, unfortunately, to the stagnation in the building trade. He would like to draw the members' attention to the rule for preferential treatment which had been put into force at the beginning of the year, resulting in a large increase of membership. Owing, perhaps, to the depression of trade in the district, the rule had not been so stringently enforced as it might have been, but he hoped the members would adhere to the rule wherever possible, thereby bringing into the association those desirable tradesmen who remained outside its ranks.

On the proposition of Mr. J. McMillan, seconded by the president, Mr. J. Morice Wright was unanimously re-elected vice-president. Mr. J. M. Wright suitably thanked the members for his re-election. On the proposition of the president, seconded by Mr. Robert Swan, Mr. Fred W. Ranken was re-elected hon. treasurer, and Messrs. R. J. Hunson and J. T. Clark, hon. auditors.

The following were elected upon the executive council: Messrs. Robert J. Huntley, J. Morice Wright, J. W. White, F. W. Ranken, W. B. Cooper, J. McMillan, A. Stafford, G. Swan, R. Swan, J. M. Gibbons, J. Emmerson, J. T. Clark, R. Kerrison, P. Harle, and James Taylor.

The employers' representatives on the Sunderland Conciliation Board for the Building Trades were appointed, as were also the bricklayers' trade committee. The following were appointed upon the board of representatives of the Northern Counties Federation of Building Trades Employers:—Messrs. Robert J. Huntley, J. M. Wright, J. W. White, F. W. Ranken, W. B. Cooper, J. Emmerson, A. Stafford, and J. McMillan.,

The secretary presented his tenth annual report of the work of the association, which dealt with the steps taken by the association to cover the members' liability under the Workmen's Compensation Act (1906); the relations with the operatives, which had fortunately been free from friction; the work of organisation, and the adoption of the rule for Preferential Treatment; the wages of the operatives; the adoption of the BUILDERS' JOURNAL as the official journal of the National Federation; the Sunderland Corporation (1907) Act; breaking up of streets, etc., to lay drains and service pipes; and several other matters.

The question of the annual dinner was discussed. A poll had been taken amongst the members, and the result had been against the holding of the dinner in view of the distress in the town. On the proposition of the president, seconded by Mr. J. T. Clark, it was resolved: "That the association hold an excursion in the summer in lieu of the annual dinner."

There is nothing to report from the following associations affiliated to the Northern Counties Federation: Gateshead, Stockton-on-Tees, Sunderland, North Shields, South Shields, Tees-side.

TYNE AND BLYTH DISTRICT BUILDING TRADES FEDERATION.

Secretary: W. H. HOPE, Solicitor, Post Office Chambers, 14, Norfolk Street, Sunderland.

A meeting of the dinner committee appointed to consider the question of holding a joint annual dinner of the local associations affiliated to the Tyne and Blyth District Federation, was held at Sunderland on November 24th, Councillor Stephen Easten, of Newcastle-on-Tyne, in the chair. It was decided, on the proposition of the North Shields representatives, who could not see their way to recommending their own town, that the joint annual dinner be held at Newcastle-on-Tyne.

The dates proposed were December 9th or 10th; failing that, the Wednesday or Thursday of the following week. It was left in the hands of the Newcastle Association to decide upon a convenient date and hotel. The price of the dinner tickets was fixed at 6/- each. It was decided to invite the mayors of the different towns, and the presidents of the National Federation and of the Northern Architectural Association, and the presidents of the local associations affiliated with the Northern Counties Federation outside the district federation's area, and the National secretary (Mr. A. G. White), and that the invitations of architects and the officers of the local authorities be left to each local association or to individual members. The musical arrangements were left to the local secretaries and the Federation secretary (Mr. W. H. Hope).—W. H. HOPE.

THE MIDLAND CENTRE OF THE NATIONAL FEDERATION.

Secretary: F. W. AMPHLET, 58, New Street, Birmingham.

The only meeting held of the Midland Centre, since last report has been that of the Midland Centre Conciliation Board, in Birmingham, on November 12th. Mr. John B. Whitehouse (Birmingham) presided, and most of the members of the Board, or their substitutes, were present. The Board met to consider a dispute having reference to the area of the Leicester district. The bricklayers, carpenters, and labourers were involved in the matter, which the Leicester Local Conciliation

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Board had been unable to settle. Mr. W. Yates (Leicester M.B.A.), explained that both sides had agreed to refer the matter to the Mayor of Leicester as arbitrator. The operatives, however, had inserted a condition as to settlement in the statement submitted to the mayor, which brought the matter to a deadlock. Mr. A. Chambers (Leicester M.B.A.) said the question was whether a job that was being carried out by Mr. Chapman, at Wigston, just over four miles from Leicester, came within the Leicester district. He quoted from the working rules in support of the employers contention that the boundary of the Leicester district was a radius of three miles from the Clock Tower as a centre. He also stated that he had letters (two of which he read), from 12 builders, within 4½ miles radius from the Clock Tower, who were not observing the Leicester working rules. Messrs. T. Hickley, A. J. Smith, J. W. Whiston (on behalf of the operatives), claimed that, with the exception of alteration of the working points, the present rules were practically the same as those which had been in existence for the past 28 years. The operatives had opposed the three miles radius from the Centre when the rules were under revision in 1905. From the signing of the rules in that year, it had been understood that the boundary of the Leicester district was three miles from the 1¼ miles walking points. Cases were quoted in support of this contention. After the representatives had stated their case, and the Board had considered the matter, a resolution was proposed to the effect that a radius of 4½ miles from the Clock Tower constitute the Leicester area. The following amendment was then submitted:—"That the Leicester District be defined as a three miles radius from the Clock Tower." The voting resulted in a tie, all the employers voting for, and all the operatives against the amendment. The representatives having re-entered the room, the chairman said he regretted to inform them that the Board had been unable to settle the dispute. The Board was generally agreed that the working rules were badly drawn up, and a suggestion had been made that both parties should agree to a revision of the whole of the rules. The representatives accorded the chairman and the board a hearty vote of thanks for the consideration they had given to the dispute, and the proceedings then terminated.—FRED W. AMPHLETT.

LOCAL ASSOCIATIONS AFFILIATED TO THE MIDLAND CENTRE.

BIRMINGHAM ASSOCIATION.
Secretary: E. J. Bigwood, J.P.

The inter-trading rule was adopted by the Birmingham Association at the annual general meeting, held at the Grand Hotel, Colmore Row, Birmingham, on Tuesday, November 10th, and a sub-committee has been appointed to revise the rules of the association.

A meeting of the local Conciliation Board was held at the Imperial Hotel, Temple Street, on Wednesday, November 18th. The dispute was between Messrs. Tomkinson and Son, of Dansie Street, Liverpool, and the bricklayers. Messrs. Tomkinson were carrying out alterations to premises in Bull Street, Birmingham, and as the work was urgent, the bricklayers were engaged in two shifts (day and night). The men working on the night shift claimed that they should be paid overtime rate for the whole of such time worked, but as there is no local rule on this point the employers could not agree, and the whole question has been referred to the Midland Centre Conciliation Board.

Notices of alterations to working hours have been received from the various operatives.

LEICESTER ASSOCIATION.
Secretary: S. A. Dove.

The number of members to date of the Leicester Association is 127.

The monthly meeting of the council was held on November 11th, when the chair was occupied by the president, Mr. W. Yates.

A discussion arose re tenders for work with specifications and plans without quantities when the job was in competition. It was thought that this plan should be a universal one throughout the whole sections of the Association.

It was resolved that the association subscribe to the BUILDERS' JOURNAL, so that the secretary should be in touch with all the news of the National Federation.

Eight new members were elected.

A letter was read from Midland Centre re the question of the uniformity of working rules, and it was decided that each branch should meet and discuss the matter and report to the next meeting.

On November 30th, communications were sent to the secretaries of the operatives' societies giving notice of alterations of working rules and boundaries. This was done in order that all the starting-times and the boundaries should be as far as possible uniform.

For some time past there has been a dispute with the operatives with reference to the area of the Leicester district. On August 26th, the Association received a letter from the operatives calling their attention to two breaches of the working rules by one of our members. One of these breaches was that he was not paying the standard rate of wages, and the other was that he was not allowing walking time although the job was situated outside the three miles from the Clock Tower. The Association, after consideration, supported their member in his action, and it was mutually agreed that the Local Council be called together to discuss and if possible decide the question. The local representative of the Board of Trade, Alderman T. Smith, who at the time was mayor, was asked to preside as independent chairman. The meeting took place in the Council Chamber of the Town Hall, on September 16th, and was adjourned to the 21st, and again to the following day. No agreement being arrived at on the latter date, both sides mutually agreed that the chairman be appointed arbitrator to define the Leicester District, each side to prepare their case and submit within seven days.

At a further conference, held on October 7th, the arbitrator said that in the written statement by the operatives they specifically asked him to define the area of the Leicester District to read: "Either as to its being three miles from the Clock Tower or as to its being three miles from the walking boundaries" (that is, three, or four and a half miles from the Clock Tower as a centre); whilst the employers left the arbitrator at full liberty to give any decision, not confining him to either the three or the four and a half miles. On the operatives declining to accept the rendering of the agreement as suggested by the employers, the conference broke up without any settlement of the case. The employers then asked for the matter to be laid before the local Conciliation Board, and that Board met on October 27th, when the case on behalf of the employers was again presented by Mr. Arthur Chambers. The local Conciliation Board considered it fully, but were not able to agree, and it was resolved that the joint secretaries be requested to make the necessary arrangements to bring the matter up to the Midland Centre Conciliation Board. That Board met on November 12th, and after a long sitting found they were unable to settle the dispute.

A full meeting of members was held on November 18th, when it was resolved that the matter be handed over to the National Conciliation Board. This Board met on November 26th, in London when the case was again presented by Messrs. A. Chambers and W. Yates. It was pointed out by Mr. Chambers that builders beyond three miles from the Clock Tower had never considered themselves within the Leicester District, and that they were paying smaller wages than the Leicester District called for; further, if Leicester workmen were set on by them, they had to be at the job at starting time, and were not allowed walking time. This is a great drawback to Leicester builders when they are called to pay more wages than the country builders, besides allowing walking time, as they could not successfully compete with the country builders; consequently Leicester builders were very short of work, and the country builders were very busy. It was stated by the operatives that some builders did pay Leicester conditions outside the three miles from the Clock Tower; but why should the operatives claim as a right what many employers have granted as a favour, or perhaps in order to avoid difficulty and trouble; particularly as many of the jobs are but small ones, and on many occasions the men were sent from the employer's shop; and the employers always have paid walking time when the men have been sent from Leicester?

Eventually the witnesses withdrew; to be informed that, after but a few minutes' consideration, the Board had decided the question in favour of the workmen.

NORTHAMPTON ASSOCIATION.
Secretary A. L. Airs.

The monthly committee meeting of the Northampton Association was held at the Peacock Hotel, Northampton, on Friday evening, November 13th. There were very few members present, and in the absence of the president (Mr. E. Archer), who had gone to Paris to attend the International Congress, Mr. R. W. Harris (vice-president) took the chair. There was no very important business to bring forward. The state of trade is still very bad. It was decided to subscribe to the BUILDERS' JOURNAL, for the use of the secretary.

There is nothing to report from the following associations affiliated to the Midland Centre: Bromsgrove, Burton-on-Trent, Coventry, Derby, Dudley, Hinckley, Kidderminster, Leamington, Lincoln, Long Eaton, Loughborough, Mansfield, Newark, North Staffordshire, Nottingham, Nuneaton, Redditch, Stafford, Stourbridge, Walsall, West Bromwich, Wolverhampton, Worcester.

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COMPOSED OF

The London Federation,

The Southern Counties Federation, and

The Eastern Counties Federation.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

THE LONDON FEDERATION.

Secretary: T. COSTIGAN, 31 & 32, Bedford Street, Strand, London, W.C.

The Council of the London Master Builders' Association met on November 19th, and transacted business connected with the following subjects:—1. Joint office premises committee's report. 2. An application from the stonemasons' society on the question of piecework and working rule agreement were duly considered. 3. Correspondence was read. It was decided that the association become a subscriber to the BUILDERS' JOURNAL.

THE SOUTHERN COUNTIES FEDERATION.

Secretary: T. COSTIGAN, 31 and 32, Bedford Street, Strand, London, W.C.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTHERN COUNTIES FEDERATION.

There is nothing to report from the South-Eastern Centre, nor from the Southern Counties Federation, nor from the following affiliated associations: Brighton, Chatham, Gravesend, Maidstone, Portsmouth, Southampton. Reports from these associations would be welcome.

THE EASTERN COUNTIES FEDERATION.

LOCAL ASSOCIATIONS AFFILIATED TO THE EASTERN COUNTIES FEDERATION.

There is nothing to report from the Eastern Counties Federation, nor from the following associations affiliated to that Federation: Cambridge, Great Yarmouth, Norwich. Reports from these associations would be welcome, even if they dealt merely with ordinary routine business.

THE SOUTH-WESTERN CENTRE OF THE NATIONAL FEDERATION.

COMPOSED OF

The South-Western Federation, and

The South Wales Federation.

Secretary: W. F. LONG, 3, Northumberland Buildings, Bath.

BATH ASSOCIATION.
Secretary: E. J. Meredith.

A general meeting of the Bath Association was to have been held on Saturday, November 28th, but owing to the enforced absence of the president, vice-president, and four or five other important members of the committee, mainly through illness, no business was transacted.

Trade here is as dull as possible in all branches.

BRISTOL ASSOCIATION.
Secretary: A. J. Pitt.

As decided upon at the previous meeting, the members of the Bristol Association gave special consideration, at their monthly meeting on November 26th, to the sub-contracting clause in the National form of contract, which provides that "all specialists, merchants, tradesmen, or others executing any work, or supplying any goods for which prime cost prices or provisional sums are included in the specification, who may at any time be nominated, selected, or approved by the architect, are hereby declared to be sub-contractors employed by the contractor; but no such sub-contractor shall be employed upon the works against whom the contractor shall make what the architect considers reasonable objection, or who will not enter into a contract with the contractor upon terms and conditions consistent with those in this contract, and securing the due performance and maintenance of the work supplied or executed by such sub-contract, and indemnifying the contractor against any claims arising out of the misuse by the sub-contractor or his workmen of any scaffold erected or plant employed by the contractor, or that may be made against the contractor in consequence of any act, omission, or default of the sub-contractor, his servants or agents, and against any liability under the Workmen's Compensation Act, 1897, or any amendment thereof."

This clause, it was felt was not so satisfactory to the builder as that recently adopted by the Bristol Corporation, a paragraph of which reads that "provided that if the contractor shall be required by the architect (or engineer), the Corporation, or the specification to employ any particular sub-contractor, he shall not be responsible for work done or materials supplied by such sub-contractor, nor shall he be responsible to see that the clause relating to the payment of wages, and the observance of the hours and conditions of labour is carried out with reference to the persons or workmen employed by such sub-contractor."

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It was, of course, recognised by the members that any alteration in the existing form was a matter attended by great difficulties, and it was accordingly decided to communicate with the secretary of the National Federation, Mr. A. G. White, and to ask him to bring the views of the Bristol Association before the next meeting of the emergency committee for their consideration.

There is nothing to report from the South-Western Centre, nor from the South-Western Federation, nor from the following affiliated associations: Bridgewater, Cheltenham, Exeter, Gloucester, Hereford, Stroud, Taunton.

THE SOUTH WALES FEDERATION.

Secretary: W H. BILLINGS, Salubrious Chambers, Swansea.

LOCAL ASSOCIATIONS AFFILIATED TO THE SOUTH-WALES FEDERATION.

NEWPORT (MON.) ASSOCIATION.
Secretary: R. Richards.

The monthly meeting of the Newport (Mon.) Association was convened for Wednesday, November 3rd. Many special matters were to be considered, among them the question of apprenticeship indenture, suggested new rules applicable to the Swansea operatives, advertisements in the official organ, and a communication from the Lancashire and Cheshire, etc., Building Trades Employers' Federation re enquiry as to fair wages clauses in corporation contracts.

Building operations in the town are generally quiet, but in the Monmouthshire valleys generally building operations are more brisk. Especially is this so in colliery districts.

Work at the new County Borough Technical Institute at Newport has not yet commenced. This is to be regretted in view of the depressed condition of the trade.

The 41st annual dinner of the association was to be held Tuesday, December 8th, at King's Hotel, at 6.30 p.m. The association has invited the leading citizens and professional gentlemen to the dinner, and amongst those gentlemen who had accepted and signified their intention of attending are the Mayor of Newport (Councillor W. Graham White, J.P.), ex-Mayor Councillor Tom Parry, J.P., Alderman Mark Mordey, J.P., Mr. L. H. Hornby, Mr. R. H. Haynes (borough engineer), Mr. John Bain, F.R.I.B.A. (county architect), Mr. E. Maples Linton, Mr. Edgar Fawckner (Messrs. Habershon and Fawckner), and many others.

There is nothing to report from the South Wales Federation, nor from the following affiliated associations: Cardiff, Pontypridd, Swansea.

SCOTTISH BUILDING TRADES FEDERATION.

Secretary: JAMES CAMERON, Solicitor, 61, Lothian Road, Edinburgh.

ASSOCIATIONS AFFILIATED TO THE SCOTTISH FEDERATION

EDINBURGH, LEITH, AND DISTRICT BUILDING TRADES ASSOCIATION.
Secretary: James Cameron, Solicitor.

The monthly meeting of the executive of the Edinburgh, Leith and District Association was held in the Building Trades Exchange, Edinburgh, on Thursday afternoon, November 26th. Mr. David McKie presided, 10 members being present.

The minutes of the former meeting having been adopted, the secretary submitted the names of 16 gentlemen for membership, all of whom were duly admitted. He mentioned that he had secured these proposals in consequence of the circular that had been issued anent the inter-trading rule, and thought that the results had amply justified the action taken by the association. The secretary was cordially thanked, and as an acknowledgment of what he was doing in the interests of the association, the meeting agreed to recommend the association at its annual meeting to allow the secretary 5s. for every new member he secured.

A report on the state of trade showed it to be about the same as last month, and worse than last year at this time.

The secretary reported the present position of matters regarding the opposition to the Edinburgh and Leith Gas Commissioners doing the plumber work on the new buildings for the Gas Commission at Waterloo Place. He stated that he had written to the clerk to the Gas Commissioners asking why schedules had not been issued for the plumber work, as was done in connection with the other departments of the work, and also under what Act of Parliament or Provisional Order the Commissioners had power to do the work themselves—employing men and supplying material. No reply had been received to that communication, as the Gas Commissioners had not met up to the time of reporting.

The annual dinner of the association will be held in the Royal British Hotel, Princes Street, on Thursday evening, December 10th. The following associations have accepted invitations to be represented at the dinner, namely, Glasgow Master Masons' Association, Glasgow Master Wrights' Association, Glasgow Master Plumbers' Association, Edinburgh Architectural Association, Edinburgh Ordained Surveyors' Society, and Edinburgh and Leith House Factors' Association, while the Corporations of Edinburgh and Leith are also to be represented.

Since the issue of the circular *re* the inter-trading rule, the local Press has given the circular in detail, and commented on the "extraordinary move by the Edinburgh Builders." It has ended there, however, for no correspondence has ensued in the papers.

There is nothing to report from the Scottish Building Trades Federation, nor from the following affiliated associations: Aberdeen, Alloa, Dingwall, Dumfries, Dundee, Hawick, Inverness, Keith, Kilmarnock, Oban, Paisley, Perth.

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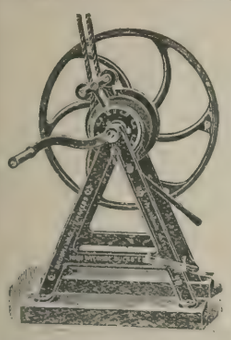
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Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—817 Gerrard. PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

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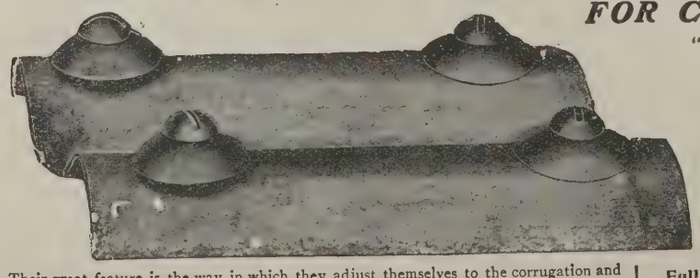
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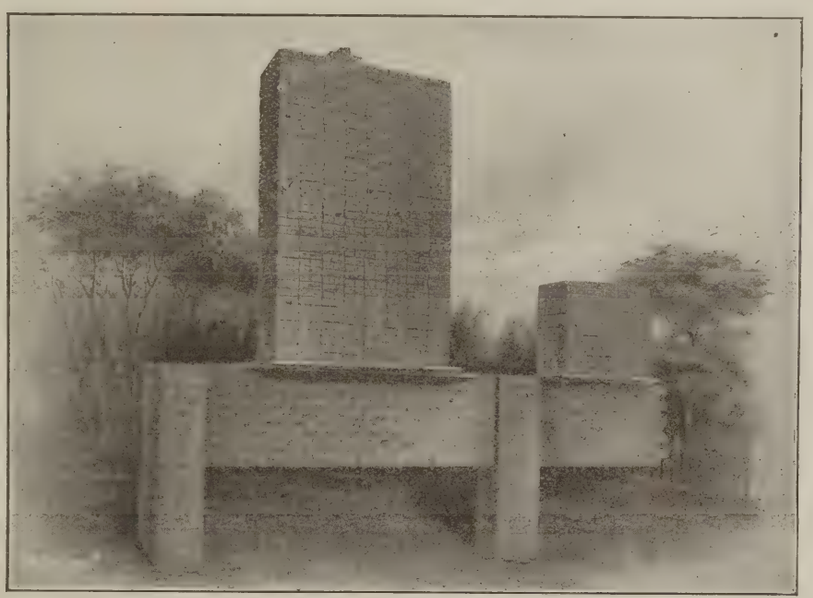
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W. G. Dunham 4,586 0 0
T. and E. Neville 4,481 0 0
H. Martin, Ltd. 4,445 0 0
Goodchild and Jeffery 4,435 0 0
J. Saunders and Son 4,340 0 0
C. H. White 4,300 0 0
W. and D. Wilkins 4,299 0 0
G. W. Buckingham 4,283 15 0
Clark Bros. 4,278 0 0
Barber and George, 33, New Bedford Road, Luton* ... 4,152 0 0
G. Henson and Son 4,112 0 0
E. Brown and Son, Ltd. ... 4,097 10 0
Lewin and Son 4,049 0 0
A. E. Foulks 4,046 10 10

*Accepted.

Minehead.—For erecting a house on the North Hill, for Mr. R. H. Holman. Messrs. Andrew and Hosegood, architects and surveyors, Wellington, Somerset:—

J. H. Hurford £1,650
Parker and Sons 1,495
Passmore and Derrick 1,450
J. W. Burt and Sons 1,330
J. Burgess and Sons 1,298
J. B. Marley* 1,295

(All of Minehead).
*Accepted.

Newham, Cambridge.—For the erection of six houses in Owlstone Road, Newham, Cambridge. Mr. Sidney French, architect, St. Andrew Street, Cambridge:—

Bennett and Sons £2,075
Willmott and Sons 1,950
Clark and Sons 1,875
John Brignell* 1,849

Architect's estimate, £1,890.
*Accepted.

Norwich.—For residence, Unthank Road, Norwich, for C. J. Clarke. Messrs. Morgan and Buckingham, architects, 1, Upper King Street, Norwich. Quantities by architects:—

W. E. Gedge £1,117
J. Youngs and Son 1,065
J. Smith 1,055
T. Gill and Son 1,037
G. E. Hawes and Son* 967

*Accepted.

Pinner, Middlesex. — For the erection of two pairs of semi-detached villas on the West End Park Estate. J. E. Henderson, architect, West End Avenue, Pinner:—

G. Ellement £2,500
A. J. Reynolds 2,488
Milsom and Booth,* Kilburn 2,380

*Accepted.

Thornbury (Glos.).—For erecting class and cloak rooms at the school, Thornbury, for the governors of the Thornbury Grammar School. Mr. F. J. Williams, architect, Chapel Street, Thornbury, R.S.O.:—

A. R. Woodward, Southwell Street, Bristol 705 0 0
E. G. Bishop, Bishopsworth Bristol 685 0 0
Marsh and Stone, Bedminster, Bristol 680 10 0
E. Love, Hampton Road, Bristol 667 0 0
E. Preece, Filton, Bristol ... 650 0 0
G. Dimeny and Sons, Berkeley Glos. 614 0 0
P. Hawkins, Rudgeway, Glos. ... 612 10 0
Tucker Bros., ... 560 5 0
W. W. Pitcher* 498 10 0
G. Brain, Kingswood, Bristol ... 450 0 0
C. Hodges, Easton, Bristol ... 445 17 0

*Accepted.

Winchcombe, Glos.—For the erection of a residence at Winchcombe, Glos. Mr. Thomas Malvern, architect, 21, Winchcombe Street, Cheltenham:—

T. H. Kingerlee and Sons, Oxford £2,411
F. J. Green, Greet 2,127
R. West, Moreton-in-Marsh 2,100
J.E. White, Evesham 1,885
J. A. Oakey, Winchcombe 1,851
R. R. Skemp,* Cheltenham 1,850

*Accepted.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Insurance Coupons have this week been sent to the following:—

T. F. G. (Cricklewood), E. T. P. (Westminster), P. P. (Westminster), T. C. (Bakewell), J. E. D. (Ashton-on-Mersey), T. A. (Bramley), H. H. K. (Bath), J. R. (Halifax), B. C. (Haslingden), J. M. (Leicester), F. J. (Gt. Yarmouth), W. W. M. (Sheffield), H. (Sheffield), T. E. (Sheffield), S. J. W. (Northampton), F. S. (Worthing), C. P. S. (Ipswich), D. H. M. (Aberdare), J. H. (Edinburgh), G. E. (Edenbridge), J. C. (Manchester), G. T. (Birmingham), R. B. (Birmingham), E. U. (Leeds), J. C. (Preston), F. N. (Bolton), J. B. (Oldham), L. C. G. G. (Southport), E. B. (Croydon), H. G. C. (Frome), H. W. C. (Brightlingsea), W. A. T. F. (Wellingborough), T. H. B. (Barnsley), J. B. J. (Liverpool), J. E. (Oldham), T. B. V. (Preston), W. W. (Walsall), G. I. (Walsall), R. C. (Haslingden), T. R. (Birmingham), F. W. (Oldham).

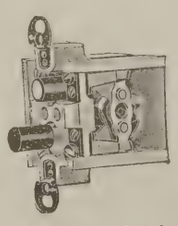
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LIVERPOOL COTTON EXCHANGE, RITZ HOTEL, ETC.

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Heating Engineer.
15, CRAVEN ST., LONDON W.C.

COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Dec. 10. LONDON, N.W. — Erection of new church at Golder's Green (Parish of All Saints', Child's Hill, N.W.). Bills of quantities obtainable from Wills and Anderson, architects, 24, Bloomsbury Square, W.C. Deposit of £1 will be required. Sealed tenders required by Dec. 10.

Dec. 10. SALISBURY.—Internal and external renovations to the Fisherton County Police Station, Salisbury, and for erecting a new wash-house, for the Wilts C.C. Specifications and form of tender can be obtained on application to the county surveyor, Trowbridge. Sealed tenders, addressed to the county surveyor, and endorsed "Tender for Fisherton County Police Station," must be delivered at the office of J. G. Powell, county architect and surveyor, County Surveyor's Office, Trowbridge, on or before Dec. 10.

Dec. 12. LEEDS.—Alterations necessary to convert the building hitherto known as the Queen's Arcade Hotel into a cafe. Contractors desirous of tendering are requested to send their names to W. Broadbent, M.S.A., architect, Red Hall Chambers, Guildford Street, Leeds, and at Horsforth, on or before Dec. 12.

Dec. 12. REDCAR.—Alterations and extensions to Ings Farm buildings, near Redcar, for the Marquess of Zetland. Tenders are invited for slater's work. The quantities may be seen at the Zetland Estate office, Marske, between the hours of 9 a.m. and 5 p.m. Tenders to be endorsed "Ings," and delivered to T. E. Senior, Zetland Estate Office, Marske-by-the-Sea, not later than Dec. 12.

Dec. 12. PENDEEN.—Erection and completion of proposed Council school at Pendeen, near St. Just, for the Cornwall Education Committee, according to plans and specification which may be seen by appointment at the school, or at the office of S. Hill, architect to the Committee, Green Lane, Redruth, from whom all particulars relating to the work may be obtained. Forms upon which all tenders are to be made may be had from the architect or at the School. Sealed endorsed tenders are to be sent to F. R. Pascoe, secretary, Education Office, Truro, on or before Dec. 12.

Dec. 12. BANDON.—Erection of 144 single cottages, with fencing of an acre plot of land to be attached in every case, at a cost not exceeding £130 per cottage and plot, for the Bandon R.D.C. The works to be completed within six months after the sites have been laid out by the Council's engineer, under a penalty for delay of £1 per week for each cottage. A deposit of £2 per cottage must be lodged with each tender, and an official acknowledgment obtained therefor. Conditions of contract and any other particulars required, as well as tender forms, can be had on application fro A. Haynes, clerk of District Council, Council Office, Workhouse, with whom tenders should be lodged not later than 11 a.m. on Dec. 12.

Dec. 14. BLACKBURN.—Erection of a bandstand, in the Corporation Park, Blackburn, for the Parks Committee. Tenders, etc., to be sent to W. Stubbs, A.M.I.C.E., borough engineer, Municipal Offices, Blackburn, on or before Dec. 14.

Dec. 14. BIRKENHEAD.—Alterations and additions to the Welsh Independent Chapel, Victoria Street, Birkenhead. Plans and specifications may be inspected with L. W. Williams, architect and surveyor, 410, Park Road North, Birkenhead, to whom sealed tenders should be delivered on or before Dec. 14.

Dec. 14. NORTH BROOMHILL.—Alterations to branch premises, North Broomhill, for the Broomhill Co-operative Society, Ltd. Plans and specifications can be seen upon application to the Secretary at the Society's Central premises, Broomhill. Tenders to be delivered not later than December 14, addressed to the committee and endorsed "Tender for alterations."

Dec. 14. BRIDLINGTON.—Erection of a new chancel and organ chamber to the church of St. Anne's, at the Convalescent Home, Bridlington. Persons desirous of tendering can obtain bills of quantities of W. S. Walker, F.R.I.B.A., architect, 52, Quay Road, Bridlington. Only whole tenders will be considered. Tenders to be delivered to the architect at the same address not later than 10 o'clock on December 14.

Dec. 14. WEDNESBURY.—Erection of a public sanitary convenience near the Market Place, for the Town Council. Plans, specification, and conditions of contract (no quantities) can be inspected and form of tender obtained, at the offices of E. M. Scott, borough engineer and surveyor, Town Hall, Wednesbury. Sealed tenders, to be addressed to the borough surveyor, endorsed "Public Sanitary Convenience," by Dec. 14. Fair wages clause.

Dec. 14. MIDDLETON.—Following works in connection with the erection of a new school in Durnford Street, Middleton, for the Corporation: Draining all the premises; tiling of rooms, hall, corridors, etc. Specifications, quantities and form of tender, which will include a fair wages clause, and any further particulars may be obtained from E. Wood, architect, 78, Cross Street, Manchester. Tenders, endorsed "Draining," or "Tiling," as the case may be, and addressed to the Chairman of the Education Committee, must be delivered at the office of F. Entwistle, town clerk, Town Hall, Middleton, not later than Dec. 14.

Dec. 15. RAVENFIELD.—Erection of a new school at Ravenfield for the West Riding C.C. Whole or separate tenders are invited. A deposit of £1 must be paid to the West Riding treasurer, and sent to him direct at the County Hall, Wakefield, otherwise applications will not be entertained. Sealed tenders, properly endorsed, to be sent not later than 10.30 on the morning of Dec. 15, to S. Abson, divisional clerk, Woodhouse, Sheffield.

Dec. 15. WORCESTER.—Erection of new station buildings at Bransford Road, near Worcester, for the directors of the Great Western Ry. Co. Plans and specification may be seen and forms of tender and bills of quantities obtained at the office of the engineer at Gloucester Station, between the hours of 10 a.m. and 4 p.m. Tenders, addressed to G. K. Mills, secretary, Paddington Station, London, and marked outside "Tender for Works at Bransford Road," will be received on or before Dec. 15.

Dec. 15. DURHAM.—(1) Removal of iron school from Dean Bank to Chopwell. (2) Alterations and improvements at Sedgefield Infants' Council School, for the Durham C.C. Plans, specification, and general conditions of contract may be seen, and bills of quantities (for Sedgefield Infants' Council School only) obtained at the office of F. E. Coates, A.R.I.B.A., Shire Hall, Durham. Sealed tenders, endorsed with name of school, are to be sent to A. J. Dawson, clerk to the Education Committee, Shire Hall, Durham, on or before Dec. 15.

Dec. 15. LONDON, E.—Repairing, painting, and sundry work at Essex Road, Hartley Avenue, Plashet Lane, and Shaftesbury Road Schools, for the Education Committee of East Ham. Specifications and forms of tender may be obtained at the Education Office, Wakefield Street, East Ham. The work must be completed by the end of the next ensuing Christmas vacation. The contractor must deposit with each tender a £5 Bank of England note or crossed cheque of equal value. Tenders, on the printed form, must be delivered to H. C. Padgett, secretary, Education Office, East Ham, E., not later than 3 o'clock in the afternoon of Dec.15, and should be endorsed "Tender for General Repairs." Tenders may be made by any one contractor in respect of all or any of th schools named in the specifications. Fair wages clause.

Dec. 16. TREORCHY, Wales.—Erection and completion of a new vestry at Treorchy, Rhondda Valley, for the Trustees of Noddfa Baptist Chapel, Treorchy. Plans and specification may be seen and bills of quantities obtained at the office of W. D. Morgan, M.S.A., architect, 194, Ystrad Road, Pentre, on payment of a deposit of £1 1s. Sealed and endorsed tenders to be delivered by noon on Dec. 16.

Dec. 16. RIPON.—Improvements at Ripon Station, for the Directors of the North-Eastern Railway. Plans and specification may be seen and quantities and further information obtained upo application to W. Bell, the company's architect, at York. Duplicate plans may also be seen upon application to the Station-master, Ripon. Quantities supplied on personal application to parties tendering for the whole of the works. Sealed tenders, marked "Ripon Station Improvements," to be sent to the Secretary at York, not later than 9 a.m. on Dec. 16.

Dec. 16. CORK.—Erection of new barrack floor, Cork Barracks, Ireland. The plans and specification may be inspected at the office of the Director of Barrack Construction, Cork, up till Dec. 9th. A copy of the bills of quantities and form of tender may be obtained on application, addressed to the Director of Barrack Construction, 80, Pall Mall, London, S.W., if accompanied by a remittance of 10s., payable to him. No application will be considered if received after Dec. 11. Tenders must be addressed in sealed envelopes to the Director of Army Contracts, War Office, Whitehall, London, S.W., and must be delivered not later than 12 o'clock noon, on Dec. 16. The envelope should be marked "Tender, New Barrack Block, Cork." The bills of quantities should accompany the tender in a separate sealed envelope similarly addressed, and marked "Bills of Quantities, New Barrack Block, Cork," and should bear the contractor's name and address thereon.

Dec. 16. CURRAGH CAMP.—Erection of one block of married soldiers' quarters at Curragh Camp, Co. Kildare, Ireland. The plans and specification may be inspected at the office of the Director of Barrack Construction, Curragh Camp, up till Dec. 9. A copy of the bills of quantities and form of tender may be obtained on application addressed to the Director of Barrack Construction, 80, Pall Mall, London, S.W., if accompanied by a remittance of 10s., payable to him. No application will be considered if received after Dec. 11. Tenders must be addressed in sealed envelopes to the Director of Army Contracts, War Office, Whitehall, London, S.W., and must be delivered not later than 12 o'clock noon, on Dec. 16. The envelope should be marked "Tender Married Soldiers' Quarters at Curragh Camp." The bills of quantities should accompany the tender in a separate sealed envelope, similarly addressed, and marked "Bills of Quantities, Married Quarters, Curragh Camp," and should bear the contractor's name and address thereon.

Dec. 17. BRECON.—Construction of new cells, and for various alterations, re-building, etc., at the Builth Police Station, for the Standing Joint Committee. The plans and specification can be seen at the office of C. W. Best, M.I.C.E., County surveyor for Breconshire, County Hall, Brecon, and bills of quantities obtained on deposit of £2 2s. Tenders must be delivered at the same place not later than 12 noon on Dec. 17.

Dec. 17. MULLINGAR.—Keeping in repair all the roofs, downpipes, gutters, and internal plastering of the entire Asylum. No attendance will be provided other than that of patients' labour. For the Joint Committee of Management of the District Lunatic Asylum, Mullingar. Form of tender can be obtained at the Asylum Office (none other will be considered) between the hours of 10 a.m. and 5 p.m. daily, up to Dec. 12, on deposit of £1 as proof of bona-fide. Sealed tenders are to be deposited in the Asylum tender box at or before 11 o'clock a.m. on Dec. 17, or, if by post, to be addressed to the Resident Medical Superintendent, marked "Tender for ——." Securities required.

Dec. 18. CARDIFF.—Supply, delivery, and erection at the generating station of the following, for the Corporation:—One 2,500 K.V.A. turbo-alternator complete, with surface condensing plant and motor-driven auxiliaries. Specifications and form of tender may be obtained from A. Ellis, City electrical engineer and manager, Central Offices, the Hayes, Cardiff, on payment of a deposit fe of £1 1s. The successful contractor will be required to enter into the usual form of agreement, a copy of which can be seen at the town clerk's office. Sealed tenders, endorsed "Turbo-alternator," to be delivered at the office of J. L. Wheatley, town clerk, City Hall, Cardiff, on before 10 a.m., Dec. 18.

Dec. 19. MERTHYR TYDFIL.—Erection of 38 houses at Danyderi, Merthyr Vale, and 68 houses at Penywern, Dowlais, for the Corporation. Separate tenders, endorsed "Danyderi Houses" and "Penywern Houses" respectively, must reach T. A. Rees, town clerk, Town Hall, Merthyr Tydfil, not later than 12 o'clock noon on Dec. 19. Plan and specifications may be seen and forms of tende obtained at the office of the borough surveyor, Town Hall, Merthyr Tydfil.

Dec. 19. ACCRINGTON.—Erection and completion of public baths, laundry, boiler-house and chimney to be built in St. James' Street, adjoining the premises of the Salvation Army, for the Corporation. Plans and drawings may be seen, and forms of tender, with specifications, general conditions, bill of quantities, etc., obtained, on application to the architect, W. J. Newton, borough engineer, Town Hall, on and after December 19, on payment of £5. Sealed tenders, endorsed "Public Baths," to be delivered to A. H. Aitken, town clerk, Town Hall, Accrington, not later than the time stated in the general conditions.

Dec. 21. CANTERBURY.—Alterations and extensions to the City School of Art, in St. Peter's Street, for the Education Committee. All particulars of the work may be obtained at the office A. C. Turley, A.M.I.C.E., city surveyor. Sealed

tenders for the work must be forwarded to the town clerk, Burgate Street, by 10 a.m. on Dec. 21.

Dec. 21. DUBLIN. — Extension of the goods store at Portadown Station, for the Great Northern Railway Co. (Ireland). Parties wishing to tender for the work may see the drawings and specification at the office of W. H. Mills, engineer-in-chief, Amiens Street Terminus, Dublin; or copies of them at the office of the district engineer, Belfast, and can obtain at the said offices forms of tender on payment of 1s. each (not returnable). Tenders, made out on the forms supplied by the company, should be delivered under sealed cover, endorsed "Tender for Extension of Goods Store, Portadown," to T. Morrison, secretary, secretary's office, Amiens Street, Terminus, Dublin, not later than 10 a.m. on Dec. 21.

Dec. 21. WOOLWICH.—Erection of R.A.M.C. officers' mess and quarters, Woolwich. The plans and specification may be inspected at the office of the Director of Barrack Construction, 80, Pall Mall, London, S.W., up till Dec. 9. A copy of the bills of quantities and form of tender may be obtained on payment of the sum of 10s. to the Director of Barrack Construction. No application will be considered if received after Dec. 11. Tenders must be addressed in sealed envelopes to the Director of Army Contracts, War Offic, Whitehall, London, S.W., and must be delivered not later than 12 o'clock noon on Dec. 21. The envelopes should be marked "Tender, R.A.M.C. Officers'-Mess, Woolwich." The bills of quantities should accompany the tender in a separate sealed envelope, similarly addressed and marked "Bills of Quantities, R.A.M.C., Officers'-Mess, Woolwich," and should bear the contractor's name and address thereon.

Dec. 22. ST. MARY CRAY.—Erection of a new council school to accommodate 300 children at St. Mary Cray, Kent, for the Kent Education Committee. Plans and specification, prepared by W. H. Robinson, committee's architect, and conditions of contract may be inspected at the offices of the committee on and after December 14, between the hours of 10 a.m. and 4 p.m. (Saturday excepted), until the time appointed for the delivery of tenders. Any person desiring to tender and to receive copy of the bills of quantities must send in his name, accompanied by a deposit of £1, to F. W. Crook, secretary, Caxton House, Westminster, S.W., not later than 10 a.m. on December 10. Tenders, on the form to be supplied with the bills of quantities, must be enclosed in a sealed envelope, endorsed "St. Mary Cray Tender," addressed and delivered to the school correspondent, G. E. Wright, Belgrave, St. Mary Cray, Kent, not later than noon on December 22.

Dec. 31. PENZANCE.—Erection of a dwelling-house and shop at South Terrace, Penzance, for G. Kettner. The drawing and specifications may be seen on application at the offices of O. Caldwell, F.R.I.B.A., architect, Victoria Square, Penzance. Tenders are to be sent to Mr. Kettner on or before Dec. 31.

Jan. 6. HEXHAM.—Erecting a new secondary school at Hexham. Contractors desirous of tendering for the work should forward particulars of their name and address to C. Williams, secretary to the Education Committee, the Moothall, Newcastle-on-Tyne, not later than December 12, accompanied by a deposit of £2 2s. for specification and bills of quantities. Plans of the work may be inspected at the Committee's Office or at the office of Oliver, Leeson and Wood, Milburn House, Newcastle-on-Tyne, and tenders endorsed "Tender for Hexham Secondary School," must be forwarded to the Secretary not later than noon on January 6.

No date. ST. HELENS.—Erection of a new monastery at St. Helens Junction. Builders and contractors desirous of tendering can have quantities and particulars from R. Curran and Son, architects, Warrington, on deposit of £2 2s.

No date. MOORTOWN.—Erection of a pair villas in Sand Hill Lane, Moortown, for Mrs. Taylor. Contractors desirous of tendering for any of the trades must send their names to Messrs. Mosley, Estate Agents, 6, Wormald Row, Leeds; and a copy of quantities will be forwarded to them in due course.

No date. LONDON, S.W.—Pulling down and materials of two houses known as "Bryan Wood" and "Stanhope House" on Wimbledon Theatre site, at the junction of the Merton and Russell Roads, Wimbledon. All materials to become the property of the pulling-down contractor. For specification, etc., apply to J. B. Mulholland, King's Theatre, Hammersmith, W.

ENGINEERING.

Dec. 14. MANCHESTER.—Supply and erection at the sewage works, Davyhulme, near Manchester, of crushing and screening plant complete, adequate for dealing with a maximum quantity of 100 tons of granite per day, for the Rivers Committee. Samples of the stone may be seen, and general conditions and stipulations of contract may be obtained, on applicaion to the secretary of the Rivers Deparment, Town Hall, Manchester Tenders must be enclosed in the official envelope provided expressly for the purpose (otherwise tender will not be considered), and delivered at the above office not later than 10 a.m. on Dec. 14

Dec. 17. BOSWYN.—Construction of a storage reservoir at Boswyn, near Camborne, together with intake works, mains, the erection of a battery of pressure filters, etc., for the Camborne Water Works, Camborne, Cornwall, in accordance with plans and specifications prepared by the company's consulting engineer. Plans may be seen, and copies of the specification, bills of quantities, and form of tender obtained at the offices of the Company between the hours of 10 a.m. and 4 p.m., on deposit of £3 3s. Uncoloured prints of the drawings may be obtained from the printers for 2s. 3d. each, upon the production of a written permit from J. Champion, secretary, such prints to be paid for by the parties tendering, and returned with the tender, by them to the secretary, or the deposit fee will be forfeited. Sealed tenders, endorsed "Tender for Boswyn Reservoir, etc., Contract No. 1," to be deposited at the Company's offices on or before Dec. 17.

Dec. 21. MANCHESTER.—Laundry machinery required to be delivered and fixed at the Withington Workhouse, West Didsbury, Manchester, for the Guardians of the Poor of the Chorlton Union. Specifications, showing the machinery required, may be obtained on application to D. S. Bloomfield, clerk to the Guardians, Union Offices, All Saints', Manchester. Sealed tenders must be delivered to him not later than 5 p.m. on Dec. 21.

Dec. 21. BRAINTREE.—Delivery and erection of a gas engine, suction-gas plant, and set of two-throw well pumps with accessories, at the Waterworks Pumping Station, Braintree, Essex, for the U.D.C. Copies of the drawings, specification and form of tender can be obtained from P. Griffith, engineer, 54, Parliament Street, Westminster, S.W., on payment of £5. The Council reserve to themselves the right to restrict the supply of drawings, specifications and forms of tender to selected firms of standing and repute. Sealed tenders, endorsed "Tender, Contract No. 2." are to be delivered to H. J. Cunnington, clerk to the Council, Braintree, Essex, on or before December 21.

Dec. 31. SWINTON.—Supplying and erecting of a refuse destructor plant within the district, for the Swinton and Pendlebury U.D.C. Particulars and conditions can be obtained on application to H. Entwisle, surveyor, Council Offices, Swinton, Manchester. Sealed tenders to be returned not later than Dec. 31 to W. T. Postlethwaite, clerk to the Council, Council Offices, Swinton.

IRON AND STEEL.

Dec. 10. LONDON.—Supply of the following stores, for the Directors of the Great Indian Peninsula Railway Co.:—Bolts and nuts, steel and iron work for bridges, screw couplings. Specifications and form of tender may be obtained at the office of J. I. Berry, secretary, Company's Offices, 48, Copthall Avenue, E.C., on payment of the fee for the specification, which payment will not be returned. Tenders must be delivered in sealed envelopes, addressed to the secretary, marked "Tender for Bolts and Nuts," or as the case may be, not later than 11 o'clock a.m. on December 10.

Dec. 11. ABERDEEN.—Supply of cast iron, malleable iron and ironmongery, brass work, lead and tin pipes and plumber work, tinsmith work, timber, painter and glazier work, bricks, lime, Portland cement, oils, etc., for the Town Council of Aberdeen (Police Department). Schedules of quantities, conditions of contract, and information regarding the various articles required can be had at the burgh surveyor's office. Tenders are to be lodged with W. Dyack, burgh surveyor, burgh surveyor's office, Aberdeen, not later than Dec. 11, at 12 o'clock noon.

Dec. 14. LONDON, S.W.—Supply of flat-bottomed rails 85 lb. per yd., and fishplates, for the Crown Agents for the Colonies on behalf of the Government of Hong Kong. Forms of tender and all particulars may be obtained on application at the office of the Crown Agents for the Colonies, Whitehall Gardens, London, S.W., between the hours of 10 a.m. and 4 p.m. (Saturdays 10 a.m. to 1 p.m.), on payment of a deposit of £1. Tenders to be delivered in sealed envelopes, addressed to the Crown Agents for the Colonies, Whitehall Gardens, S.W., not later than noon on Dec. 14, endorsed "Tender for Rails and Fishplates."

Dec. 15. TRANMERE.—Supply and erection of a corrugated iron portable building, to accommodate 50 persons, at the Birkenhead Union Workhouse, Church Road, Tranmere. Tenders, with drawings, specifications, and price, are to be sent to J. Carter, clerk to the Board, Poor Law Offices, Conway Street, Birkenhead, on or before Dec. 15, endorsed "Iron Building."

Dec. 16. DUBLIN.—Supply of 1,200 tons Bullhead steel rails (85 lbs. per lin. yd.) with corresponding fishplates, half to be delivered in February and half in June, 1909; also for the supply of 700 tons of Bullhead cast-iron chairs, 400 tons to be delivered in January, and 300 tons in June, 1909, for the Dublin and South-Eastern Ry. Co. Specifications and forms of tender can be had on application to S. J. Shannon, engineer's office, 1, Westland Row, Dublin. Tenders, marked "Tenders for Rails and Chairs," and addressed to M. F. Keogh, secretary, Westland Row Station, Dublin, to be forwarded so as to be received not later than 10 a.m. on Dec. 16.

Dec. 19. LONDON, S.W.—Enclosing ends of covered yard with Iron Framing and Corrugated Iron, etc., Building Shelter for petrol tank, and other works at the Mead Ambulance Station, Carnwath Road, Fulham, S.W., for the Metropolitan Asylums Board, in accordance with drawings, conditions of contract, and specification prepared by W. T. Hatch, M.I.C.E., M.I.M.E., engineer-in-chief. The drawings, conditions of contract, specification and form of tender may be inspected at the Office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £2. Tenders addressed as noted on the form, must be delivered at the Office of the Board not later than 10 a.m., on December 19th.

No date. DUNMOW.—Excavations, concrete foundations, and sundry walls, etc., in connection with corrugated iron buildings; also for the iron buildings of a bacon factory, to be erected at Dunmow, Essex. Specifications and plans may be had on depositing £3 3s. Apply to W. Douglas and Sons, Ltd., bacon factory engineers, Douglas Wharf, Putney, London, S.W.

PAINTING.

Dec. 10. ASHTON-UNDER-LYNE.—Painting distempering, etc., the following schools: Charlestown, Christ Church Central, Gatefield, and Holy Trinity, the work to be done during the Christmas vacation, for the Education Committee. Specifications and forms of tender may be obtained at the Education Office, Mechanics' Institute. Sealed tenders, endorsed "Tender for Painting ——— School," and addressed "Mr. John Neal, Borough Comptroller, Town Hall, Ashton-under-Lyne," to be delivered by Dec. 10.

Dec. 11. SHEFFIELD.—Plumbers' and glaziers' work required for general repairs during the year ending Dec. 31, 1909, for the Education Committee. Specifications and forms of tender, together with cover, may be had on application at the office of the Education Committee, until Dec. 7. Sealed tenders, which will only be received on the form and in the cover provided, should be sent to G. S. Baxter, secretary, Education Office, Leopold Street, not later than Dec. 11.

Dec. 14. LEEDS.—Painting, etc., the interior and exterior of the Meanwood Road baths. Specification may be seen, and forms of tender and schedules of work obtained at the office of W. T. Lancashire, city engineer. Tenders, properly endorsed, must be received at the town clerk's office not later than 10 a.m. on Dec. 14.

Dec. 18. PRESTON, LANCS.—Cleaning, painting, etc., of the Wheatsheaf Inn, Regatta Inn, Moor Park Inn, County Arms, and Corporation Arms, for the Corporation. Specification, with form of tender, may be had, and further particulars obtained, at the office of the borough engineer, town hall, Preston, to whom sealed tenders, endorsed "Tender for Painting," must be delivered by 12 noon on Dec. 18. Fair wages clause.

PLUMBING & SANITARY

Dec. 12. ABERAVON.—Construction of a 12-in. Water Main about two miles in length for the B.C. The work is divided into two contracts. No. 1 comprises the providing of all implements, materials (except materials to be supplied by the Council), and labour, etc. No. 2 comprises the providing and delivery of cast-iron pipes, valves, hydrants, etc. Plans and specification may be seen and form of tender, bills of quantities, and further particulars obtained at the office of J. Roderick, borough surveyor, Town Hall, Aberavon, upon payment of £2. Sealed tenders, endorsed "Water Main," must be delivered to M. Tennant, town clerk, not later than noon on Dec. 12.

Dec. 14. WEDNESBURY.—Erection of a public sanitary convenience near the Market Place, for the Town Council. Plans, specification, and conditions of contract (no quantities) can be inspected, and form of tender obtained, at the offices of E. M. Scott, borough engineer and surveyor, Town Hall, Wednesbury. Sealed tenders, to be addressed to the borough surveyor, endorsed "Public Sanitary Convenience," on or before Dec. 14. Fair wages clause.

Dec. 14. OSSETT.—Construction of precipitation tanks, percolating and straining beds, humus tanks, alterations to buildings and lightening the land at the Spa Sewage Outfall Works, for the Corporation. Persons desirous of tendering must send in their names to W. Brook, town clerk, Town Hall, Ossett, not later than December 14, after which date plans may be inspected and specification and bills of quantities obtained on payment of a deposit of £2 2s.

Dec. 14. HINCKLEY.—Additional works at the Sewage Disposal Works, Sketchley Farm, consisting of the construction of settling tanks, screening and ejector chambers, detritus tank, and concrete carriers, etc., for the U.D.C. The plans may be seen and specification, bill of quantities, and form of tender may be obtained on payment of £2 2s. from the Council Offices, Hinckley, and tenders must be delivered in sealed envelopes, endorsed "Tenders for Sewage Disposal Works," to E. H. Crump, A.M.I.C.E., engineer and surveyor, Council Offices, Hinckley, at or before noon on Dec. 14.

Dec. 14. YARDLEY.—Provision and construction of the following sewers for the R.D.C.:—3,450 yds. of 3 ft. 6 in. by 2 ft. 4 in. brick and concrete sewer, 204 yds. of 4 ft. circular sewer, together with manholes, lampholes, and other works appertaining thereto, in accordance with plans, drawings, specification and conditions of contract, which may

be seen on application to A. W. Smith, engineer and surveyor, Council House, Sparkhill, near Birmingham, between the hours of 10 and 1 and 3 and 5 (Saturdays 10 to 1). Specification, bill of quantities, and form of tender may be obtained on payment of £3 3s. to F. L. Thompson, clerk of the Council, the Council House, Sparkhill, near Birmingham. Sealed tenders, endorsed "Cole Valley Sewer," to be addressed and delivered to the clerk of the Council not later than noon on Dec. 14. Fair wages clause.

Dec. 15. ASHBY.—Works of sewerage to be carried out in Ashby, including brickwork, excavating, pipelaying, etc., and leading, for the Glanford Brigg R.D.C. A plan and specifications may be seen, and a form of tender obtained, at the office of J. Bainton, surveyor to the Council, at 3, Wells Street, Scunthorpe, on any Monday from 10 a.m. to 6 p.m., or on any day from 4.30 to 6. Tenders addressed to the Council, and marked "Tender for Sewerage Works," must be sent to F. C. Hett, clerk, Brigg, on or before Dec. 15.

Dec. 15. BIRMINGHAM.—Construction of about 1,100 yds. of pipe sewers in Belcher's Lane, together with manholes and other incidental works, for the Public Works Committee. Plans and specification may be seen, and quantities and forms of tender obtained on deposit of the sum of £2. Fair wages clause. Tenders, sealed and endorsed "Belcher's Lane Sewerage," and addressed to the chairman of the Public Works Committee, to be delivered at the office of H. E. Stilgoe, M.I.C.E., City engineer and surveyor, the Council House, Birmingham, not later than Dec. 15.

Dec. 19. HALIFAX.—Construction of about 150 yds. of 5 ft. by 3 ft. 4 in. brick sewer in Queen's Road. Plans and specifications may be seen and forms of tender obtained on application to J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax, upon payment of the sum of £10. Tenders, endorsed "Queen's Road Sewer," must be sent to K. Walton, town clerk, not later than 12 o'clock noon on Dec. 19. Fair wages clause.

Dec. 24. YNYSCYNHAIARN.—Work and material required in the construction of sewage disposal works and sewering, at the Borth-y-Gest Sewage Disposal, for the Ynyscynhaiarn U.D.C. Drawings may be seen and copies of specification, quantities, and general conditions of contract obtained at the offices of J. Commin, engineer, 1, Victoria Street, Westminster, S.W., or at the office of J. Jones, clerk to the Council, Town Hall, Portmadoc, between the hours of 10 a.m. and 4 p.m. (Saturdays excepted), on payment of £1 1s. Tenders, endorsed "Borth-y-Gest Sewage Disposal," must reach the clerk to the Council not later than 12 o'clock noon, Dec. 24.

Dec. 29. MANSFIELD WOODHOUSE.—Construction of sewerage and sewage disposal works for the Forest Town portion of their district, for the U.D.C., and laying out about five acres of land for the disposal of the sewage, together with all manholes, valves, and other appurtenant works. The drawings, plans and specifications may be seen at the office of F. P. Cook, A.M.I.C.E., engineer, Leeming Street, Mansfield, on and after December 17, and schedule of quantities and a form of tender may be obtained from him on payment of a deposit of £3 3s. Sealed tenders, endorsed "Tender for Forest Town Sewerage Scheme," are to be sent to J. E. Alcock, clerk to the Council, Leeming Street, Mansfield, so as to arrive not later than 12 o'clock noon on Dec. 29.

Dec. 30. HARROGATE.—Colouring, whitewashing, and varnishing, at the Royal Bath Hospital, and Rawson Convalescent Home, Harrogate, for the Committee of Management. Specifications may be seen daily at the hospital from 1 to 4 p.m. Tenders to be sent in by Dec. 30.

ROADS AND CARTAGE.

Dec. 10. GREENWICH.—A cargo of about 500 tons Channel Island or genuine Guernsey granite spalls for stone breaking, for the Greenwich Union, Grove Park Workhouse, Lee. Forms of tender can be obtained on application at the clerk's office, Woolwich Road, Greenwich, and must be returned on or before 12 o'clock noon on Dec. 10, on which date they will be opened at a meeting of the Guardians.

Dec. 10. PEMBROKE.—Broken boulder or river stone, or other county Dublin stone, suitable for macadam for road-making, and maintenance purposes, for the Pembroke U.D.C., in keeping with form of tender, which can be obtained of J. C. Manly, clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co. Dublin. Tenders to be sent in on or before Dec. 10, and addressed to the chairman of the Roads Committee.

Dec. 12. HARBORNE.—Widening and reconstructing a portion of Ravenhurst Road, Harborne, for the Harborne Tenants, Ltd. The drawing and specification may be seen at the Works office of the Society in Moor Pool Avenue, Park Hill Road, Harborne. Tenders, sealed and endorsed "Ravenhurst Road," and addressed to the chairman of Harborne Tenants Limited, 106, Colmore Row, Birmingham, will be received not later than Dec. 12.

Dec. 14. HULL.—Concrete paving to playgrounds, making alterations to latrines, etc., at the Grammar School, Leicester Street, for the Grammar School Committee of the Corporation. Drawings and specifications may be seen at the office of J. H. Hurst, city architect, Town Hall, Hull, and quantities obtained, upon a deposit of £2 2s. Remittances to be made payable to the City Treasurer. Tenders, sealed and endorsed "Tender for Paving Playgrounds, etc., at the Grammar School," are to be addressed to the Chairman of the Grammar School Committee, and delivered at the Town Clerk's Office, Hull, before 10 a.m. on December 14.

Dec. 14. BROADSTAIRS.—Supplying and delivering to such roads within the district as may be required, 400-ft. run of 6-in. by 12-in. granite kerbing (straight), 55 ft. ditto (circular, 6 ft. radius), 1,460-ft. run of 12-in. by 6-in. granite channelling (straight), and 25 ft. ditto (circular, 6 ft. radius), for the Broadstairs and St. Peter's U.D.C. Sealed tenders, endorsed "Tender for Granite Kerbing, etc.," must be delivered to L. A Skinner, clerk to the Council, Council Offices, Broadstairs, not later than noon on December 14. No tender will be considered unless it be sent in on the prescribed form, which can be obtained from H. Hurd, town surveyor, Council Offices, Broadstairs.

Dec. 15. FORMBY.—Making up roads with tar macadam on the Carr's Crescent Estate, Formby, for the U.D.C. Further particulars may be obtained on application to E. H. Bond, clerk to the Council. Sealed tenders, endorsed "Carr's Estate," must be delivered to E. H. Bond, clerk to the Council, Formby, not later than Dec. 15.

Dec. 15. LONDON, N.—Making up Cadoxton Avenue and Wargrave Avenue, for the Tottenham U.D.C. The plans can be seen and general conditions, specifications, bills of quantities, schedule of prices, and forms of tender can be obtained on application to W. H. Prescott, A.M.I.C.E., engineer to the Council, at the Council Buildings, The Green, Tottenham, any day during office hours. The sum of 10s. 6d. will be charged for each set of quantities. Securities required. Fair wages clause. Canvassing members of the Council is strictly prohibited. Sealed tenders, on the form supplied, endorsed "Tender for .....," as the case may be, to be delivered to E. Crowne, clerk of the Council, Tottenham, by twelve o'clock noon, on Dec. 15.

Dec. 18. LONDON, W.—Removal of refuse for the Metropolitan Borough of St. Marylebone, in accordance with the provisions of the Public Health (London) Act, 1891, from the whole of the houses and premises in the Northern District of the Borough, in covered vans or carts, for one, two, or three years, commencing April 1, upon the terms of the present contract, viz., for a house-to-house call not less frequently than once a week, in addition to provision for special cases and kerb collection. Particulars of the district for the purpose of this contract, with the printed form of tender, and conditions of contract, may be had on application to J. Wilson, town clerk, Town Hall, St. Marylebone, W., or to the Medical Officer of Health, 24, Somerset Street, W., from 10 to 4 daily. Tenders must be on the printed form supplied by the B.C., and must be delivered, sealed, and endorsed "Tender for the Removal of House Refuse," to the town clerk on or before 12 noon on Dec. 18. Securities required to the sum of £1,000.

Dec. 18. LONDON, N.—(1) Making up of the following private streets, together with works incidental thereto:—Fallowcourt Avenue, Eton Avenue, Church Crescent, Woodside Grove, Victoria Avenue, Chambers Gardens, Park Crescent. (2) Works of tar macadam, kerbing, channelling, and slab paving in Bow Lane and Granville Road and works incidental thereto; of kerbing and channelling in Oak Lane and works in connection therewith, for the Finchley U.D.C. Plans and sections of the proposed works may be seen at the offices of the Council's Engineer and Surveyor at the undermentioned address, and forms of tender, specifications, schedules and general conditions may be obtained on deposit of £1 in respect of the documents for each street. Sealed tenders, endorsed "Private Street Works," or "Street Improvements," as the case may be, to be sent in to E. H. Lister, clerk of the Council, Council Offices, Church End, Finchley, N., by not later than 4 p.m. on Dec. 18.

Dec. 31. TROWBRIDGE.—Hauling material from the stations to the depots, for hauling from the depots to the roads, and for supply of horses and men for general hauling, by day work, in the several districts, for a period of one year, from March 31, for the Roads and Bridges Committee of the Wilts C.C. Specifications and schedules of the approximate quantities to be hauled in each respective district, with form of tender, can be obtained on application to the county surveyor. Sealed tenders, addressed to the clerk of the County Council, County Offices, Trowbridge, endorsed "Tender for Hauling," to be delivered on or before Dec. 31.

Jan. 1. READING.—Supply of broken road materials for the twelve months ending March 31, 1910, delivered at railway stations and wharves in the county, for the Berkshire C.C. On the receipt of a stamped addressed foolscap envelope, forms of tender, list of stations and wharves, and full particulars will be forwarded by the county surveyor. Tenders, endorsed "Tender for Materials," to be sent to J. F. Hawkins, county surveyor, by Jan. 1. Securities required. A specimen form of contract may be seen at the office of the clerk of the County Council, 28, The Forbury, Reading.

No date. WARTON CRAG.—Excavating and formation required for the diversion of a road through limestone rock, about 500 yards long, on Warton Crag. Bills of quantities and other particulars can be seen on application to the Carnforth Iron Co., at their Offices, Carnforth.

MISCELLANEOUS.

Dec. 10. MANCHESTER.—Supply and delivery of clean old bricks at Platt Fields and Boggart Hole Clough, for the Special Committee re Work for the Unemployed. Tender forms may be obtained on application at the city surveyor's office, Town Hall, Manchester. Tenders, enclosed in the official envelope, to be delivered at the above office not later than 11 a.m. on Dec. 10.

Dec. 12. BANDON.—Fencing 12 additional half acre allotments to existing cottages, at a cost not to exceed 12s. 6d. per perch, for the Bandon R.D.C. The works to be completed within two months after the plots have been laid out by the Council's engineer, under a penalty for delay of 10s. per week per plot. A deposit of 10s. per plot must be lodged with each tender and an official acknowledgment obtained therefor. Conditions of contract and any other particulars required can be had on application from A. Haynes, clerk of District Council, Council Office, Workhouse, with whom tenders should be lodged not later than 11 a.m. on Dec. 12.

Dec. 12. DORKING.—Tar Spraying by Machinery. Specification may be seen daily at the Town Surveyor's office, 64, South Street, Dorking. Quotations to be addressed to W. J. Hodges, clerk, Dorking, on or before Dec. 12, endorsed "Tar Spraying."

Dec. 12. LONDON.—Supply of the undermentioned materials and articles to the City Lands Committee for one year from Christmas, 1908:—1, bricklayers' materials; 2, timber; 3, ironmongery, etc.; 4, gas tubings and fittings, etc.; 5, painters' materials and glass; 6, plumbers' materials and lead. Further particulars and forms of tender may be obtained upon application at the city surveyors' office, Guildhall, E.C. Tenders must be delivered by hand at the Hallkeeper's office, Guildhall, E.C., on Dec. 12, between the hours of 10 and 11 o'clock in the forenoon.

Dec. 12. SOUTH SHIELDS.—Supply of disinfectants for a period of one year, beginning on Jan. 1. Forms of tender and other information may be obtained from Dr. Mostyn, Health Office, Russell Street, South Shields. Sealed tenders, marked "Tender for Disinfectants," to be delivered, together with samples, not later than 5 p.m. on Dec. 12 at the office of the Town Clerk, County Buildings, South Shields.

Dec. 15. TURTON.—Supply of one 16-ton steam roller, with scarifier, one water cart, three 320-gallon tar boilers, two portable sand drying machines, for the U.D.C. The parties tendering are requested to send complete descriptions and specification of the article tendered for. The price to include delivery at Bromley Cross Station, near Bolton. Sealed tenders, endorsed "Tender for ——," to be sent to J. B. Goulburn, clerk to the Council, Council Offices, Bromley Cross, near Bolton, not later than Dec. 15.

Dec. 17. NOTTINGHAM.—Supply of the whole or a portion of the following goods and materials, for delivery during the ensuing year, carriage paid, at the various gas stations, chemical works, or stores, or at any railway station within the Nottingham Gas Supply District, for the Gas Committee:—(a) Cast-iron pipes and specials; (b) pig lead, lead and compo pipe, white, red, and chemical sheet lead; (c) wrought iron and steel; (d) silica and special fire clay materials only; (f) wrought iron tubes and fittings; (g) brass cocks and malleable iron levers; (h) small iron castings, retort fittings, etc.; (j) lime for purification and chemical works purposes; (k) paints; (r) timber; (s) plumbing; (t) tools distributing department. Specifications and forms of tender may be obtained and samples seen on application to the engineer and general manager at the Gas Offices, George Street, Nottingham. Tenders to be addressed to J. A. H. Green, town clerk, and delivered at the Guildhall, Nottingham, not later than Dec. 17.

Dec. 18. MERTON.—Supply of two curricle fire escapes, with accessories, for the U.D.C. Specification can be seen and form of tender can be obtained at the Council Offices. Tenders, endorsed "Fire Escapes," must be delivered to G. Jerram, surveyor, Council Offices, Kingston Road, Merton, Surrey, not later than 4 o'clock p.m. on Dec. 18.

Dec. 30. DEVONPORT.—Supply of the following stores and materials from Jan. 1, to Dec. 31 1909, for the B.C.:—1, masons', plasterers' and slaters' materials; 2, carpenters' materials, labour, etc.; 3, smiths' materials, labour, etc.; 4, painters' and glaziers' materials, labour, etc.; 5, plumbers' and gasfitters' materials, labour, etc.; 6, ironmongery; 7, sand. Forms of tender may be obtained at the borough surveyor's office, Devonport. Sealed tenders, endorsed "Tender for .....," must be delivered to R. J. Fittall, town clerk, Municipal Offices, Devonport, on or before twelve noon on Dec. 30. The lowest or any tender will not necessarily be accepted.

No date. GLASGOW.—Supply of stores for the year, from Dec. 1, to Nov. 30, 1909, for W. Barr and Sons, Coalmasters, Ltd.:—(a) iron, steel, etc.; (b) bolts, spikes, rivets, etc.; (c) nails; (f) J.R. joints, packing, etc.; (g) stock locks, hinges, etc.; (h) wire ropes; (j) oils, paints, etc.; (k) shafts; (o) electric fittings. Forms of tender and all particulars can be obtained on application to the office of the Company, 10, Bothwell Street, Glasgow.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion for the first four lines, and 6d. per line afterwards, prepaid. Three insertions may be had for the price of two. Advertisements can be received up to 5 o'clock on Monday evening.

AN experienced architectural assistant (25), disengaged; designs, details, specifications, quantities, etc.; any neighbourhood; moderate salary.—Box 4718, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, nearly 23, desires re-engagement, permanent or temporary; first-class experience of town and country work, domestic, schools, libraries, business premises, competition and working drawings, perspectives, surveying and levelling; excellent references; moderate salary.—F. E. J., 10, Cobham Road, Kingston-on-Thames. 4751

ARCHITECT'S Assistant (27), disengaged; twelve years' experience; good draughtsman, designs, working drawings, details, etc.; excellent references.—W. A. N., 16, Kimberley Gardens, Harringay, N. 4725

ARCHITECT'S Assistant (21), seeks re-engagement; Probationer R.I.B.A.; 5 years' church and domestic experience, in large Provincial office; good draughtsman and colourist. — Box 4726, BUILDERS' JOURNAL Office.

ARCHITECT'S Assistant, age 27, desires engagement, permanency preferred; good draughtsman, and capable at working drawings, details, perspectives, water-colour, and pen and ink, assistance with specifications, quantities and general work, levelling and survey; salary 30s.—Apply Aubrey Leonard Pritchard, Bryn Derwen, Rhyl, North Wales. 4709

ARCHITECT and surveyor's assistant (25), design, working drawings, details, can take off quantities, survey and level; any district.—W. M., 11, Pyenot Hall Lane, Cleckheaton, Yorks. 4739

ARCHITECT'S Assistant (23), student R.I.B.A., 5½ years' experience, working drawings, details, levelling, surveying, drainage, specifications, knowledge of quantities; excellent references; salary moderate.—Bernard A. Dyer, St. Peter Street, Hereford. 4723

ARCHITECT'S Junior, 5 years' experience (23) desires immediate engagement; good references; neat draughtsman, colourist, etc.; assist quantities.—Apply Box 4727, BUILDERS' JOURNAL Office.

ARCHITECT and surveyor's junior assistant desires situation; 4 years' experience; good draughtsman, plot from sketches; certificates, building construction; also shorthand (100) and typewriting; good testimonials; energetic; would go on trial; age 19; salary £1. — Box 4674, BUILDERS' JOURNAL Office.

ARCHITECT renders assistance, competition, or contract drawings, quantities, surveys, etc.; own office or out. Terms low.—50, Elm Park Road, Finchley, N. 4731

ARCHITECT'S junior assistant (20), seeks permanent engagement, town or country; shorthand.—C. Weston, The Laurels, Rotherfield, Tunbridge Wells. 4734

ARCHITECT'S assistant (23), over 7 years' London and Provincial experience; excellent references; Inter.R.I.B.A. Exam. — H. J. Wilson, "Brinkdale," Park Road, Peterborough. 4670

ARCHITECT'S Junior Assistant desires engagement in London; 6 years' experience, contract drawings, details, and measuring; moderate salary.—Box 4737, BUILDERS' JOURNAL Office.

ARCHITECT'S, builder's, estate agent's assistant, 10 years' practical experience; good draughtsman; details; quick tracer; used to general routine, builder's office.—E. H. S., 13, Maidstone Road, New Southgate. 4729

ASSISTANT (23) disengaged; six years' experience town and country. Student R.I.B.A.; working and detail drawings, perspectives, levelling, shorthand and typewriting; good references; moderate salary.—S. Riches, 35, Culverden Road, Balham. 4735

ARCHITECT'S and Surveyor's Assistant, 15 years' good practical experience; excellent draughtsman, designer, and colourist; working drawings, details, specifications, surveying, levelling, and general routine; excellent references; moderate salary.—A. R., 1, Ivy Villas, Cheam, Surrey. 4698

ARCHITECT'S Junior Assistant, over 4 years' London experience, competition work, contract drawings, details, perspective; honours construction, Prelim. R.I.B.A.; very moderate salary.—Box 4661, BUILDERS' JOURNAL Office.

ARCHITECT'S son, 10 years' office experience, wishes to take up agency or post as representative in Lancashire, or North of England, to well-known firm in any special line of Building trade. —Apply Box 4585, BUILDERS' JOURNAL Office.

AS Clerk, cashier, depot manager, or any position of trust, 11 years' experience, builder's and coal merchant's trade; age 25; good penman; also reference; moderate salary.—Box 4659, BUILDERS' JOURNAL Office.

BUILDER'S or surveyor's assistant (20), 4 years with quantity surveyor; quantities, estimating, correspondence, plans, tracings, measuring up, levelling, etc.—H. Priddle, 4, Sumatra Road, West Hampstead, N.W. 4705

BUILDER'S general foreman, advertiser seeks engagement; 16 years' service as above with first-class London firm on important and various works; good references.—Address H., 150, Effra Road, Wimbledon, S.W. 4703

BUILDER'S and Surveyor's Assistant (24), practical experience in construction and surveying; also quantities and levelling, supervision; assist estimating; draughtsman; well up in costs, accounts, wages, etc.; moderate salary.—Box 4684, BUILDERS' JOURNAL Office.

BUILDER'S or surveyor's assistant (24), 11½ years' experience; quantities, estimating, plans, accounts and prices; excellent references; moderate salary with improvement. Eastern or Southern Counties preferred.—Box 4740, BUILDERS' JOURNAL Office.

BUILDER'S general foreman disengaged. Bricklayer; experienced on large contracts. Good manager, setter-out, and measurer in all trades. Well up in p.c. and day accounts; first class references.—W. R., 64, Douglas Road, Handsworth, Birmingham. 4746

BUILDER'S Assistant disengaged, 21 years' experience; office routine, plans, specifications, quantities, supervision, measuring up, levelling, and surveying; good references; abstainer.—L. J. Greaves, Prestwood, Great Missenden, Bucks. 4717

BUILDER'S Foreman, with good London experience of all trades, seeks position of trust; estate or business firm; correspondence invited.—H., 150, Effra Road, Wimbledon, S.W. 4716

CLERK of Works, just finishing large schools, wants situation, 15 years' experience; expert timber, good all trades; plans, surveying, levelling, etc., etc. Country estate preferred.—Caswell, New Council Schools, Biddulph, Staffs. 4720

CARPENTER and Joiner (age 32) wants job. Bench, fixing, alterations, or jobbing. Could take charge if required. Good references. Life abstainer.—Pearson, 53, Hartham Road, Isleworth, W. 4681

DOMESTIC Engineer, young, energetic, thoroughly practical, seeks sit as estimating or working foreman, used to taking charge; large heating and sanitary, installation; good refs.—Box 4707, BUILDERS' JOURNAL Office.

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER, general, wants permanent appointment, official or private staff; thorough all-round experience; electrical, plumbing, smith, married, 34; good testimonials.—86, Bathurst Gardens, Willesden. 4704

FIREPROOF Engineers and Concrete Specialists. Advertiser, connected with above trades for 10 years, and whose name is well known in connection with same, desires position as manager, traveller, or head clerk; first-class book-keeper; aged 33; very moderate salary.—P. W. Potter, 73, Penshurst Road, Thornton Heath. 4719

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

GENERAL Foreman (or foreman of carpenters and joiners, either inside or out), seeks situation. Country or colonies preferred. Good references. Age 30. Life abstainer.—A. White, 51, Alexandra Avenue, Southall, W. 4730

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4615

PLUMBER (Reg. by Exam.), well up in hot water and heating systems, capable of taking entire charge; 6 years' ref.; age 38.—H. P., 11, New Buildings, Hampstead, London. 4676

PLUMBING, etc., Sanitary or Lead-laying, job wanted, day or piecework; anywhere; lowest prices; best work; excellent references; used to speculating or jobbing.—Squirrell, 47a, Woodland Street, Dalston, N.E. 4749

QUANTITY Surveyor's Assistant (21), 4 years' experience, desires engagement, certificates and good references. — Apply Box 4745, BUILDERS' JOURNAL Office.

QUANTITY Surveyors.—A builder wishes to place his son (18) in above office; has had some experience. No premium, but can introduce business.—Apply H., Ashford House, Wimbledon Common. 4686

REINFORCED concrete foreman, disengaged, long and varied experience, especially in Kahn bars and expanded metal, timbering a speciality; carpenter by trade; good refs.—G. C., 59, University Road, Tooting, London. 4721

SLATE MERCHANTS AND BUILDERS' MERchants.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4586

TO Builders.—Situation as improver wanted by young man just out of his time; technical student; neat draughtsman; assist with quantities, supervision, etc.; abstainer. — Box 4662, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4591, BUILDERS' JOURNAL Office.

TRAVELLER.—Architect desires post as representative to good firm. — Address Box 4497, BUILDERS' JOURNAL Office.

Appointments Vacant.

AGENT, with slight knowledge structural engineering, wanted by well known firm to introduce sale of speciality on commission, in Southampton and district, gentleman having connection among architects, surveyors, and engineers preferred — Write Reinforced Concrete, c/o Brown's Advertising Office, 17, Tothill Street, Westminster. 4732

WANTED, a young assistant for clerk of works' office; must be accustomed to plans, quantities, and pricing.—Apply to A. H. Ashdown, Uppington, Wellington, Salop, and state age, experience, and wage required. 4742

WELL educated youth, to learn routine of architect's office; some knowledge of shorthand and typing desirable; commencing salary.—E. Crosse and Co., 11, Bermondsey Square, S.E. 4713

WANTED, immediately, a first-class active all-round architect's assistant, with considerable experience in public, elementary, and secondary school planning. He must also be an expeditious draughtsman, capable of writing specifications and checking accounts. Preference given to one capable of preparing a complete bill of quantities (London system), up to at least £10,000. Salary not to exceed three guineas per week, payable monthly. Apply stating full particulars and testimonials (copies) to D. Pugh - Jones, County (School) Architect, 62, Charles Street, Cardiff. 4733

December 16, 1908. Volume 28. No 723.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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New Point in Workmen's Compensation.

Attention is drawn by a correspondent to a case that was decided the other day by the Court of Appeal, and was not reported in the newspapers, but is of considerable interest to all who are in any way connected with the building trade. It lays down the law in a manner which is far from satisfactory to employers. The facts, as stated by our correspondent, were as follows:—A mill in Bradford was burned down. The Corporation purchased the site, with the bricks, etc., upon it, and invited tenders for the materials of the structure as they then stood in their damaged condition. An offer was made of £30 for the whole, the buyer pointing out that it would cost him £100 to take down and remove the materials to the site where he proposed to use them again. The usual agreement was entered into, by which the purchaser was to clear the ground and to pay £30. When the work was begun, a labourer asked for a job, and was given one upon his stating that he was used to the work. The next day, when at a height of about 60ft., he fell, and was killed. Of course under the Employers' Liability Act the employer was liable, but the widow of the labourer also in the same action sued the Bradford Corporation, alleging that they were also his employers, the man who had engaged him being only a sub-contractor, and judgment was given for the widow for an agreed sum of £170 as against the employer; but the question of the Corporation's liability to have judgment entered against them was disputed, and argued at considerable length, and in the end the judge found that the agreement specified above was not a sale of goods pure and simple, but involved a contract for service. In these circumstances, not only the employer was liable, but the Corporation also, and this decision was confirmed by the Court of Appeal without calling upon counsel for the widow. The Court of Appeal was very strongly constituted, and included Lord Justice Fletcher Moulton and Mr. Justice Cozens Hardy, who are looked upon as very strong judges. The effect of this decision is that, assuming that a person wishes a building pulled down and another erected in its place, which is to be used by him in his trade, if he employs either a builder and [or] housebreaker to pull it down, and during the course of its being done someone is killed or injured, then not only is the builder and [or] housebreaker liable, but also the person who is the principal, and who, prior to this decision, always considered himself clear of any claim. The obvious moral is that employers of builders or housebreakers should take care that they are financially strong; otherwise the principals may be called upon to pay heavy damages. Principals who are aware of this decision and of its consequences, will insist upon builders and [or] housebreakers taking out an insurance policy, covering the liability which has been thus strikingly revealed. Strange to say, this law applies to business premises only, and not to private houses.

Restoring Metz Cathedral.

Metz Cathedral is about to be very extensively restored, the Kaiser having approved of the scheme prepared by Herr Schmitz, the architect. One of the towers is to be completely reconstructed, but the old architectural features will be rigorously conserved. The principal doorway is to be fitted with massive bronze gates, which will be cast by Martin and Piltzin, of Berlin, and the decorative masonry above this doorway is to be reconstructed by Herr de Bouché, of Munich. The restoration of the great stained glass windows in the transept, now nearly finished, has been executed by Professor Geiges, of Freiburg-im-Breisgau, Baden. The chapel of the Sacred Heart is to be elaborately embellished, and altogether the restoration is to be on so extensive a scale that a writer in a Continental building paper is led to ask, "What will remain of the old Cathedral, of which the people of Metz are so proud, when all these works are executed?" The cost of the restoration is estimated at 100,000 marks.

Unregenerate Leeds.

The holding over of the Towns Planning Bill until next Session has caused unholy rejoicing at Leeds. The Bill prohibits the erection of back-to-back houses; and since 50 per cent. of the houses erected in Leeds during recent years are of this description, the unpopularity of the Bill in that delectable city is not difficult to understand. The town clerk is actively engaged in an endeavour to get the provision modified; and the postponement of the Bill will give him a breathing space which even he will be able to appreciate. The owners of such property have made frantic efforts to show that the back-to-back system is almost essential to salubrity, and that your rear-space theory is pure hypothesis, and mischievous at that, because it prevents the magnanimous property-owner from putting up dwellings that can be let at 2s. a week cheaper than any kind of decent abode. The recalcitrancy of Leeds is a rather striking indication of the value of the principle of central control embodied in the Bill. Certain localities, it is clear, like certain persons, are apt to become almost passionately addicted to peculiar idiosyncrasies, not to say vicious practices, and it is hopeless to expect reform from within. In such case it is well for the State to intervene. Leeds has a strong architectural society, and we should like to hear that it is doing something to counteract the misdirected energies of the town clerk, because, in clinging thus desperately to its darling sin, Leeds is making itself rather a sorry spectacle in the eyes of disinterested observers, who are convinced that the back-to-back system is indefensible by its mere hideousness. The hot-gospellers of housing reform may well regard Leeds as being almost past praying for.

The Law Courts Extension.

The commencement of work for the extension of the Royal Courts of Justice recalls the fact that it was the intention of the architect of the existing building, the late George Edmund Street, to erect on this very site a great tower, which was to be surrounded by subsidiary buildings. This, no doubt, would have greatly simplified the planning. His scheme, however, was frustrated by the interference and opposition of the then Law Officers and the no less meddlesome and much more ignorant First Commissioner of Works, and it was commonly said that Street was worried to death by the impossibility of realising his ideals rather than by the material obstacles that were put in his way. Four new courts are now to be erected, and these will occupy only the northern portion of the site. The new buildings have been designed by Sir Henry Tanner, of H.M. Office of Works, who may be congratulated, surely, on the existence of a wiser and milder régime than that under which Street writhed and groaned. A bridge of three arches will connect the four new courts with the court level of the old building. Portland stone will, of course, be used, to match that of the existing buildings. It is stated that very special attention is to be given to the ventilation of the new courts; and that

is apparently the only respect in which Sir Henry Tanner's work does not "enter very sympathetically into the spirit of Street's fine Gothic building," whereof the interior atmosphere, when the courts are crowded, is Gothic in the extreme.

On Roman Gardens.

In the days of the ancient kings of Rome, the gardens of the citizens usually consisted of small enclosures ornamented with a few shady trees, but otherwise not differing, in any essential respect, from modern kitchen gardens. But, with the later opulence of Rome, and the general increase of the wealth of its inhabitants, the term *Hortus* implied not the former small utilitarian enclosure, but a stately pleasure ground very similar, in style and arrangement, to that which usually surrounds a modern Italian villa. Early in the reign of Augustus, the garden of the wealthy Roman began to be planned on a magnificent scale. Where space permitted it, the ground was divided into shady avenues (*Gestationes*) for walking, and provided either with a large riding-house (*Hippodromus*) or covered roadway (*Deambulatory*), for equestrian exercise. In addition, there was a large open space (*Xystus*) the pathways of which were bordered with box and *picea*, a species of yew. Beyond the *Xystus*, a charming vista of green lawns, bounded by hedges of evergreen clipped into trim forms, or fanciful shapes, usually presented itself. Here also was placed a large marble basin to receive the streams of water which meandered through the green turf. The borders of the basin were bright with flowers and shrubs and grass plots, planted with violets, roses, and lilies, were arranged in beds enclosed by narrow paths. Beyond the basin of water, approached by an avenue of stunted trees, there was usually a pavilion or summer-house (called by Pliny "The Delight"), and sometimes there was a second pavilion, constructed wholly of marble, in which seats were arranged round a water organ of simple and ingenious mechanism. Statues of the tutelar deities were placed at the garden gates to protect the pleasure grounds from depredation, and busts and figures of illustrious men, marble seats, fountains, and grottoes, abounded in profusion.

Post-prandialism and the Painter.

Mr. E. R. E. Sutton, F.R.I.B.A., has made a subtle but unsuccessful attempt to surprise the great secret of the house painter. It happened at a dinner of the Nottingham branch of the National Association of Master House Painters. Mr. Sutton, representing the Nottingham Architectural Association, was received as an honoured guest; "instead of which" he dropped a bombshell in the midst of his trusting hosts. In proposing the toast of "The Nottingham Architectural Association," Mr. G. T. Shearman remarked on the wide and extensive knowledge required by an architect. Nottingham, he added, was known as a fair city, and it owed some of its fairness to Mr. Sutton. In responding, Mr. Sutton seemed to bend all his energies on the destruction of these amicable propositions. In the first place, he seriously discredited the "wide and extensive knowledge" theory by confessing that "there was only one thing about his profession that he did not know." This was in itself a sufficiently damaging admission; but its gravity became profound when the ulterior object in making it was revealed. "When he specified for four coats of paint, how did he know that he had got it? That was the secret he wanted them to tell him." Soho, then! this confession of ignorance on one single point was made not in real humility of spirit, but in the wily desire to take the hospitable painters off their guard. Surely, while they were in such an expansive mood, they could not refuse to render absolutely perfect the admittedly all but complete omniscience of their guest. And so it came to pass that the "fairness" attributed to Mr. Sutton was, like the extent of his knowledge, voluntarily subjected to a cruelly heavy discount. For the painters would not allow him to "sweedle" them out of their guilty secret, which, as he must well know, they are bound by a solemn compact never to reveal. Such mysteries as Mr. Sutton vainly tried to probe must for ever remain inviolably esoteric. But possibly science may not find them eternally impenetrable; for although it is not always convenient to cut out sections of the work and study the strata, it may some day possibly occur to some particularly practical-minded person to employ an incorruptible clerk of works to count the coats in the order and at the times of their succession. We wonder that, as Christmastide is so near, someone did not point out to Mr. Sutton that when three coats looked as well as four, the fourth, if applied, must surely be a waste coat.

Property and Propriety.

That eminent firm of property agents, Messrs. Blank, Dash, and Asterisk, have issued a somewhat startling manifesto. They "beg to notify that they have decided to state CLEARLY in their descriptions of property any obvious disadvantages that exist, as they feel this course is in the interests of both Vendor and Purchaser, and will often save much waste of time to all parties. To enable Messrs. Blank, Dash, and Asterisk to carry out this principle IN EVERY CASE, they further beg to announce that they will be unwilling to accept the agency of any estate should the owner object to the suggested course." Surely this is to carry frankness to the verge of knight-errantry. It is one more evidence of the renascence of chivalry, and the magnanimous example is likely to be widely followed. Indeed, it has been to some extent anticipated. We have a vague remembrance of a very floridly eloquent auctioneer who never failed to point out the defects of the property that he was offering for sale. As thus: "I do not for a moment wish you to suppose that this property is absolutely perfect. On the contrary, as a man of conscientious principle, I am bound to point out that it has two very serious disadvantages. A most annoying but not entirely irremediable nuisance arises in summer from the overpowering fragrance emanating from the extensive rosery, which, however, could without much trouble or expense be converted into a potato field. The second drawback is, I fear, insuperable. It arises from the picturesque beauty of the mansion and the charm of the scenery that surrounds it. As a not unnatural but, perhaps, deplorable consequence, the estate is constantly infested with artists. Unfortunately, to shoot them would be to rob the Royal Academy of its brightest ornaments and its best pictures. But I have now conscientiously informed you of the worst faults of the property. Take it or leave it." Any such development of the principle is assuredly not contemplated by Messrs. Blank, Dash and Asterisk, who, according to our reading of their manifesto, intend nothing more ambitious than a clear statement of the obvious. They do not mean to let any form of concealment, like a worm i' the bud, feed on their damask cheek; bearing in mind, perhaps, that a full endowment of cheek, whether or not it is qualified by an adjective, is indispensable to a property agent.

Board of Education's Fit of Modesty.

The building conditions imposed by the Board of Education do not frequently tend towards the sparing of space and expense; but apparently the Board is able, on occasion, to reverse its engines. An instance of this kind, however, is so rare as to deserve to be chronicled. At a recent meeting of Cambridge Town Council, it was stated that, in a letter received from the Board of Education, plans for proposed new schools in Melbourn Place were approved, except that "the Board were of opinion that the halls were unnecessarily large, and that it would be possible to diminish their width without affecting the arrangement of the class-rooms." It was explained that the proposed central halls would be about 60ft. long and 30ft. wide; and the architect had reported that if the width of the hall were reduced to 28ft. the consequent saving in cash would amount to no more than about £100. And so the town council chose the more expansive and more expensive way, and the disinterested economist on the Board of Education will perhaps groan in concert with the aggrieved ratepayer at the deliberate and wilful rejection of this perhaps unexampled opportunity of "saving a bit" on the suggestion of the Board of Education. "Such a magnificent offer may never be repeated," and its refusal must have a very disheartening effect on the Board, which is thus flouted at what may possibly be its first and last attempt at asking for less than a local authority is prepared to give. Yet, on the whole, the spectacle of a Government Department and a local authority engaged in a rivalry of self-denial would be rather edifying if it were not so bewilderingly topsy-turvy. One has a lurking suspicion that there may be more in it than meets the eye.

Lighting and Ventilation of Schools.

The transactions at the second International Congress on School Hygiene, held in London in 1907, are recorded in three substantial volumes, of which the first alone can be said to contain anything that is of special interest to the architect and builder; but the reports there given of Sir Aston Webb's remarks on the lighting and ventilation of class-rooms, and the summaries of papers (in French and German) on kindred subjects by M. Georges Courtois, Dr. R. Dinet, and Dr. Wilhelm Prausnitz, afford the means of interesting comparisons. In the upshot, however, one is forced to agree with the observation with which Sir Aston Webb opened the discussion: "I am afraid that there is nothing new that can be written on this subject." The necessary abridgments have been admirably done by the editors.

R.I.B.A.

THE ELEMENTS OF DESIGN IN INTERNAL DECORATION.*

Having referred to examples of the decorator's art which have come down to us from the past, the author said there was no reason why we should be complete slaves to their magnificent domination. Neither should we in any way despise the triumphs in line, form, or colour on which the ancients have set the seal of beauty. From the savage races to those which have attained to intellectual and artistic fulness we find an equal instinct and love for colour and its disposition in beautiful shapes. Why should we of the twentieth century be denied crystallisation of such figments of beauty in colour and shapes as may have drifted into the net of our most fervid moods—moods from which invention springs and an intenser clearness of vision of things lovely in themselves, of distinction in style, and sympathy with the architect's creation? In the first place there is the decoration which is entirely the architect's achievement, in more or less permanent materials, forming, not only the anatomy, but much of the clothing of his work—the design and disposition, for instance, of such materials as wood, stone, metal, marble, tiles, glass, gesso, mosaic, etc.—the unity of all this expressing his own particular art. From this single partnership great things have been accomplished, which are treasured as ideals by most students.

Limitation of Natural Objects.

The olive, the laurel, the pomegranate, the orange, the vine and its leafage, etc. —the curving festoons for horizontal shapes, the pendant for vertical shapes, and the circular wreath for telling expression at a distance—all these have had a long domination in architecture, and go to prove that there is a limited number of things in nature that can be used with success. In the way of natural forms as decorative elements, the Egyptians have shown what can be done with the lotus, the cane, and binding bands of reeds. The festoon has become in careless hands a very baggy sort of detail, generally dubbed the swag, a term which rightly indicates its debasement.

Too Much White.

The author deprecated the present fashion of painting nearly everything white. The use of white on all occasions becomes extremely monotonous, indicates a certain poverty of thought, and belongs to the transitory interest of things easily done. The full and sumptuous quality of colour in decoration seems the rarest and most difficult to attain, the predominance of primaries being essential: such schemes maintain their interest longest, mellowing rather than deteriorating in tone. As decoration the greatest triumphs in colour and design have been set within the compass of a frame; and with such examples as an incentive the standard of our work should reach higher. Lord Leighton in his "Daphnephoria" has left us one of the great decorative pictures of the world, containing as it does much of the finest elements of decoration in the procession of singing children, youths, and women, carrying the beautiful symbols of their faith through the olive groves, beyond which is seen the city of the violet crown set against the Attic sky. The landscape alone is a great decoration.

Decoration on the higher scale seems a thing of the past. What little that is done trends rather to a technique—that is, a kind of swagger of the brush—rather than to an effort to create pictorial decoration which shall be an embodiment of things beautiful. The sincerity and reverence of the primitives, though lame in technique from a modern point of view, have a more lasting interest.

Decorative Materials.

The author discussed the merits and defects of various decorative materials—marble, bronze, copper, wrought iron, etc. —and dealt at length with the treatment of gesso, gilding, friezes, carved wood, wall-coverings, heraldry, glass, sculpture, painter's work and materials, etc.

To the author there seemed great possibilities for architecture set within architecture as an adjunct in decoration. Architecture is really the basis and beginning of design, and that which it has accomplished in the creation of forms, contours, disposition of vertical and horizontal lines cannot be overlooked by those who set out to give us a great pictorial or decorative composition. When speaking of architecture within architecture the author explained that he was thinking of the beauty and fitness of many cities (if painted with a decorator's instinct) to fill with success rectangular spaces, either vertical or horizontal, which may be appointed by the architect. These cities as subjects required careful selection. Some were decorative in themselves:—for instance, Jerusalem, from the hil' of Scopus behind the Mount of Olives; Athens, from Lycabettus set against the Saronic Gulf and Peloponnesian mountains; Milan set within the Lombard plain from Bergamo; Saragossa, with the steely blue of the Pyrenees behind, as seen from the south. The point of sight should not be near, so that due justice would be given to the harmonies of the atmosphere in which they are enfolded. Accuracy of detail is important, but not so much so as a grasp of the fine contours and colour gradations in a big sort of way.

Landscape.

Landscape, too, has great decorative possibilities. There is at present a tendency to use so-called classic landscapes (made at home in which hard, strongly outlined rolling clouds, doubtful classic buildings, and large trees are set in vistas of brown tones only. A real classic landscape is a great revelation of its fitness for decoration. In the land where classic art had its birth very little rearrangement is needed. There in itself one finds composition tones and colour harmonies. Planes and values are all in order, making a refulgent yet sober composition.

Wanted, a Renaissance.

The author felt that there was an opportunity now for a great Renaissance in decorative design. Donatello, Mino de Fiesole, and other Italians with their genius achieved a personal and perfect culmination from the study of the rather limited Roman remains that were within reach. They were essentially modern, and were influenced by the fashion of the moment and ready to embody any new thought for the glorification of their work. Now, in the twentieth century, our treasures of Greek art are largely multiplied and easily available in the British Museum, and in the incomparable Parthenon frieze, the decorative bronze ornaments, coins, and hundreds of other jewels of art are shown the best qualities of dignity and restraint in design for students who have the fervour and ambition to

*Summary of paper by Mr. T. R. Spence, read before the Royal Institute of British Architects, December 14, 1908.



Photo:] [*T. Lewis.*

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EDWARD CRATNEY, ARCHITECT.

recreate a style that shall be on a par with, yet quite distinct from, the fourteenth-century Italians, and of a freshness and interest that cannot be evolved from a period of decadence.

The author disclaimed any intention of laying down laws for the treatment of any department, as the dimensions, schemes of lighting, etc. His impression was that design had its birth from vague memories of beautiful things seen; if careful notes were made for reference in the actual work of creation the operation meant death to the imagination.

Ornament and the spaces for its disposition needed new thoughts and careful consideration as to the disposition of lines and areas—of the separate details of the ornament— and the amount and variety of decoration already achieved by the architect in the use of mouldings, modelled forms, etc. The battle could only be fought out on the walls or spaces allotted for treatment to the decorator by the architect, and to this there was no royal road to the creation of any work of art. Consequently such creations could not grow into shape without much tribulation and strained endeavour.

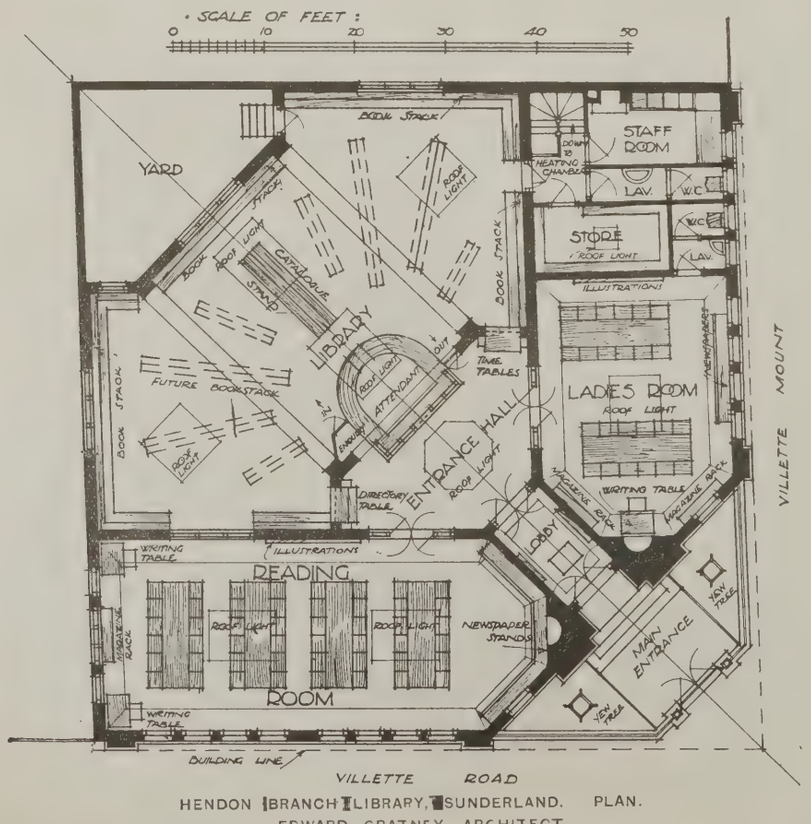
THE TOWN PLANNING OF THE ROMANS—CONSTANTINOPLE.

When, after the defeat of his brother-in-law Licinius, Constantine, the Emperor of the West, reigned supreme—the sole Emperor of the Roman world—he cast about for a metropolis suitably situated for the administrative, military, and commercial requirements of his vast dominions. The city of Rome, separated by the Alps from other parts of the empire, and ill-provided with harbours, had long since ceased to be a convenient centre of government, and Constantine, above all, was desirous that his new capital, whilst being easily accessible from both land and sea, should yet be sufficiently remote from the frontiers of his realm to afford a safe residence for the imperial court. His choice of the great port of Byzantium was, in many respects, an excellent one. Indeed, no place was so well situated for dominating either Europe or Asia, or, in other respects, was better fitted to become the seat of the universal empire to which Roman ambition aspired.

The Bosphorus and the Sea of Marmora afforded easy and safe passages for the commerce of the neighbouring countries, whilst the Golden Horn, the great harbour of the city, possessed immense natural facilities for the safe accommodation of vessels, both large and small.

At Byzantium, then, in A.D. 328, the boundaries of the new city were defined, with the solemn ceremonial to which the Romans were accustomed. The Milion, or golden milestone (a small building resembling a Roman temple), whence the distances to all parts of the empire were to be measured, was placed immediately outside the walls of the old town, on the site of the market-place of the new city. Within the walls of Byzantium, on its south-eastern side, a portion of the old town, one hundred and fifty acres in extent, was chosen for the emperor's palace and pleasure grounds, the imperial precincts being shut off from the new city by a wall, commencing on the coast line, where the Bosphorus meets the Propontis, thence proceeding inland, and continuing, approximately parallel with the shore, for about one mile. West of the enclosing wall of the emperor's palace stood the Augustæum or forum.

(To be Concluded.)



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EDWARD CRATNEY, ARCHITECT.

BRITISH AND FRENCH BUILDINGS*

A Reply to Mr. Jemmett's "Appreciation of French Buildings."

By J. S. Gibson, F.R.I.B.A.

After listening with great pleasure to the very able essay of Mr. Jemmett on the virtues of French public buildings, I feel somewhat diffident in laying before you a few thoughts on the English buildings of similar class, but I do so in the hope that you will turn a blind eye to the defects of the speaker, and a keen one upon the many excellencies of the subject I have the honour to lay before you.

Our National Characteristics.

Our consideration of the matter should be treated on general broad lines. We should endeavour to ascertain the motives that lie behind all achievements in public building, irrespective of "style," and it is only by looking at this subject from a philosophic standpoint that we can obtain any beneficial results.

Our national characteristics may be summarised as follows:—Independence of mind and judgment; a marked individuality; modest unostentatiousness; keen commercialism; businesslike economy; and it will be found that these qualities are reflected in our architecture. The fact that we are an island people with world-wide interests has moulded us in this way, and we cannot escape the consequences of our environment.

Just consider for a moment the immense value of a strongly developed spirit of independence, active and eager in research into the heights and depths of styles and traditions, but relying on strength of character to form conclusions that will help on the progress of art.

In these days, when the development of the architectural work in Europe is as clear to us as the work in England, when we can analyse the trend of effort on the part of our Continental confreres, in the same way as we may do that of our fellow-architects at home, and when we can weigh these efforts in the delicate balance of the mind, and sift the live architecture from the dead mask, how valuable is that independence of analysis and judgment!

Independence of Mind and Individuality of Treatment.

It is this very independence which saves us from the deadly monotony of "schools" and "periods" and "styles," from the cut-and-dried classification of architecture according to historical dates.

This independence of mind is reflected in the marked individuality which is to be found in all English work, and produces that diversity of treatment which gives to our buildings unexpected charm and variety.

This grace of individuality of treatment saves English architects from the deadly formalism of Classic styles, which in their purity are no longer applicable to modern requirements, and we have realised that it is foolish to expect twentieth-century men to fit themselves to the austere rigidities of Greek temples or the ponderous picturesqueness of Gothic masonry.

Developments Present and to Come.

But the formalism of the Classic and the picturesqueness of the Gothic works have passed through the crucible of the modern mind so as to yield a pliability of treatment of architectural forms that is stamped with the individuality of the author, and from which much greater developments may be hoped for and reasonably expected. Perhaps when some great master mind gathers up all these scattered efforts, and welds them into one harmonious structure, we shall then see how much further we have succeeded in our real appreciation of architecture than is at present apparent.

Imitation may be the sincerest form of flattery, but it would not be flattery to say

*Paper read oy Mr. J. S. Gibson, F.R.I.B.A., in the Architectural Association Debating Section on November 27th, 1908. This paper is a reply to that which was read at the same meeting by Mr. A. R. Jemmett, F.R.I.B.A., printed in our issue of December 9th.

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General View.



The Circulating Library: Open Access System. *Photos: T. Lewis.*

HENDON BRANCH LIBRARY, SUNDERLAND. EDWARD CRATNEY, ARCHITECT.

LIBRARY
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UNIVERSITY OF ILLINOIS



Photo:] [*T. Lewis.*

HENDON BRANCH LIBRARY, SUNDERLAND.
ATTENDANTS' CONTROL COUNTER. EDWARD CRATNEY, ARCHITECT.

that imitations of the forms of architecture will ever produce works that will be interesting or individualistic.

British Reticence of Expression.

Again, we find that the national characteristic of modesty, especially in public display, pervades the spirit of our architecture; and although we may be a nation of shopkeepers, we do not put all our goods in the shop windows. This modesty conduces to a reticence of expression in public buildings that might be taken for baldness or lack of imagination; but its very quietness constitutes a great charm, and we generally find, as we grow older, that the simpler buildings appeal to us the most, and satisfy us best.

"Thrift, Thrift, Horatio."

The commercialism of the Englishman, and perhaps in a more marked degree, the thriftiness of the saving Scotsman, is usually hurtful to the architecture of our public buildings, in that the surroundings of the buildings are hardly ever considered in relation to the building itself. We are thus often like a man who owns a beautiful picture and is worse than careless as to whether it is framed or not. But while it is true that almost any site is apparently good enough for a public building so long as it is cheap, this very defect has produced in the architect a capacity to design on difficult and awkwardly shaped sites buildings that are admirably adapted for public purposes.

Where the British Architect Scores.

In the matter of compact planning, admirably lighted and healthful buildings, I am sure the English architect is a long way ahead of his Continental brethren. This very quality has reacted on the client, so that he does not now realise what ceremonious planning means, until he goes abroad and sees the grand lay-out of a big public building.

The Glories of the Irregular Site.

When you consider the wonderful skill and ingenuity which must have been required to plan the Manchester Town Hall, with its myriad rooms of varying dimensions, on a much too small triangular site, and with what success has all this been achieved, it is hardly to be wondered that town hall sites all over the country have been selected because of their irregularity rather than because of their suitability.

The client is so satisfied by the business-like economy of means to ends, the saving of the public time and energy by the elimination of ceremonial halls, stairs and entrances, that it is scarcely surprising if we too begin to question whether these things really add to the joy of living.

The Spirit and the Form.

The architecture of our public buildings may be said to epitomise the national characteristics in so far as these can be translated into brick and stone, and will be found to be almost the exact opposite of the qualities found in similar buildings of the French class; and I maintain that these characteristics tend to keep alive the spirit of architecture as distinct from the form and that development along the lines of English practice means progress in evolving a type of building which shall be found suitable to modern needs and expressive of modern thought.

Architecture must express abstract ideas, else it is only copybook stuff and of no value. I do not mean that the fronts or decorative works alone should express abstract ideas, but that these shall be manifest in the whole conception and lay-out of the building. The economy of money, of time, of energy are our dominant characteristics, and these will be shown in the tightness of planning, the direct routes, the absence of grand stairs, just as clearly as in the omission of useless columns and pediments and carved swags and pendants.

We may never be able to evolve a new "style" which can be labelled and differentiated from those preceding it, and I hope it will be many years before we attempt to do any such foolish thing; but I trust we shall never forget that it is the thought embedded in the style which matters. The style represents merely the words of the language, giving expression to the thought, and though some may be wonderful word painters, it is much greater to be an originator of thoughts that go on expanding and fructifying through the years.

Theatrical Effects.

In the study of French public buildings, one is convinced that they are largely laid out with an eye to scenic effect, and the modern buildings have a certain air of unreality that also savours of the theatre.

I grant that they have a symmetry of treatment and a ceremonial lay-out of environment, a certain spaciousness of halls and stairs and entrances that suggests receptions to be enjoyed rather than business to be done.

But we cannot always be decked in purple and fine linen, and these classical facades make but an indifferent background for the ordinary garb of the ordnary man on his ordinary day. Besides, I shrewdly suspect that there is not that intimate relationship between the plans of these structures and the work to be daily accomplished in them as will be found in similar English buildings. And therein lies a grave danger to architecture; for if the conception of the plan is subservient to a scenic display of architectural features, however admirable, the spirit of art will soon be lost, and the work become lifeless and uninteresting.

Our Plate.

Hendon Branch Library, Sunderland.

The building has been planned with a view to working the library with as small a staff as possible. The principal rooms are grouped round the entrance hall, and consist of lending library, general reading room, and ladies' room, with the usual complement of staff rooms, stores, etc.

The delivery counter is so placed that the librarian has direct supervision of each department. The library will be arranged on the "safe-guarded" open access system. The elevations are designed in a quiet treatment of Free Renaissance. The walls are built of Windy Nook stone dressings, and the roof covered with blue Welsh slates. The floors of the main rooms are laid with maple wood blocks. The whole of the interior fittings are executed in oak. The building was designed by and carried out under the supervision of Mr. Edward Cratney, architect, of Messrs. Davidson and Cratney, of Wallsend and Sunderland, the contractors being Mr. Joseph Huntley and the stonemasons Messrs. McMillan and Son, both of Sunderland, and the carving was executed by Mr. Christian Neusser, of Newcastle. Mr. T. Cooke was Clerk of Works.

The whole of the fittings and fixtures have been designed by the architect, whose design was selected in competition.

Notes and News.

A crematorium for Edinburgh is proposed. The cost suggested is about £2,500.

* * *

"The Irish Builder and Engineer," which was established in 1859, will celebrate its jubilee, in March 1909, by issuing a special edition de luxe, which is to contain "a comprehensive retrospect of the past fifty years." The offices are at 34, Lower Abbey Street, Dublin.

* * *

The proposed Bunyan memorial for Westminster Abbey is now taking definite shape. At the last meeting of the committee, designs for a window were submitted by Mr. J. N. Comper, the artist appointed by the Dean of Westminster, and were approved. The scenes selected for the two main openings are:—Christian's meeting with Evangelist; his admittance at the Wicket-gate; his deliverance from the burden of sin at the foot of the Cross; Mr. Interpreter's house; Piety, Prudence, and Charity harnessing him in armour of proof; his fight with Apollyon; Vanity Fair; and crossing the river to the Celestial City. The headlight will depict Christian's entrance into the city, and his joyous reception there. Round the centre panels will run a series of vignettes representing minor scenes in the allegory.

Notes on Competitions.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 19	WHITTINGHAM. ANNEXE TO ASYLUM FOR PAUPER LUNATICS, for the Lancashire Asylums Board. Limited to Architects who are in practice and are ratepayers in the County of Lancashire. The new building is to accommodate 700 Inmates. Premiums of £100, £50, and £25. Particulars and plan of site from Leonard Colman, Law Clerk to Committee of Visitors, 8, Lune Street, Preston. Deposit £5 5s.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit, £1 1s.
1909 Mar. 17.	NEW OFFICES FOR THE STANLEY U.D.C., DURHAM. Cost £3,500. Premiums £30, £20 and £10. Conditions, etc., to be obtained from J. G. Ridley, Clerk to the Council. Stanley S.O., Co. Durham.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W. T. Postlethwaite, Council Offices, Swinton, Manchester.

** This competition has been unfavourably reported upon by Correspondents.*

Law Cases.

Railway Carriage as Sanatorium.

Judgment has been delivered by Justices Bigham and Walton, in the Divisional Court of the King's Bench Division, in the case of Harahan v. the Leigh-on-Sea Urban District Council, in which plaintiff appealed against the decision of Judge Tindal Atkinson, in the South-end-on-Sea County Court.—Mr. Justice Walton said that although the question arose out of a small matter, on the other hand, it was quite plain that the decision which they were to give expression to would have far-reaching effects. The facts, briefly, were that the appellant, having a daughter suffering from consumption purchased an old railway carriage, which he placed on an open space. For the purpose of making it a comfortable little dwelling-house, Mr. Harahan took away the seats, cut a hole in the partition, and erected a stove, etc. He submitted no plans, and for that reason the Urban District Council issued a summons against him. He was fined, and later the Council's employees appeared and pulled down the whole structure.—Mr. Harahan sued the council for damages. The council contended that the building, being a new one under the Public Health Act, according to their by-laws, they were entitled to act as they did, and the appellant submitted that, while the council were entitled in law to remove any new work that he had carried out in the structure, they had no power to go further. The County Court judge decided in favour of the council. Mr. Justice Walton added that he was impressed by the extraordinary consequences which were possible if they upheld that in a case like that the urban authority had power to remove the whole structure, but as they read the by-laws and Act he thought the decision of the County Court judge must be upheld, and the appeal dismissed.—An application for permission to appeal was granted.

An Honourable Issue.

At the London Bankruptcy Court on Friday, December 4th, Mr. Edmund P. Milne, heating and hot water engineer, of 15, Craven Street London, W.C., was granted his immediate discharge from the bankruptcy petition which he filed in July last. Nearly two years ago Mr. Milne was obliged to commence an action in the High Court for the recovery of the balance of a contract due to him, amounting to £370. The case occupied fifteen months in preparation, and was eighteen days before the Court, as it was necesary to produce a large amount of technical evidence as to the efficiency of Mr. Milne's special boilers for combined heating and domestic supply. Mr. Milne's contention was that after his work was completed a defect arose in the chimney, which destroyed the power of his furnace. In the end judgment was given against Mr. Milne, with costs amounting to nearly £3,000. Mr. Milne at once realised that his only course was to file his petition, from which he has now received his discharge, owing in a great measure to the almost unanimous desire of his creditors. He has now resumed his business, which for the last five months had been temporarily suspended.

Views and Reviews.

Elementary Manual of Building Inspection.*

Mr. W. R. Purchase, who is no novice in the authorship of technical books, has produced yet another that is likely to be very serviceable and successful. It is a handy manual in which the whole duty of building inspectors is set forth clearly and tersely. It is the result of attentive observation and practical experience acquired by the author both as builder and as building inspector. It is modestly stated that "this little work has been compiled for students engaged in the supervision and conduct of building work, and also for craftsmen who contemplate becoming inspectors." We should suppose it to fulfil this purpose very well indeed, and to possess the additional virtue of showing architects and builders their work as seen from the inspector's point of view. The book should have had an index; and the promise of "nine plates" given on the title-page is hardly fulfilled. There are, it is true, nine pages of diagrams, but these are all printed on both sides, and, strictly speaking, are therefore disqualified from taking rank as plates.

*Elementary Manual of Building Inspection; or, How to Become a Building Inspector. By William R. Purchase, building inspector to the Borough of Hove. With nine plates. London: Crosby Lockwood and Son, 7, Stationers' Hall Court, Ludgate Hill. 2s. 6d. net.

A Practical Work on Timber.

Steel-frame and reinforced concrete construction being at the present day so conspicuous, a kind of hazy idea is current that timber is becoming obsolete. Evidently the author of this book fears the possible injuriousness of such an impression, for he makes haste to correct it, his very first sentence being, "A new work on timber may by some be considered of questionable value, for do we not live in the 'steel age'?" As evidence that we do, he cites the celebrated case of the sky-scraper of forty-seven storeys erected in New York for the Singer Sewing Machine Company, in the which monstrous edifice not a single cubic foot of timber enters into the permanent construction. On the other hand, there is the serious complaint that the world's timber supply is being wastefully exhausted; and it is shown that the import into this country increases every year. Most of it is used for telegraph poles, railway sleepers, and street paving, while the enormous consumption in papermaking is indicated by the statement that the average daily circulation of a popular halfpenny newspaper requires 200 trees for pulp. Even in reinforced concrete work, a large amount of timber is put to temporary use. Timber, therefore, still demands study and attention, and the author is well advised in quoting this passage from Mr. T. G. Jackson's "Reason in Architecture": "All experience hitherto tends to show that an architect who wishes his building to go down to posterity will do wisely to let iron play as small a part in his construction as possible." Apparently the American architect is careless as to whether his sky-scraper goes down to posterity. He would probably prefer it to go up to infinity or down to the antipodes; but since Mr. Jackson's advice is likely to be followed for many a long year in our country, a thoroughly trustworthy and very interesting though intensely practical book on timber, such as this appears to be, is pretty well assured of a wide welcome. Not being a mere botanical list, it does not pretend to be exhaustive, and it is on that account of all the more use to practical men, who will find in it very little that is extraneous to what they want to know, while the information that they really desire is sufficiently full, and its authenticity appears to have been very carefully ascertained. Fully a third of the book is occupied with useful description and discussion of such eminently practical matters as the causes of decay, the various processes of seasoning, the different defects to which timber is liable, and the strength and testing of timber. The half-tone and other engravings are excellent.

"Timber."—By J. R. Baterden, Assoc.M.Inst.C.E. London: Archibald Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C. 6s. net.

STRENGTH AND MATERIALS.

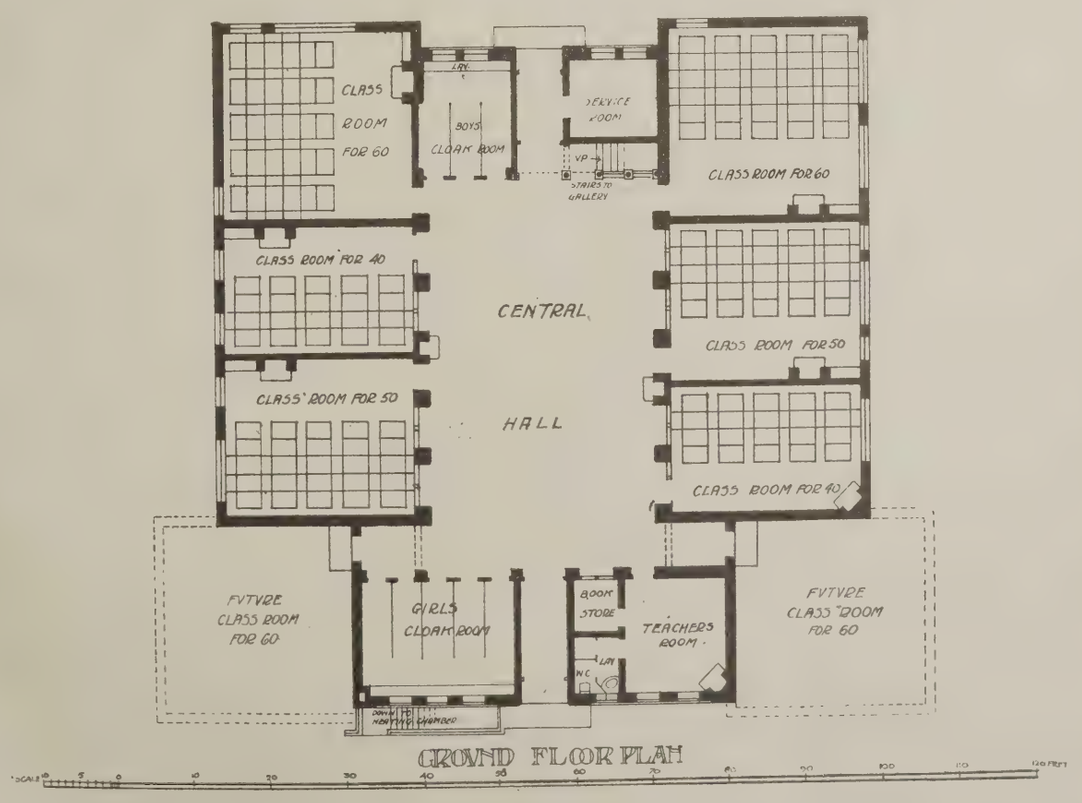
A good many books have been published on the subject of applied mechanics, and the strength and resistance of materials. Upon the former subject, perhaps, the best and standard works are by Professor Goodman, the late Professor Rankine, Professor Parry, Professors Alexander and Thompson, with the book on framed structures by Professors Johnson, Bryan, and Turneaure, and also the books on stresses in trusses and arched ribs and bridges by Professor Burr, and on bridge construction by Professor Fidler. On the subject of the strength of materials the only books in the English language that are important are the American ones by Professor Johnson, Professor Mansfield Merriman, and Professor Martens, with the English works of Professor Unwin and Professor Ewing. In addition to these authorities we cannot omit to mention the very important work of Professor Bauschinger, whose results, unfortunately, are not readily available, and have not been fully translated into English.

Notwithstanding these works on both aspects of engineering, there has been room for several works, one upon the materials, more with relation to applied mechanics, and one upon applied mechanics, that shall treat the subject thoroughly, theoretically and practically, and bring the other books up-to-date, and a third which will do the same for the subject of materials, but, at the same time,



CHILDREN'S HOMES SCHOOL BUILDING, CHIPPING ONGAR. W. FINCH, ARCHITECT.

This building provides class-room accommodation for 300 children, with hall and cloak-rooms for a further 120 ; space being arranged for the future addition of two large class-rooms. The building was erected by Messrs. F. and E. Davey, Ltd., of Southend-on-Sea, from the designs of Mr. W. Finch, of 76, Finsbury Pavement, E.C., and is in connection with the Children's Homes built by the Guardians of the Hackney Union upon adjoining land.



gather together the whole data available. It is only the first gap which the author of the work now under review sets himself out to fill. Professor Morley has done his work well on the whole. He has explained the elementary theory in a concise and clear manner, and has not been deterred by any defects in elaborate and awkward problems. The result is, that his work is of greater practical utility to the engineer than perhaps any earlier work, though we still think Professor Johnson's volume extremely valuable because of its collection of data and clearness of explanation, while Professor Ewing, on the other hand, to some extent sums up the matter more shortly, while covering almost as great a range in each field.

The book is deserving of all praise, and though we wish Professor Morley had gone further, it is only because he has done so well that we ask for more. The book is intended as a text book for students, and a large number of examples are given. These make the book larger than otherwise would be the case, but they do not interfere with the handiness of the volume.

Mr. Morley has not ignored reinforced concrete, and he has gone into points which have been cleared up a great deal by investigations abroad. His treatment of the theory of beams is extremely clear, and goes much further than we have seen in any other text book. We feel, however, that he might have made it clearer by dealing with the moment of inertia by following the diagrammatic methods of Professors Alexander and Thompson.

In analysing the stresses of beams he has gone very fully into the subject of shear stresses on inclined planes and the deflection of beams. There are one or two problems we should like to see dealt with. One is the bending moment on a beam fixed at the ends with a distributed load gradually increasing from one end to the other. Another is the stresses in a member subjected to tension and a bending moment at the same time. Shear stresses in composite beams of reinforced concrete or other materials form another useful subject, the intricacy of which might lead Professor Morley to offer a great help to students and engineers.

He deals with the subject of flat plates, but there has been insufficient investigation in this direction; we feel, therefore, he has not been able to provide us with so satisfactory an explanation of all the problems as we hope to see, possibly in the near future.

Pipes, cylinders, and discs form intricate subjects, but they have been dealt with admirably. The problems presented by chimney construction might, however, be dealt with in future editions. Curved bars, arches, etc., are well dealt with in a short chapter, and the volume is concluded by a description of testing machines. The latter, however, is largely occupied by the description of English machines, with an account also of the Riehl machine. In all cases the machines dealt with do not go beyond 50 tons actual load; a machine of this capacity is nowhere near sufficient for civil engineers' work, and a 200-ton machine should, at least, have been dealt with. The English machines are fairly good, but we rather prefer the Continental machine made by Amsler-Laffon, which seems more convenient and accurate. We are glad the author illustrates machines that test specimens vertically; any machine which tests specimens horizontally, in our opinion, suffers from a great disadvantage in compression tests, for it introduces the stresses of bending, and the test is in no way allied to practice. It is a pity that there are no very large vertical testing machines in this country. What engineers require is a machine which shall at least be able to take steel or reinforced concrete columns 18in. square by 20ft. long, and tests ought to be conducted on struts of very large size. Since the Quebec disaster attention has been directed to this matter in the United States, but it seems unfortunate that we should not make any experiments in such an important subject in this country. Unfortunately, our methods in this direction are not at all to be commended.

The book by Professor Morley marks an advance in the theoretical treatment of the subject. It includes much original treatment, and gathers together the results of recent investigation. The subject is made much more clear than it was before, and Professor Morley has kept in view the practical problems, so that his work will be valuable to engineers, as well as serving as an excellent text book for University and similar examinations on the subject of the strength of materials.

We hope that before many years have passed we shall have to welcome an elaborate volume from his pen on the subject of applied mechanics. It is hoped that his patient and painstaking investigation will be copied by other writers, and that some engineer will be good enough to collect together for use in one volume all the data on materials and tests on construction in some such ideal way as was done for chemistry in the revised edition of Watt's Dictionary of Chemistry. It is a gigantic undertaking, but it ought to be done, for the subject of engineering is very important to the community at large.

"Strength of Materials," by Arthur Morley, M.Sc., M.I.Mech.E. (Longmans, Green and Co.; price 7s. 6d. net.)

Correspondence.

The Proposed Guild of Architects' Assistants.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I have read with the greatest interest the article in your issue of December 2nd, on the present position of architects' assistants. It is a convincing proof that the social status of those entering our profession is deteriorating. As the writer truly says, in the last generation assistants all looked forward to becoming practitioners; and as the ablest young man has to wait some little while after he starts in practice before he becomes self-supporting, he must—as in all businesses—have some capital, and probably few professions require more than that of architecture. I believe there are very few assistants of a good social class who are unemployed, while there are hundreds looking for berths who are without means, and spring from a class unlikely to meet persons of the "client" class. Also I have found that those who have prospects of one day practising are keener in their work, and make more useful assistants than those without that hope. I believe the Architects' Benevolent Society's records would prove how difficult it is for a middle-aged or elderly man to earn a living as an assistant when once he is thrown on his own resources, an event which may happen at any time through no fault of his own, but frequently in consequence of his employer's death. I do not think there is any necessity for the formation of another society. The work suggested in the article could be well done by the Architectural Association, although the energies of that body are largely absorbed in helping to increase the present depression in our profession. Any increase in the paltry salaries earned by assistants which could be obtained by a quasi-trade-union must be preceded by a general increase in the fees obtained by the principals, and that can only come by registration. I will conclude by emphasising the importance of all those, and only those entering the profession having sufficient connection and capital to enable them to become practitioners, and by warning them that the life of a middle-aged assistant is not worth any man's while.

ARCHITECT.

London, E.C.

SIR,—I have been reading with great interest the articles and letters appearing in your columns on the above subject, and Mr. Dixon's last article in your issue of December 2nd has convinced me that the time is ripe for some practical measures to be taken to bind more closely together the large number of architects' assistants in the country for their mutual help and betterment.

Mr. Dixon strikes the correct note when he says that there is an ever-widening breach between architects in practice and the mass of assistants, the result of the stress of modern industrial conditions, and this means that their respective interests are liable to diverge and sometimes to clash. This should not be so. Both should work together for the general advancement of the architectural profession. There is an increasing number of assistants who have either no hope or no opportunity of obtaining a practice for themselves, and it is this circumstance which makes the present time more suitable than the past for combined movement. Again, as Mr. Dixon says, the movement must be distinct from a trade union, for it is not to be considered as the assistants' interests against the employer, but the union of the two interests for the good of the Art in general. In many respects the assistant to-day has to submit to ungenerous treatment, and in a majority of cases has to accept a most inadequate salary, and as a result does not feel the interest in his profession which he otherwise would. It is also most disheartening for a young man, after going through his articles, to find that he is expected to know shorthand and typewriting, and to accept a salary of 10s. or 15s. a week. The older men, too, have their grievances in many cases, which could easily be remedied by united action.

To return, however, to the formation of a guild, as suggested by Mr. Dixon. To launch such a scheme successfully, someone or some few must begin it, and work it. Should Mr. Dixon have formed any idea of carrying his scheme into practice, I suggest that the time is ripe for him to advance it, and I feel sure he can be certain of help from others to bring it into being. Should Mr. Dixon not desire to, or not be prepared to initiate some working scheme (and I think he is the one whom we should look to for such) then, with all deference to him, I would put before your readers some suggestions as to how it might be started. At the same time, I am prepared to co-operate with anyone who will undertake to set some machinery in motion on other lines.

My ideas, then, may be summed up as

follows. I may here say, Mr. Editor, that you could lend most valuable aid to the movement in your columns. The primary consideration is, then, "How many assistants would be willing to join such a Guild?" and preliminary steps must be taken to ascertain this. I propose that a few enthusiasts should announce through your columns their willingness to form a temporary committee, and should appoint one of their number as hon. secretary *pro tem.* They should have a number of leaflets printed embodying certain questions, etc., as outlined below, and each member of this temporary committee should subscribe a few shillings, sufficient to cover the expense of printing and of your inserting one in each copy of a weekly issue of the BUILDERS' JOURNAL. This would bring the matter prominently before a large number of assistants, and by attaching a reply form to the enquiry leaflet, addressed to the secretary, those in favour of the movement could signify their approval, and an approximate idea could be thus obtained of the number who would join.

I suggest that the leaflet should take the following form:—

1.—Are you willing to join a Guild of Architects' Assistants for the general betterment of their professional status, and the advancement of the interests of the profession in general?

The Guild, when formed, would endeavour to deal with such questions as the payment of fair salaries, with possibly a minimum, no unsalaried assistants, no employment of clerks for improvers' work, the number of pupils in an office, the sharing of the chief assistants in percentages, etc. Further, a fund for unemployed assistants could be formed.

The Guild would consist of different grades, according to the standing of the person joining, each with its particular obligations and advantages.

2.—Would you subscribe, say, 2s. 6d. towards forming a nucleus fund for the necessary expenses attendant on the inauguration of such a movement?

This form, of course, would have to be modified by the committee, and is only a rough idea at present.

Should this be favourably received, there ought surely to be 800 replies, and this would mean £100 promised. With this in hand, a proper representative committee could be formed, a secretary appointed, and steps taken to put the Guild on a firm basis in the usual manner.

It remains then, Mr. Editor, for such of your readers as are enamoured of the idea to send you their names as willing subscribers to a preliminary fund. They ought also to add whom they would like to act as secretary *pro tem.*, and their names could then be sent direct to this person, and between them the preliminary enquiry form could be drawn up for distribution.

It is difficult, of course, for anyone to choose whom he would like to act as secretary, for at first no one would know the others. But if the names of the willing subscribers are sent to you, Mr. Editor, and forwarded to me, I would willingly undertake to communicate with each one, and get his views of a secretary, and thus inform each who his fellow subscribers were.

I trust this letter will have some result, even if only criticism. I am willing to do all I can to forward such a movement.

ASSISTANT.

PROPOSED NEW LONDON SESSIONS HOUSE.

The Local Government, Records, and Museums Committee of the London County Council have submitted an important proposal to provide a new building in London for transacting the business of the quarter sessions of the county. The committee state that several sites for a new Court House had been rejected on the ground of cost or unsuitability. Of all the sites available the committee are of opinion that the most suitable at a reasonable cost is that belonging to the Foundling Hospital estate, having frontages in Hunter Street, Handel Street, Compton Street and Kenton Street, Bloomsbury. The site has an area of about 54,300 ft. super. The freehold cannot be obtained, but the owners are willing to grant the Council a 999 years' lease for the whole site at a rent of £1,000 a year on the payment of a premium of £5,000 subject to the lease, but with the benefit of the rents amounting to £200 a year for an unexpired term of 73 years arising from a portion of the site, which, although not now needed, might be useful for any future extension. The proposed expenditure on capital account for providing the new Court House in accordance with the requirements of the Standing Joint Committee is estimated at £87,690—for building £82,190, and for equipment £5,500. It is expected that this expenditure will be spread over the next four years. The committee make recommendations in accordance with their report, and the Finance Committee, concurring in the proposal, submit estimates for the premium and the necessary preliminary expenses.

A carved oak pulpit that has been placed in the church of St. John the Baptist, Newport, Mon., has been designed in fifteenth-century Gothic style by Mr. Frederick R. Kempson, F.R.I.B.A., of Cardiff.

* * *

The Danish Minister of Public Works has submitted to the Rigsdag a Bill authorising the construction of a bridge between the islands of Zeeland and Falster. The construction of this bridge, and the formation of a new railway between Kjoge and Copenhagen, would greatly increase the facilities of communication between Scandinavia and Continental Europe. The bridge is to be about two miles and a half long, with a movable central section to admit of the passage of vessels. The cost is estimated at about £400,000.

Trade and Craft.

Messrs. G. B. Kent and Sons, Ltd., of 75, Farringdon Road, E.C., and elsewhere, have just purchased the entire stock and goodwill of the old-established brush and painting brush business of Messrs. Gawdery & Son, 8, George St., Minories, E.C., and are transferring the manufacture of Messrs. Gawdery's patterns and orders to their own factories at Victoria Park and Hemel Hempstead.

We are further informed that this firm, which is now in the 132nd year of its existence, is, in the early part of 1909, going to open an up-to-date painting brush factory in Australia. Mr. Arthur Kent, chairman of the company, has already sailed in the s.s. "Arabia" for India, and, after spending a month in India, will proceed to Australia, and superintend the arrangements of the new factory in Melbourne. Several hands, and the manager of this branch, are sailing, at the end of December to meet Mr. Kent on his arrival in Melbourne.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.
The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.
The querist's name and address must always be given, not necessarily for publication.
Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

District Surveyor's Fees for New Drainage Work.

LONDON, N.—CAMERON writes: "I shall be glad to know whether a district surveyor can claim a fee for new drainage to old buildings? No structural alteration has occurred, nor has any brickwork been used excepting only to the manholes."

Certainly the district surveyor can claim fees for any new drainage work done, whether there is much structural alteration or not.

Book on Reinforced Concrete Construction.

LONDON, W.C.—Q.S. writes: "Kindly let me know of a useful and inexpensive book on reinforced concrete construction."

We would recomend Marsh and Dunn's "Manual of Reinforced oncrete," 7s. 6d. net, from these offices.

Door with Spring Joists.

ESSEX.—X.Y.Z. writes: "Kindly describe the best way of dealing with a door where the joints have all opened in consequence of the wood not being properly seasoned. Is it any use taking down and reframing again after it has hung for a few months?"

We do not know of any way of dealing with the door in the condition you name. It might be taken down and reframed again if you are are satisfied that it is thoroughly seasoned. Probably the expense of doing this would be as great as that of putting in a new door.

Concert Hall Construction.

"What are the sources of the best information on concert halls, assembly rooms, and theatres? The querist would particularly like to have the names of any corn exchanges which are used for concerts and theatrical entertainments."

There appears to be very little published information on the subject, the most important being Mr. E. O. Sachs's "Modern Opera Houses and Theatres" (3 vols. folio, published by Mr. B. T. Batsford, at 15 guineas nett), which contains some 600 plans and diagrams. Plans of concert halls and assembly rooms may occasionally be found in the professional Press. The New Colston Hall at Bristol was thus illustrated in vol. ix. of the "Architectural Review," and the concert room at Bath in vol. xviii. The regulations issued by the London County Council as to places of entertainment, though, of course, only in force in the County of London, form a very good guide for general use. They may be obtained from P. S. King and Co., Great Smith Street, Westminster, S.W. Many corn exchanges are used for concert and theatrical entertainments without being specially well adapted to the purpose. The one at Chichester is so used. Gloucester Corn Exchange, in Southgate Street, has a hall used for entertainments, and the combina-

tion market at Barnstaple (Devon) is similarly provided. G.

[It may possibly be of interest to note that the old corn exchange at Kirkcaldy has just been converted into a theatre, accommodating 1,500 people.—ED.]

Village Sanitation.

With respect to the enquiry and reply under this heading on p. 415 of our issue of November 25th, the manager of the sanitary department of the Leeds Fireclay Co., Ltd., 2 and 3, Norfolk Street, Strand, W.C., forwards an illustrated leaflet showing "a sanitary rearrangement of an old-fashioned insanitary method." It is claimed that by the use of the company's patent dry-closet casing, which is made of highly-glazed fireclay or stoneware, the dry-closet system is brought into line with the sanitary ideas of the present day. It was the old wooden casing, which, becoming foul through spilling or leakage, was really the most objectionable part of the system: but a casing made of highly glazed fireclay or stoneware can be easily cleansed, and relieves the very useful earth-closet system of a disqualification that was not inherent to it.

Books on Dairy Construction.

TUXFORD, NOTTS.—J. B. R. writes: "Please recommend a book on dairies, specifying floors, ventilation, and heating."

You will find the leading principles of dairy construction dealt with in "Specification," and all books on farm building construction treat on the subject. The two books I have in my office are Scott's "Farm Buildings" (Weales' Series), published by Crosby, Lockwood and Co. at 2s.; and Clark's "Farm Buildings," published at the "Hampshire Observer" Office, Winchester. The latter costs 5s., I think, but goes a little more deeply into the arrangement of machinery, etc., than does the former. F.S.I.

Constructing Roller Skating Rink.

NORFOLK.—C. R. writes: "Kingly inform me the cheapest flooring that could be used for a roller skating rink; also the size and shape required to accommodate about fifty persons."

We are advised that the cheapest flooring for a roller skating rink is asphalt, and that the shape should be oblong, giving as much length as possible without making the place unduly narrow. There is no exact size for accommodating fifty people. The larger the rink, of course, the more satisfactory it will be found. It should not in any case, however, be less than 75ft. by 3ft.

Bleaching Fumed Oak.

R.G.M.—EALING, W., writes: Would you kindly let me know some method of bleaching (a) fumed oak, and (b) stained oak, which are too dark and require lightening in colour.

You can bleach these woods by using a solution of chloride of lime and washing soda, provided that the wood has not been polished or varnished. If it has it would be advisable to remove the coating by applying such a varnish remover as "Pintoff," made by Messrs. Holzapfels, Ltd., Millburn House, Newcastle-on-Tyne, or "Pyrol," made by Farquhar and Gill, North of Scotland Works, Aberdeen. This, when applied to a varnished surface very quickly renders it in a condition to cause the varnish to be removed on the application of a scraper or, better still, engineer's cotton waste dipped in turpentine. The bleaching of the wood may be effected as stated by a mixture of chloride of lime and washing soda in the proportion of 2lbs. of the former to ¼lb. of the latter, about 2½ gallons of water will be required to bring these materials in solution. Apply with a fibre brush, not a bristle, and keep the work well saturated until the bleaching is carried forward to a sufficient degree: then thoroughly rince with water. Oxalic acid may be employed for the same purpose and in the same way, but this is a deadly poison and should only be used under very stringent conditions. The bleaching proposed may result in a grey appearance, and this can be removed by a subsequent staining of the oak to the required degree of intensity.

Works in Progress and Completed.

Athy.—At the last meeting of the Rural Council, referring to labourers' cottages, Mr. Hurley, engineer to the Council, wrote saying he had enough work in hands to keep him going for five years, when the chairman suggested help should be got if necessary.

Bradford.—The improvement scheme for the Langlands area will cost, for the erection of the new tenement dwellings, £14,473, this being the grand total of the various tenders. The excavation and other preliminary work is now nearly complete. The plans were drawn years ago by Mr. F. E. P. Edwards, the then city architect.

Cardiff.—It is reported that the building trade here is now very brisk. The corporation works committee, at their last meeting, passed plans for seventy-three new houses, while the Llandaff Council has just passed plans for forty-five new houses at Whitchurch, Llandaff and Llanishen.

Chester.—The town council have held a special meeting at which contracts were accepted for various new undertakings that are being pressed forward in the interests of the unemployed. The new works, which include the building of two new schools, are estimated to cost £18,000. Various street works are also to be put in hand immediham are estimated to cost £10,633, this sum inately.

Cleadon, Durham.—The newly erected Cleadon School, which was formally opened on December 7th by the chairman of the North-Eastern District Education Committee of the Durham County Council, Mr. C. E. Thompson, J.P., provides accommodation for three hundred people. It is a one-storey erection, built of red brick with simple stone dressings. There are six classrooms, one of which is fitted up as a cookery room, and the central hall is 42 ft. by 25 ft. Hot water on the low pressure system is used for the heating. The floors are solid, being constructed of boards laid on concrete, and the dados are lined with glazed bricks in the entrance and cloak rooms, and hard and impervious plaster in the classrooms and hall. The school is a "mixed" one, and there are separate playgrounds for the boys and girls. The cost of the building is under £3,200, which is more than £200 less than the sum usually allowed by the County Education Committee for this class of building. The architect is Mr. J. H. Horton, F.R.I.B.A., of South Shields and Newcastle-on-Tyne, and Mr. H. W. Bulmer, of the Education Offices, Durham, has acted as clerk of works. The general contractor is Mr. W. Hall, Derwent Joinery Works, Gateshead-on-Tyne. Messrs. Adamsez, Ltd., Scotswood-on-Tyne, supplied sanitary fittings.

Culford, Suffolk.—A stained glass window that has been placed in the new aisle of Culford Church represents Charity ministering to the aged, blind, and lame, and is to the memory of Beatrix Countess Cadogan. The window has been executed by Mr. Forsyth, of Hampstead.

Enfield.—A county school for girls, and a technical institute are being erected near the Tudor Grammar School here, at a cost of £12,379. The foundation stone has just been laid. The builders are Messrs. Treasure, of Holloway.

Glasgow.—The new premises for the Institution of Engineers and Shipbuilders in Scotland, which were opened on December 3rd, have been designed in later English Renaissance style.

Grimsby.—H. Mudd and Son, Fish Merchants, Grimsby, have recently had some new premises built in the Fish Docks, Grimsby, the architect being Mr. Herbert C. Scaping, of Grimsby. The building is carried entirely on a reinforced concrete raft, this raft, as well as the constructional steelwork, and fire-resisting floors, being carried out by Messrs. Homan and Rodgers, Manchester.

Horncastle.—The new grammar school here, of which the foundation stone was laid on December 7th, has been designed by Messrs. Scorer and Gamble, of Lincoln, in eighteenth century style. Its estimated cost of £4,500 includes the purchase of the site and of large playing fields, and the accommodation is for eighty-four boys and girls

Lancaster.—Now that the hoarding has been removed from the front of the new town hall, a better idea of the elevation is obtained. The huge portico, with its six columns and pyramidal pediment, as seen from Dalton Square, with the tower immediately central with it behind, has a fine effect. The view from Common Garden and Brock Streets is rather unfortunate, the great projection of the portico into Dalton Square interrupting the fine vista of Victoria Avenue and the spire of St. Peter's Church beyond; the perspective is so sharp through these narrow streets that the main thing which catches the eye is the leaded top of the huge pediment. The sculpture in the tympanium of the portico is a fine example, carved from design and model by F. W. Pomeroy, A.R.A., and represents—in the centre, King Edward VII., seated in the robes of State, with crown, orb, and sceptre, richly gilt, supported by female figures emblematical of Justice, on the right, and Mercy, on the left—both seated, these being flanked by standing cherub figures supporting shields bearing the arms of Lord Ashton (the donor of the building), and the arms of Lancaster. These latter are crowned by a ducal coronet, the King being the Duke of Lancaster. The angles of the space are terminated by lions couchant and sprays of Tudor roses. The large clock dials are now being fixed in the four faces of the tower, circular moulded limettes being preferred for their reception. It is expected that the town hall will be ready in time for next year's mayoral banquet.

Letchworth.—The success of the first Garden City is evident from the steady development of the estate, and the large number of buildings at present in course of erection, of the principal of which the following is a brief summary:—In Broadway, a house designed by Mr. Alwyn O. Cave; builders, Messrs. S. Redhouse and Sons. In Station Place, bank premises for Messrs. Barclay and Co.; Mr. E. Burgess, London, architect; Mr. T. Newton, Hitchin, builder; also a large block of shops, Mr. E. Simms, architect, Mr. G. W. Sonster, builder. In Leys Avenue, two shops; Mr. C. M. Crickmer, architect; Mr. A. Collins, builder. Also four shops: Mr. Allan Foxley, architect; Messrs. Openshaw and Co., builders. In Commerce Avenue, a bakehouse for Mr. F. Nott; Messrs. Wheatley and Duncanson, London, architects; Messrs. Openshaw and Co., builders. In Pixmore Way, two houses; Messrs. Underwood and Kent, architects; Mr. H. Rose, builder. In Meadow Way, two houses; Messrs. Underwood and Kent, architects; Mr. Jeffs, builder. In Rushby Mead, the Conservative Club; Mr. C. M. Crickmer, architect; Mr. H. Hurst, builder. In Cashio Lane, block of houses; Messrs. Bennet and Bidwell, architects; Mr. Jeffs, builder. In Norton Road, block of houses; Messrs. Underwood and Kent, architects; Mr. Hudson, builder; also the elementary schools, to seat 680 children, from the design of Mr. Urban Smith, county surveyor; Messrs. Hacksley, Wellingborough, builders; cost about £9,000. The Letchworth Cottages and Buildings, Ltd., are also having several blocks of cottages built in Common View. The First Garden City, Ltd., are making a large addition to the "Kosmos" Factory, and are also erecting a new factory for Messrs. Kryptok, Ltd. They also have several roads under construction. The factories are from the designs of Mr. H. Burr, surveyor to the company, and Mr. A. W. E. Bullmore is engineer for the roads. The whole of the work is being carried by their own men, under the personal superintendence of Mr. W. G. Satchell, works manager. The Hitchin Rural District Council are reconstructing the roadways in the old Ickneild Way, and in Green Lane, Letchworth, and the work is being carried out by Messrs. Davis, Ball and Co., at a cost of about £2,000.

London, N.W.—A new Unitarian church for Kilburn and West Hampstead, in Quex Road, West Hampstead, has been built at a cost of about £3,500, from the design of Mr. Chatfeild Clarke. It is in memoriam of the late Dr. Brooke Herford.

Mountain Ash.—The Church of St. John the Baptist, Mirkin, Mountain Ash, of which the foundation stone has just been laid, will seat 532. It has been designed in Late Gothic style by Mr. Bruce Vaughan, F.R.I.B.A., and the first portion consisting of nave, aisles, and south porch, is being built by Messrs. E. Turner and Sons, of Cardiff, at a cost of £3,230.

Prestwick.—The new church here, which has just been opened, has been built at an estimated cost of £5,000. The material is Ballochmyle finished stone, and the accommodation is for 500 persons. The style is Norman, and there is a tower more than 100 ft. high The architect is Mr. P. Macgregor Chalmers, of Glasgow.

Shrewsbury.—The proposed new schools at Coleluding Messrs. Treasure and Son's contract price of £6,883; cost of site, £2,142; and cost of furclerk of works' salary, and other incidental exniture, of paving the yard, of architect's fees, penses.

Obituary.

Mr. George Mallinson, who died, aged 77, on December 5th, at his residence in Filey, Yorks., served his articles with the firm of Barry and Browne, of Liverpool, and emigrating to New Zealand, built, at Port Lyttleton, the first stone church there. Returning to England, he practised successively in Leeds, Dewsbury, and Ripon.

FIRE-RESISTING CONSTRUCTION SECTION.

(MONTHLY.)

Fireproofing Materials under the New Patent Act.

The successful application for the rescission of an English patent for certain fire-resisting slabs on the ground that, in contravention of the new patent law, they have been produced in Belgium, whereas they should be manufactured in our own country, whither they have been imported in large quantities, is a matter that not only affects the fire-proofing trade to a very considerable extent, but must have an appreciable bearing on trade in general. This decision of the courts will probably put a stop to the importation of such building materials as could be advantageously produced in the United Kingdom. The argument that, labour being cheaper in Belgium, the cost of production is lower, supplies no valid excuse for non-compliance with the new law—the Patents and Designs (Consolidation) Act, 1907, which expressly provides that British patents may be revoked when they are worked exclusively or mainly abroad, unless satisfactory reasons can be given why they are not worked in the United Kingdom. In no other country but Great Britain would the professional men, the builders, or the administrative authorities tolerate the introduction into buildings of foreign goods that could be equally well made at home; and hence it is certainly a matter for congratulation that the Patent Act, as interpreted in the law courts, will prevent some at least of such patented articles from being imported into this country. It is now proved to demonstration that such articles must be made in Great Britain if the patent rights in them are to be maintained. Fear of the hardships that the new Act may inflict on British firms that, acting as agents for such foreign materials as come under its ban, have exploited the goods at their own expense, may be easily exaggerated. The rescission of the patent does not necessarily extinguish the manufacture of the article. It simply kills the monopoly. Then, surely the original agent—or, rather the agent for the time being—whose name, by extensive advertisement, is closely identified with the goods, and who has, by his satisfactory trading, established a connection and a reputation, enjoys an enormous advantage over any rivals who may think it worth while to enter a field that, while thrown open to all comers by the operation of the Act, is so thoroughl yexploited as to render competition exceedingly hazardous to the newcomer. The agent who already occupies the ground, and who has adopted sound and judicious methods of publicity, has only himself to blame if he fails to maintain the position of advantage to which he has attained. We see no reason why similar results should not follow the event under notice. In this instance, also, the open market may lead to brisker business. At all events, the decision shows that the new law is not to be trifled with, and the demonstration of a case in point will probably lead to an expansion of home industries, to the benefit of both producer and consumer. The latter naturally prefers the goods that are manufactured in his own country; and the former cannot fail to realise that this consideration is a powerful factor in the stimulation of demand.

"The Times" on Fire Prevention.

It is but rarely we see the "Times" devoting space to questions of fire prevention, even in the ably managed columns of its Engineering Supplement, and we thus welcome an article in the issue of December 9th, entitled, "Progress in Fire Prevention," which deals with the subject in a comprehensive way as far as building construction proper is concerned. For fire-resisting purposes, the great advance made in the use of concrete is particularly dwelt upon, and details are given of some of the more important floors which have been officially tested in this country. The advantages of suitable aggregates and finely ground Portland cement are specially referred to. On the door question we observe that roller shutters are finding favour, and are likely to be looked upon as the appliance of the future for closing large openings. Altogether the article gives a very excellent idea of the progress that has been made in fire prevention during the last decade.

LONDON PRIVATE FIRE BRIGADES.

The London Private Fire Brigades Association, which now comprises 850 members, held its fourth annual competition at the Guildhall of the City of London. The challenge shield is presented by the Corporation of London for the encouragement of good work among the private fire brigades of London, and is of solid silver, and worth considerably over £100. Teams representing fifteen brigades competed, and the competition was divided into two parts, the first taking place outside the Guildhall, and consisting of one officer and four men, hydrant (wet) drill, and the second part in the hall itself, this being a surprise drill (dry) for one officer and six men. The nature of the latter drill was such as to bring out the good points in brigades when dealing with sudden outbreaks of fire, and is in no sense a set show drill which a team could win by practising. At the conclusion of the competition, Mr. John H. Lile, chairman of the City Lands Committee, announced that the challenge shield had been won by the Robertson Electric Lamp Co.'s brigade, and the three first times were as follows:—1, Robertson Electric Lamps, Ltd., Brook Green, 360 2-5 secs.; 2, Bradbury, Wilkinson, and Co., Ltd., Farringdon Road, 403 3-5secs.; 3, R. H. and S. Rogers, Cliftonville Works, Rotherhithe, 410 3-5secs.

The competition was watched by the Lord Mayor and sheriffs, accompanied by many members of the City Corporation, Colonel Fox (Chief of the Salvage Corps), Lieutenant Sladen (Third Officer of the Metropolitan Fire Brigade), etc., etc. The Lord Mayor, in presenting the shield and silver medals to the winning team, congratulated them on their activity and energy, and upon the fact that they were the first team to win the shield for the second time.

SIMPLE MEANS OF EXTINGUISHING PETROL FIRES.

If the roller shutter door tests have concentrated the interest in the work of the British Fire Prevention Committee in the building world and among the public officers controlling buildings, the tests of Wednesday afternoon, December 2nd, certainly brought together one of the largest attendance of members and visitors interested in fire extinction that the Committee could accommodate with reasonable care for their safety.

The occasion of the attendance was a series of tests regarding the extinction of petrol fires with such ordinary means as cloths, sand, and steam, the type of cloths used being asbestos cloths as obtainable everywhere in the open market.

The tests comprised a series of 25, and have been arranged at the instance of the Association of Cleaners and Dyers, who conduct a somewhat dangerous trade, where petrol spirit is constantly in use and fires frequently occur, and whose members were anxious to have some evidence as to the utility of such simple means of extinction as described above.

On this occasion Sir James Williamson, C.B. (member of council), together with Mr. Edwin O. Sachs, F.R.S.Ed., received the visitors on behalf of the British Fire Prevention Committee, and the arrangements as to the conduct of the tests were of exceedingly elaborate character.

The duties of conducting the work were in the hands of a strong sub-committee, with Mr. Percy Collins, J.P., as directing member. Among others serving on the sub-committee were Chief Officers Folker, Dyer, and Henderson (vice-presidents of the National Fire Brigades Union), and others well versed in the subject under review, including some members of the Association of Cleaners and Dyers, who had been specially co-opted for this particular duty.

To meet the contingency of accidents, the ambulance arrangements were on an extensive scale, under Surgeon-Major Maitland Coffin, F.R.C.P., and Dr. Schaub, M.B. The police arrangements were also on an extensive scale.

The visitors included the Assistant Under-Secretary of State, Sir Henry Cunynghame, K.C.B., Major Cooper-Key, and others from the Explosives Department and Factory Department, officers from the War Office, Admiralty, H.M. Office of Works, as also public officers from the London County Council and various Corporations.

The tests were undertaken with petrol and all manner of vessels of various shapes and sizes, and also in such special appliances such as are used in the dyeing and cleaning trade. They were conducted in a quite remarkably efficient manner, with great rapidity and precision, and yet with every precaution to meet the hazardous character of the work. The excellence of the organisation of the tests, in fact, called for general remark.

The results, as in the case of all the committee's work, will be embodied in a report, and we believe it can be safely said that the results were very satisfactory and eminently instructive.

THEATRE REGULATIONS IN PARIS.

Although the regulations as to theatres, concert halls, and public buildings, recently issued by M. Lepine, the Paris Prefect of Police, are only applicable within the area of the Paris prefecture, and in the town and communes of the department of the Seine, and in the departments of the Seine-and-Oise, the prefects and mayors of the other towns of France will certainly not fail to be guided by these measures of security. But whatever is done in France in the matter of theatre safety also receives the attention of our public authorities in this country, and we thus think it useful to reproduce such parts of the rules as we consider instructive. They should be useful not only to those who have the regulation of these matters, but also to the architects in practice who have charge of building work of the theatre type, of assembly rooms, town halls, and similar structures.

It will be observed that in the French rules particular discrimination is made between the theatre, the music hall, and the ordinary assembly room.

(*Free Translation.*)

I.—GENERALLY.

(1) Every person desiring to construct a building wherein public performances or exhibitions are to take place, must send for permission to a Prefect of Police. Exception is made of theatres which were permitted to be built under the decree of January 6th, 1864, which had to be subject to a declaration submitted to the Minister of Public Instruction as well as to the Prefect of Police.

(2) Every request for permission must be accompanied by detailed plans, sections, and elevations to the scale of O.M. 02 to the metre. These plans must indicate the number of floors and rooms to be placed at the disposition of the public. These plans must be furnished in triplicate, and must be signed. The interested parties must also furnish the plans and notices, etc., regarding the electric installation of the building, in accordance with No. V. of the present ordinances. The Prefect of Police will notify to the interested parties his acceptance or refusal of the plans, and, if need be, indicate what modifications must be made on them.

(3) The works must not be commenced until after definite consent to the plans has been given, and no modification whatsoever must be made in the course of construction unless it has been submitted to the Prefect of Police, or if it has been refused by him.

(4) A building to be used by the public having received authorisation, it will be subject to a visit from the Prefect of Police, who will assure himself that the building has been executed in accordance with the plans, and will indicate any modifications or alterations that he thinks necessary.

(5) No change or alteration may be made in the construction or management of an existing building unless these changes have been accepted by the Prefect of Police. Any such changes must satisfy the conditions set forth in articles Nos. 2 and 3 above.

DIVISION OF THE BUILDINGS.—2.

(6) The buildings defined under Article 1 are divided into three kinds in accordance with the risks which may occur in installation and management. Those which come under the first category are:—

(a) Buildings which have scenery manipulated from above and below. (b) Those coming under the second category are buildings having scenery not manipulated either from above or below. This category comprises equally circuses, hippodromes, velodromes, and other analogous establishments which have no scenery. (c) Those coming under the third category are buildings having no scenery, but which comprise a simple platform, which can be fixed or movable.

The category under which any building is to come will be determined by the use to which it is to be put. If the use to which it is to be put should be changed, the class or category under which it ranks may be modified.

II.—CONSTRUCTION AND GENERAL MANAGEMENT.—1.

(7) All the buildings coming under the first category, and those of the second and third categories—to accommodate at the least 500 people—must have on each floor, facing one or more streets, a facade to at least 6 metres in width. The width of the facade must be increased by 1 metre for every additional 100 persons after the first 500 accommodated.

(8) As soon as the number of persons accommodated exceeds 1,500 but does not exceed 2,000, the building must have a facade on two streets, or it must be detached on two of its sides.

(9) When the number of spectators exceeds 2,000 but does not exceed 3,500, the building must have a facade on to three streets, or be detached on three sides.

(10) When the number of spectators exceeds 3,500, the building must be an entirely detached building.

(11) The streets and courtyards provided for in the preceding articles must have dimensions in accordance with the rules issued on the 13th August, 1902, but in no case must their width ever be less than 5 metres; this width must at least be equal to that of the exits of the building on to the streets and isolated courts; these latter must be in easy communication with the public thoroughfares.

(12) In the parts of the building where the buildings under Category 1 join on to constructions or other properties, a division wall in brickwork must be erected no less than 0.45 metres in thickness, to protect neighbouring property. This wall must have no opening whatsoever on to the neighbouring property.

(13) In buildings coming under Category No. 1, the only people allowed to reside there are the watchman, a caretaker, and the manager of the building or his representative. It is forbidden to introduce into this building anything which does not appertain to it or anything which is foreign to the use for which it was erected.

II.—STAGE.

1.—Scenery of buildings coming under 1st Category.

(14) The stage must be surrounded by thick brick walls, having a thickness of not less than 0.45 metres; these walls must present a straight flat surface, and no part of them must be recessed or projected beyond the boundary line. The windows in the walls on the stage must always be higher than neighbouring buildings within a radius of 10 metres.

(15) The wall to the front part of the stage must be at least 1 metre higher than the height of the auditorium, and must end in such a manner as to form an emergency exit easily accessible.

(16) No communication must exist between the stage and the uppermost parts of the auditorium.

(17) It is not practicable to allow any openings in the walls surrounding the stage, except such as are strictly necessary to ensure proper service on the stage and proper exits from the stage. At floor level from the stage there must always be two exits, one at each side, of sufficient width to allow of the stage being quickly cleared if necessary. In the upper parts of the stage no communication must exist with the staircases and exits which serve the artists' rooms and the building which contains administrative rooms.

(18) All these openings must be closed by thick doors constructed of fire-resisting material, and in such manner as to oppose the passage of smoke and gas. The doors which are situated at stage level must open outwards from the stage, all the other doors open inwards on to the stage. The doors of communication between the stage and the auditorium and its rooms must be kept locked during the performance, and they must be easily opened from the stage side.

(19) The stage opening must be completely closed by a metal curtain working easily and noiselessly. The lowering of this curtain should be done from two directions: one from the stage side of the curtain, and the other on the outside from a point easily accessible. The lowering should be done with the aid of some simple device. To provide for accidents, where the machinery will not act, provision must also be made for the lowering to be done effectually by hand. Winches or windlasses should not be fastened down with catches, but they should be worked automatically. The metal curtain must usually be kept lowered; it should only be raised during performances.

(20) At the top of the stage must be an opening closed by one or more traps. The sections of this opening must be equal to 1-20th of the surface of the stage. The opening of this bay must be done from two points, which must be in opposite positions; one on the stage in close proximity to one of the points working the metal curtain, the other in proximity to the other working point of the metal curtain.

(21) The carpentry work at the top must be in incombustible material; the covering must be of not easily inflammable material, the flies must be of light material, 1-7th of the surface of the covering must be of fine glass.

(22) The staircases, the ladders, the bridges, the grids, the different floors above and below, the floor supports, the machinery, and generally the whole of the movable installation on the stage proper must be of incombustible material; the parquetry on the stage must be of impregnated wood. Similarly the suspension wires or cords must be equally of incombustible material; the wires or cords for manipulation can be covered with hemp or some other easily handled material.

(23) The scenery, as far as practicable, the stage accessories, the decorative curtain, and generally all movable installation on the stage proper should be non-inflammable. The theatre management must in due course give to the prefecture of the police, notice of the installations, decorations, etc., to be used, so that same may be tested from the point of view of non-inflammability by someone appointed by the prefecture. These tests must be made at least once a year, and a certificate will be given each time bearing date. As non-inflammable are to be considered materials which burn without giving off flame, non-inflammability will not be considered obligatory for furniture.

(24) The stage proper shall not be encumbered with decorations, the amount of scenery and decorations will be fixed according to the building.

(25) The scenery accessories and furniture used for the day's performance must without fail be removed to the scene store after use which is away from the stage and away from the auditorium.

(26) All accessories which are very combustible, such as garlands, cloths, shavings, etc., etc., must be kept in a special place, specially built of non-combustible material, and which must be kept closed by a dividing door which is also constructed of non-combustible material.

(27) All scenery, decorations, accessories, and furniture for the stage, not in actual use, must not be kept within the walls of the building proper, but they must be kept in stores, away from the building, constructed according to ordinance issued on March 27th, 1906.

(28) The counter-weights for stage installation must never be placed in situations accessible to the artistes or to the public, neither should they be over water-pipes or wires for lighting.

(29) It is forbidden to construct boxes within the precincts of the stage proper. Any seating accommodation needful for stage attendance must be reserved just in front of the stage.

(30) No artiste's room, or other local annexe, excepting the store containing accessories should open directly on to the stage.

(31) The firemen must have easy access to the stage, without having to pass through any exits specially reserved for the public.

(32) Smoking is forbidden on the stage and in the rooms belonging to it.

2.—Buildings coming under the 2nd Category.

(33) The stage shall be surrounded by walls of incombustible material.

(34) If the stage goes over other floors, or has other floors over it, floors and ceilings of incombustible material must be put dividing the stage from these different floors. No opening of any kind must be made in these floors. No smoky chimney belonging to neighbouring parts must come in connection with the stage building.

(35) The walls containing the stage must only have openings in them which are necessary. All these openings must be closed off by fire-resisting doors.

(36) All the fixed installations in the stage building must be of incombustible material. The parquet flooring only of the stage may consist of specially impregnated wood.

(37) The scenery must be of fine sheet iron, metallic cloth, asbestos, or other similar substance of an incombustible nature, and they must be mounted on metal. Any needful object on the stage must be of incombustible material. Stage accessories and all movable installations within the stage building must be of non-inflammable material, as also the curtain to the front of the stage. Non-inflammability is not obligatory for furniture.

(38) Articles 24, 25, 27, 29, 30, 31, 32 above-mentioned also apply to buildings coming under Category No. 2.

3.—Buildings coming under Category 3.

(39) Buildings coming under the 3rd Category may not contain a stage; a simple dais fixed or movable, can be put into the hall; its doors and platform must be constructed of incombustible material, or at least all wood must be covered with plaster. The floor of the platform and the joinery alone may be of uncovered wood.

(40) On fixed platforms and within their area, there may be only one fixed uniform kind of decoration, which must be incombustible, or it much be "mounted" on incombustible partitions. Any accessories must be rendered non-inflammable. Movable platforms may not have any scenery whatever.

III.—AUDITORIUM.

1.—Buildings coming under the 1st Category.

(41) The auditorium and all its adjoining dependencies, that is to say, the vestibule, staircases, foyers, buffets, exits, etc., and generally all the parts accessible or not to the public must be constructed in fire-resisting materials.

(42) The ceiling over the auditorium, the ceilings separating the different floors, and the upper parts, must be constructed in fireproof material.

(43) The supports and visible carpentry, the pillars and the joists not covered in masonry must be surrounded by some fire-resisting material.

(44) The joinery, the parquet flooring, and the upper parts of the treads may be in wood; the parquetry and the upper parts of the treads must be perfectly fastened to the framework of the floors and staircases. The upper parts of the treads and the staircases must not be polished, or of material which will polish with use.

(45) Metal grilles, sufficiently closed, will be fixed below the window sashes, lighting the auditorium, and its adjoining dependencies accessible to the public. The sashes to the roof will be protected above by a metal grille.

(46) All cloths and other decorative objects must adhere firmly to the surfaces which they are covering.

(47) The portières and curtains may be fixed to doors and to windows and carpets may be laid on the floors, but such hangings and carpets must be of an uninflammable character, and must not be any hindrance to the public passing to and fro.

(48) It is forbidden to have any work-rooms or any rooms with fires in the apartments over the auditorium and its dependencies or in any parts below the auditorium.

(49) Under the places specified in article 41, there may be rooms for storing costumes, rooms for rehearsals, general storage rooms and libraries. These stores and rooms must have no communication whatsoever with the auditorium and its dependent apartments, neither must they communicate with the stage. The only access to these rooms must be by way of the building containing the offices. The access to these parts must be closed off by armoured doors and in fire-resisting material. These doors must be kept closed and locked whilst the public is in the auditorium.

2.—Buildings coming under Categories 2 and 3.

(50) The auditoriums of buildings coming under the second and third category must be constructed and managed in the same way as those coming under the first category. The floors which divide these establishments from neighbouring apartments will be of fire-resisting material. An exception is made for the general construction of auditoriums destined to contain less than 500 people which, if they are not built in fire-resisting material, must be closed in and covered with plaster.

(51) No communication must exist between the auditorium and the neighbouring apartments.

IV.—ADMINISTRATIVE OFFICES (Rules applicable to all Establishments).

(52.) The administrative offices, which include the artistes' rooms, the workshops, electricians' rooms, tailoring rooms, sewing rooms, hairdressing rooms, etc., etc., and the various stores necessary for the conduct of the establishment must tbe constructed according to the rules applicable to the auditoriums of their category. They will be divided from the auditorium and its dependencies by thick masonry walls.

(53) There will only be in these walls the necessary openings for the carrying out of the business and for first aid purposes. These openings will be closed by armoured doors. The stairs and work shops will be away from the staircase and closed off by similar doors.

(54) There must be an easily accessible staircase for the use of the artistes, it must also be possible to use this by two different exits.

(55) The exits to the administrative offices and to the orchestra must never be encumbered with articles of clothing, etc., etc., they must be quite free to enable easy passing to and fro.

(56) It is forbidden to fix any portiere, curtain or any cloths which are of an inflammable material, of any description in the artistes' rooms, in the foyers, in the store-rooms, or in the workshops. The walls and ceilings must not have any decoration, except paintings or papers and cloths which adhere perfectly to the masonry. It is forbidden to smoke in any of these rooms.

(57) Such costumes, as are not in use must not be kept in the artistes' rooms, they must be put away and kept in special stores. Such costumes, in such special stores, if they are not locked away in wardrobes, must be covered by some non-inflammable cloth.

(58) It is forbidden to hang up or lay down clothes, excepting in such rooms as are set apart for that purpose.

(59) No manufacture may be carried on in the building, neither is it allowed to have any stores of explosives in the building, if anything of the kind is necessary for the due performance of the play, it will be brought in at the last moment, when required and deposited in some special place set apart.

III.—EXITS FROM THE AUDITORIUM.

1.—General Rules.

(60) All seats on ground level must never be at a lesser height than 3.50 metres from the street level.

(61) The height of the ground level of the auditorium of a building coming under the first category and that of the auditoriums of buildings of the second category which are to accommodate more than 500 people, must never be more than 4 metres higher than street level.The height of the ground level of buildings of the second category to accommodate less than 500 persons and those of the auditoriums of buildings coming under the third category to accommodate more than 500 persons, must never be more than 8 metres higher than street level.

(62) In order to define the number of persons to be admitted to each kind of building there should be added to the number of seats, the number of persons who can stand in the promenade, on the basis of three persons per square metre of promenade surfaces. As promenade may be considered all such spaces where the public can stand to view performances. On the upper tiers, where the seats are not separated or numbered, the number of spectators shall be at the rate of one person per 0.45 metres width of the bench.

(63) The number and width of the exits shall be in proportion to the number of spectators admitted into the auditorium as a whole, and in accordance with the seating arrangements. This rule applies, not only to exits into the street but on to the staircases and exits of the building.

(64) The staircases and general exits must be so arranged that the current going towards the vestibules and the exits is not jostled.

(65) Cloak-rooms must be arranged in the part of the building containing the auditorium and off routes and exits and staircases. These cloak-rooms must be so placed that the people using them, do not hinder the general public leaving the and entering the building. In any case, cloaks to be deposited or hung up in the passages and exits.

(66) It is forbidden to deposit or leave on the staircases or in the exits ways, any objects whatsoever, which can hinder the circulation or which will diminish the width of such staircases, exits, etc., even if this width is greater than obligatory, as laid down further on. The offices on the contrary must be mobile and must never obstruct the exits.

(67) The seats may be fixed in the passages used by the public for the staff of the building. These seats should raise automatically and be so installed that they will not reduce the width which is compulsory for these passages neither must they hinder the circulation of the public or form any projection in the passages, when they are raised.

(68) It is forbidden to have any steps in the passages of the auditorium, any differences in level must be adjusted by graduated slopes, the incline of which must not exceed 10 centimetres to every metre.

(69) Doors closing off side scenery, turning doors, turn styles, and rolling ways and movable staircases are forbidden. The lifts must be in accordance with the regulations laid down further on, and must not be the cause of any diminution in the needful dimensions of the staircase and passages. They may only be worked by the staff of the establishment.

(70) Visible signs indicating to the public where the staircases and exits are, must be put up. It is forbidden to put up looking-glasses, which might mislead the public as to the position of the exits and staircases. Any openings with "Exit" for the public must be indicated by proper signboards.

2.—Exits.

(71) All exits must be properly spaced out in the building. If the building goes into the open on to the street, into courts, on to terraces, etc., there must be an exit to each one of such open spaces.

(72) The auditorium, the stage and its dependencies must have independent exits into the open.

(73) If more than 100 persons and less than 500 persons are assembled in a building, there must always be at least two exits for the public, and there must be one additional exit for every 250 or fraction of 250 persons over and above the first 500 mentioned.

(74) The width of the exit doors must never be less than 0.75m.

(75) Any doors leading into the open must be according to the nature of the open spaces they lead to. Tambours may be authorised before these doors after having been examined by the Public Authorities.

(76) The width required for exits on to the open only applies to such openings which are destined exclusively for the use of the public. In this width will not be counted the exits which may exist across cafes, buffets and other inside annexes belonging to the buildings. It will also not cover the exits for first aid which may be established on to the neighbouring buildings.

(77) The doors shutting off interior passages of the auditorium, those opening into the corridors, the covers, the vestibules, etc., etc., must open outwards. These doors must be so arranged as not to form any projection in the passages or on the staircases, etc., etc., and they must not hinder the current of the public towards the exits.

(78) The manner in which the doors of the boxes shall open is to be determined by the Public Authorities after examination of plan.

(79) Doors leading into the open, with the exception of those which are always kept open, those closing interior passages, staircases, vestibules, etc., must be glazed in the upper part so as to enable the public to find its way to places where there is light.

CHAPTER III.

Couloirs and General Passages.

(80) The width of the doors and exits on to the open will be based on a minimum width of 0.80m. per 100 persons.

(81) The width of all general passages, ways, couloirs, staircases, etc., will be in proportion to the number of spectators who are to use these passages. It will be based on a minimum width of 0.60m. per 100 persons, and will never be less than 1.50m.

(82) When places on ground level are lower than street level or higher by 2 metres than the street level, the width of the passages and staircases communicating by ground level of the auditorium with the vestibules and with the open, it will be calculated at the rate of 0.80 per 100 persons using these passages.

When places on ground level are below street level, the passages and staircases serving these places will be independent of those serving the upper floors.

4.—Special Rules for Staircases.

(83) The position of the staircases will be chosen in such a manner that they will serve all parties in the building easily, and will enable the public to get into the open quickly from the vestibules and exits.

(84) When more than 100 persons or less than 500 persons are assembled on one or more floors above ground level, there shall always be at least two staircases. There shall be an additional staircase for every 250 or fraction of 250 persons over and above the first 500. (This number will be calculated in part according to the number of floors there are, so that the number of staircases increases in proportion with the number of spectators called upon to frequent the building.)

(85) The staircases to the passages must run without interruption down to the street level.

(86) Staircases destined for the use of the public must be straight, without angular turnings. Their width must never be less than 1.20m. There must be hand-rails on both sides.

(87) The width of the staircases must at no point be narrow when approaching the exits.

(88) There shall be landings, so as to limit the steps of the staircase to 20 at a time. The landing shall have an equal width to the width of the staircase. Their length shall not be less than 1.20m.

(89) If the auditoriums are confined by "couloirs" or by promenades, the staircases and their landings must be situated outside the "couloirs" or promenade.

(90) Doors closing off staircases leading on to the vestibules, "couloirs" or passages, etc., must not form any protection on the staircases, nor must they decrease their width. A landing of at least a metre must precede them from the staircase side.

(91) For exit purposes all the staircases must communicate with one another in such a way that they can be used by every section of the public, excepting according to Art. 82 setting forth the Rules for Staircases serving places below street level.

AMENDMENT OF THE LONDON BUILDING ACT.

At a meeting of the London Council that obtained some degree of notoriety owing to an extraordinary interruption by one of the members, no business was transacted, the Building Act Committee stated on the agenda that "there is one important matter which should be dealt with in the session of Parliament of 1909, viz., the use of steel construction and reinforced concrete in buildings. This method of construction was not contemplated in the Act of 1894, and there is no doubt that a change of the law in this direction is necessary in order to meet modern building requirements; and we have been strongly urged by the Royal Institute of British Architects, the Institution of Civil Engineers, and the Surveyors' Institution to promote legislation with that object. Under the London Building Act, 1894, the walls of all buildings must be of the thickness prescribed by the first schedule of the Act, with the effect that the walls of buildings mainly constructed of steel or reinforced concrete have to be of a greater thickness than is necessary for stability, thus unnecessarily diminishing the floor space of the buildings." The committee therefore recommended "that application be made to Parliament in the session of 1909 with a view to the amendment of the London Building Act, 1894, so as to facilitate the use of steel or reinforced concrete in the construction of buildings, and to make any necessary provision with regard thereto."

Since that unfortunate and memorable meeting the Council have accepted the Building Acts Committee's proposals, and thus new enactments are in course of preparation.

The question of the amendment of the London Building Act of course raises an important point from the fire aspect, but if we are rightly informed, due provision is being made in the Bill for the proper protection of the steel frame against the action of fire. This is as it should be, and we cannot but impress upon those in authority the absolute necessity of firmness on this particular feature.

Seeing that steel-frame buildings will be practically a class by themselves, we also think that some additional precautions might be safely taken in their case as to the hazard of outside openings, lift shafts, and small areas, and we think that the property owner, having the advantage of building in steel frame, and the economy of space thereby arising, would not object to additional precautions being taken in other directions in such buildings.

We trust, too, that those in authority will be guided by the experience of the British Fire Prevention Committee as to the materials to be used for protecting

steel framing; this experience, which has now spread over some ten years and is so precisely recorded, should be made use of on an occasion like this.

Turning to reinforced concrete, we should prefer to see regulations embodied in the Bill, but we are fully alive to the difficulties of this course, having regard to the present stage of the science of reinforced concrete in this country. But from the fire point of view there should at least be some broad lines laid down most strictly in the Bill, so as to indicate that, no matter what the scientific aspect of the construction may be, a certain minimum of protection must be afforded to the metal work, a certain minimum thickness of walls and floors defined, whilst the scientific details could be left to regulation, though preferably to by-law. The size of any aggregate to be used is also a matter that might be defined in the Bill.

The amendment to the Building Act will open up numerous highly interesting problems, and should afford interesting discussion. But, speaking generally, the new amendments should be of advantage to the community. Thus we desire to take this opportunity of congratulating Mr. Riley—the Superintending Architect to the London County Council—on this further proposed advance in the direction of giving the Metropolis additional building facilities which will be welcome from the fire point of view as long as the necessary precautionary measures against fire are clearly defined in the Act, and cannot be made the subject of the Council's party politics or so often varying ideas of equity.

THE BRITISH FIRE PREVENTION COMMITTEE'S TESTS.

Fire-resisting Roller Shutters.

We dealt at some length, in the last monthly fire-resisting section, with the highly interesting series of roller shutter door tests that have been conducted by the British Fire Prevention Committee, the "Wilson" type of shutter being at present under review. The tests of November 4th were continued, with further tests on November 25th, when there was again such a large attendance of visitors as to more than forcibly express the great interest being taken in the subject at the moment.

On the day in question the tests, as announced, comprised single shutter door tests, one being an official test with a single roller shutter to a 7 ft. opening, and the other an experimental test in the form of a re-test with the single roller shutter which had already been previously tested on the 4th November, and after that re-test had been repaired to the extent of receiving a fresh roller and hood. The object of the test was to obtain the classification of affording "full fire protection" (Class A), which involves the application of fire to a temperature up to 1,800 deg. Fahrenheit for 2½ hours, followed by the application of water from a steam fire-engine for 2 minutes.

On the previous occasion Sir Henry Tanner, I.S.O., F.R.I.B.A., principal architect of H.M. Office of Works, represented the Council of the British Fire Prevention Committee, and received the visitors. On this occasion, Mr. Riley, F.R.I.B.A., superintending architect to the London County Council, was present to receive visitors on behalf of the Council of that body.

Mr. Riley was supported by Mr. Edwin O. Sachs, F.R.S.Ed., and Mr. Percy Collins, J.P., members of the executive, whilst the testing operations were conducted by a strong sub-committee, of which Mr. Max Clarke, F.R.I.B.A., was the directing member, Mr. Ellis Marsland, and Mr. Grellier, F.R.I.B.A. (district surveyors), Chief Officers Dyer and Henderson, and Mr. A. E. J. Fulkes (insurance surveyors) were members.

There was again a large attendance from the Admiralty, War Office, and other Public Departments, as also a number of officers from the London County Council Building Act and Fire Brigades Department.

We understand further tests on this shutter question are in preparation for January, so that when the reports appear thoroughly comprehensive data will be available as a guide to our public authorities and to architects in private practice.

The question under investigation, of course, not only affects the problem of protecting large door openings in party walls or divisional walls with double shutters, but also the very important point of protecting window openings with single shutters, a matter requiring the serious attention of property owners in the City whose houses so often face narrow thoroughfares or share mutual areas.

ALL-ROUND CO-OPERATION IN CIVIC FIRE PROTECTION.

The benefits of greater co-operation between fire departments and underwriters are becoming more fully recognised. At the recent convention of the International Association of Fire Chiefs, held in Columbus, Ohio, there was an interesting discussion upon the matter. Strong appreciation was expressed of the benefits that have accrued during the past four or five years to the firemen of the country through the skilful work of organised fire-insurance interests in securing improvements in matters of fire defence in many cities and towns.

Those who deprecate associational activity in the business of fire insurance, as savouring too much of the "combine," would do well to ponder the opinions of civic fire-fighters with regard to the debt which the property-owning public owes to underwriting associations. As Chief Tyson, of Louisville, pointed out at Cleveland the other day, insurance organisations are just as urgent as firemen in demanding the best apparatus and the most plentiful supply and pressure of water for fire-extinguishing purposes; but the prime motive of their efforts is to encourage prevention of fire; and to this end they make critical examinations of all parts of a building, follow the processes carried on or the materials kept in stock, locate them in the least dangerous spot available, and seek to surround them with such safeguards as expert knowledge and experience dictate. All information gathered is kept on record by the underwriters' organisations, and is open to the inspection of and use by any chief who may desire to avail himself of it, the underwriters being always glad to co-operate in securing the removal or modification of any dangerous condition which might appeal to him as being of sufficient importance to demand prompt attention.

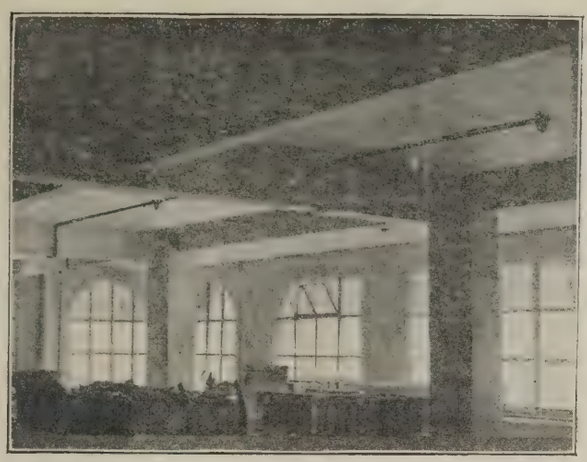
In Chief Tyson's opinion, one of the most important results of closer co-operation is that the public has become interested, the business community being more inclined to add its influence towards securing proper civic means of fire prevention and fire fighting.

In closing, an effective appeal to his fellow fire chiefs was made by the speaker. "It appears to me that we are derelict in not at once and continuously availing ourselves of the opportunity to possess such a fund of useful, and frequently essential, information as may be had for the asking, or at least a nominal expense, by the establishment of more intimate and friendly relations with organised insurance bodies and associations. Let us cast aside all prejudice, and, by mutual confidence and co-operation, take advantage of the opportunities afforded us through the systems adopted by organised fire insurance."

WAREHOUSE, IVY LANE, NEWGATE STREET.

This large warehouse was built for Messrs. J. Grossmith and Co., perfumers. The architect was Mr. A. H. Saul, A.R.I.B.A., of London, and the contractors and licensees for the Coignet system, under which the floors throughout, and the roof of this building, were constructed, were Messrs. Peacock Bros., of London. The general contractors for the work were Messrs. E. Lawrence and Sons, of London.





WAREHOUSE, IVY LANE AND DUKE'S HEAD PASSAGE, LONDON, E C
INTERIOR OF ONE OF THE FLOORS.

As to the type of floor construction used, the Coignet system is too well known to need description here, but we would mention that for a warehouse of this type the system of design can be specially recommended, for the two fire tests undertaken with floors of this description at the British Fire Prevention Committee's testing station amply demonstrated its reliability from the fire point of view.

The first portion of this warehouse contained seven floors, and the area of each floor was 1,600ft. and the height of the building approximately 50ft. The superloads to be carried by the floor were calculated from 1½ cwt. to 2 cwt. per sq. ft. The new Coignet trussed beam was used throughout for main beams. Two heavy lintel beams raised upon reinforced concrete columns or pillars support the brick walls on the two principal fronts of the building. The roof, which is altogether in reinforced concrete, is a skew gable roof in construction.

It will be worthy of note that one of the sides being much longer than the other, it was necessary to bind the structure in such a manner as to counteract an uneven thrust upon the walls.

The roof is covered with slates. In the roof there are dormers which are also constructed in reinforced concrete.

Owing to the great value of the materials stored in the warehouse, the architects advised his clients to adopt the system of reinforced concrete applied throughout the structure, except in the outer walls, where not permissible under the Building Act.

"FIRE WASTE," ITS COSTLINESS AND PREVENTION.

Mr. J. Montgomery Hare, president of the National Board of Fire Underwriters (also manager for the United States of the Norwich Union Fire Office), appeals to the American public in the following manifesto:—

"We desire to invite attention to certain features of the work of the National Board of Fire Underwriters which touch the public interest in common with our own, and suggest the fullest co-operation from all concerned. The total property loss in the United States for 1907 is reported as $199,383,300; while for the past five years the destruction of values by fire in the United States has amounted to $1,257,716,955, or an average of over $251,000,000. No country, however rich, can suffer such enormous losses without seriously impairing its prosperity. . . .

"With the purpose of aiding municipal authorities, the National Board has in its employ competent hydraulic, fire department, and electrical engineers and insurance experts of high standing in their professions, for the purposes of investigating existing conditions and presenting model building laws, thus endeavouring to minimise losses by fire throughout the country.

"The condition of the water supply and fire-fighting facilities and character of construction of buildings of a city is one of great importance to all concerned in the welfare and prosperity of the community, especially to its business interests and its property-owning citizens. The actual conditions are reported as found without prejudice by these experts, whose daily occupation gives them exceptional qualifications as judges of such matters. Many instances might be cited as examples of imperfect and even highly dangerous conditions, and it is, we think, as much the duty of the insuring public as that of the fire underwriters to prevent, if possible, a recurrence of disasters similar to those of Chicago, Boston, Jacksonville, Peterson, Baltimore, San Francisco, and Chelsea.

"According to the figures tabulated by the Committees on Statistics of the National Board of Fire Underwriters, as per reports from the United States Consulates, the fire loss per capita in six European countries was as follows:—

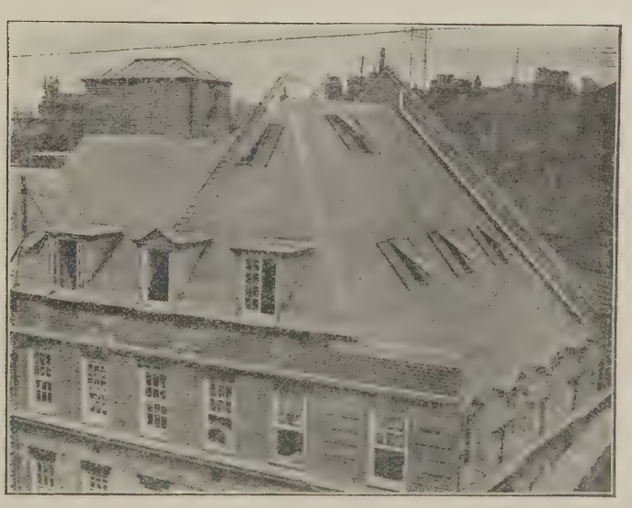
Country.	Years.	Fire Loss. Annual Average. Dols.	1901. Populations.	Loss per Capita. Dols.
Austria	1898-1902	7,601.389	26,150,597	0·29
Denmark ..	1901	660,924	2,588,919	0.26
France	1900-1904	11,699,275	38,595,500	0·30
Germany ..	1902	27,655,600	56,367,178	0·49
Italy	1901-1904	4,112,725	32,449,754	0·12
Switzerland	1901-1903	999,364	3,325,023	0·30

or an average loss per capita of $0.33 for the European countries named. In the United States, as a whole, the average per capita loss for five years ending December 31, 1907, was $3.02.

"The result in thirty foreign cities gave a per capital loss of $0.61, as against $3.10 in the five years' average of 252 cities in the United States.

"Taking the number of fires to each 1,000 population in the same cities, our Committee on Statistics found it to be 4.05 in the American cities, as against 0.86 for those of Europe, showing also that, in point of frequency, fires here are far in excess of those abroad. In the European cities, practically all fires are confined to the buildings or place of origin, while such is far from being the case in the United States, owing largely to a low standard of construction. Thus it would appear from all the statistics available that the per capita loss in the United States is appallingly greater than in any other country, whether the comparison be by cities or by countries. During the past four years over 125 of the more important cities have been investigated, and the reports have been supplied to municipal authorities, property-owners, and civic organisations, and as a result many improvements have been obtained.

"If, in the future, the insuring public will use their influence to secure proper building laws, such as are outlined by the National Board Building Code, more efficient water supply and better fire-department equipment, the destruction of pro-



WAREHOUSE, IVY LANE AND DUKE'S HEAD PASSAGE, LONDON, E.C.
SKEW GABLE IN ARMOURED CENCRETE, COVERED WITH SLATES.

perty by fire will be materially decreased and the cost of insurance to property-owners thereby lessened. Money thus expended in such improvements would advantageously affect the welfare and prosperity of the entire community. Co-operation in this work is earnestly invited."

TECHNICAL EDUCATION AND FIRE PREVENTION.

We have long advocated that our architectural and civil engineering schools should have courses of fire protection, and fire prevention in particular, but we have never gone so far as to advocate any special school devoted specially to this subject.

In the United States, where fire prevention is becoming a separate science and profession, steps have, however, already been taken in this direction; and the Armour Institute of Technology now has a special course on the subject, and students can become graduates. The idea of this course should be of such general interest that we are printing below the prospectus issued by the Institute of Technology in question. If some of the ideas from this prospectus were taken by architectural and engineering schools, and also certain of our polytechnics, much would be done in the direction of encouraging fire prevention.

Announcements Regarding Courses on Fire Protection.

The City of Chicago offers exceptional advantages for the study of problems involved in protection against fire loss. The Underwriters' Laboratories, conducted and maintained by the stock fire insurance companies of the country, are situated here, and this national testing station gives opportunity for thorough investigation and study. Armour Institute of Technology, in 1903, established a four years' course of training in fire protection engineering. The Underwriters' Laboratories, offering their facilities for experimental and research work, are co-operating with the Institute in making this course efficient, both theoretically and practically. The general engineering equipment of the Institute, and the advantages offered by the use of the Underwriters' Laboratories, insure a broad and comprehensive course of study, fitting young men for expert work in the fire insurance field with municipalities, corporations, and manufacturing companies.

The problem of reduction of the large losses by fire that occur annually is one that has not been regarded as capable of solution until comparatively recent years. Fire insurance, while it may indemnify the property owner to the extent of the actual market value of the property destroyed by fire, cannot repay him for the many indirect losses which are attendant upon the fire. The interruption of his business, the securing and moving into new quarters, the replenishing of his stock, all involve loss which is not covered by any ordinary insurance policy. Moreover, the delay incident to adjusting and collecting his claims for loss may seriously interfere with the re-establishment of his credit. Gradually, however, it is becoming known that money spent in making property safe from fire is money well spent. Expenditure incurred in securing excellence in design and construction and adequate protective equipment throughout the premises are a good investment, because the increased cost may be saved in a few years by a reduction in the rates of insurance. The property owner also has the benefit of a larger measure of security against the interruption of his business. All these matters are becoming evident, not only to the property owners, but to fire insurance companies, and consequently there is now a determined effort on all sides to train men who are competent to deal with the problems involved. The reduction of the firehazard in the various forms in which it appears in practice necessitates careful study and intelligent application of protective measures. Inefficient or unsuitable "protection," so-called, may represent a considerable initial cost nearly or quite equal to that of thoroughly adequate treatment of the property, although incapable of coping with the hazards present. Failure of such inadequate protective measures has in more than one instance resulted in loss of the investment for protection, and in the destruction of the property for the safeguarding of which it was originally expended. Public protection as applied to towns and municipalities is also a field in which intelligent thought may be productive of increased efficiency, and where legitimate saving may result.

The occupations which students in the Department of Fire Protection Engineering of Armour Institute of Technology may have in view are varied. In the fire insurance field the need is becoming apparent for capable men having experience, executive ability, and technical knowledge to fill the higher executive positions in the larger insurance companies. Such positions may be reached by capable and industrious men who have completed the course of training which is offered. Present activity in fire protection engineering is creating a demand for protective equipment and devices of all kinds. Apparatus becomes efficient only after a careful study has been made of the conditions which have to be met in service. The making and marketing of such apparatus offers a growing opportunity for men who have a comprehensive knowledge of the principles of fire protection engineering. The students who have been graduated from the Department of Fire Protective Engineering have acquired such knowledge, and are thereby qualified to reach eventually the responsible positions mentioned above, while they are able in the meantime to do satisfactory work as building, electrical, and automatic sprinkler inspectors with insurance inspection bureaus, insurance companies or municipalities; as experts on fire prevention and protection in the employ of fire insurance companies; in technical or executive positions with manufacturers of fire protective apparatus; as superintendents of fire protection for manufacturing and other corporations; or as engineers in private consulting practice.

The curriculum of the course includes the fundamental subjects, such as mathematics, physics, electricity, and applied mechanics, which are necessary as a foundation for any engineering training. Particular attention is given to the study of industrial and engineering chemistry, and a series of thorough courses in these subjects extends throughout the first three years. The purely professional work of the department is given in the third and fourth years, and begins with a careful study of types of building construction and general practice in the application of protective measures. A critical examination is made of underwriters' requirements, and those pertaining to field work are illustrated by many field inspections conducted by a competent instructor experienced in inspection work. A study is made of the various rating schedules in use in different parts of the country, and practical application of these schedules is made to the mercantile, manufacturing, and special hazard risks for which they are designed. All of the work is extended to cover buildings in course of construction, as well as finished and occupied premises, and includes attention to faults of design, structural defects, installation and maintenance of fire stops and protective equipment.

The laboratory work of the department is carried through the junior and senior years of the course, and is supplemented by outside tests of steam and electric pumping machinery and other protective apparatus embodied in private equipments which have been placed at the disposal of the department. Thus the student is familiarised with correct and faulty construction, and the installation of hazardous and protective equipment and apparatus. The work is planned to include demonstration of practical test methods for use in the field, laboratory, and shop.

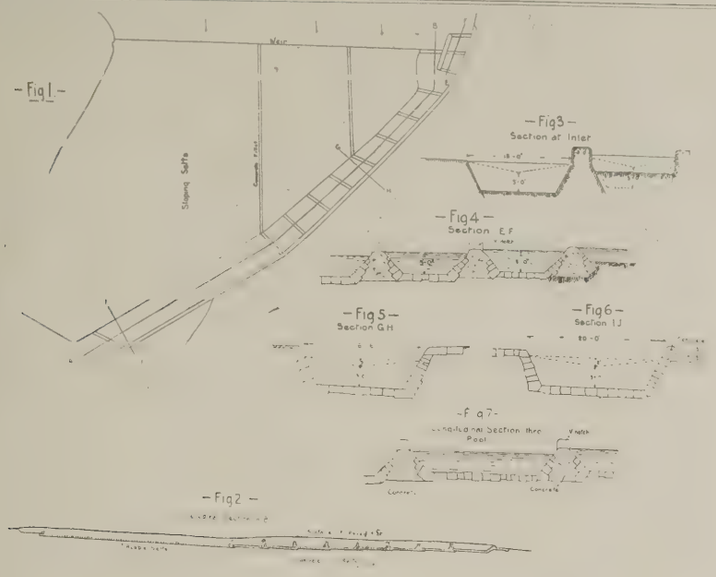
TWO NOTABLE SPECIAL ISSUES.

"Recent English Domestic Architecture."

The special issue of "The Architectural Review," bearing this title, is now ready (price 5s.), and is issued from the offices of "The Architectural Review," Caxton House, Westminster. The work represents an earnest attempt to produce a representative selection of specimens of modern English domestic architecture, and it is believed that this aim has been satisfactorily achieved. The collection is quite catholic, no conscious bias towards any particular school of design having ben allowed to influence the choice. More than two hundred illustrations, reproduced in the best possible style, and printed on art paper, show elevations, interiors and plans by architects who have achieved distinction in domestic work; and the letter-press, rendered in English, French, and German, in parallel columns, gives useful particulars as to construction, materials, etc. The book should be at once a record and an inspiration.

The "Builders' Journal" Special Issue.

In the Special Issue of THE BUILDERS' JOURNAL, which is being prepared for publication on December 30th, there will be a wealth of photo-process engravings of the highest class illustrating the history and development of English architecture, with notes on the various periods by Mr. Prior, Mr. Gotch, and Mr. Mervyn Macartney. In addition, the issue will contain many special features, in both the text and in the illustrations, that will possess extraordinary interest for the architectural and building world. As this sumptuous and covetable volume costs but a shilling, the issue is sure to be speedily exhausted, and we reiterate our advice to our regular readers to make early application for it.



ILLUSTRATING NOTE ON "FISH PASSES."

CONSTRUCTING FISH PASSES.

[In view of the recent correspondence in THE BUILDERS' JOURNAL on salmon ladders, the following particulars may be of interest.]

In cases where streams are used by mill owners for driving water wheels the water is often kept back by a weir, to keep a good head of water for power purposes. The weir may consist of a balk of timber filled up underneath with clay, or a masonry wall running across the river, backed by an inclined surface paved with setts, and sloping downwards from the weir towards the mouth of the stream. It is difficult, and in dry weather impossible, for fish to pass up the river over the weir, and it is therefore necessary to provide a series of pools in such a convenient position as to enable the fish to pass the weir and reach the water. This is done as shown in Figs. 1 and 2, and in detail 3 to 6 (p. 485 by providing pools holding a depth of water of 3ft. along one side of the stream and weir. Th number of pools required is determined by the difference in level of water above and below the weir, the height of one pool above the one next lower being in this case 9in., the idea to be kept in mind being the height of a fish's jump, and this must be kept at a minimum to give the fish every chance of clearing the divisions between the pools. The divisions between the pools are made of cement concrete faced with setts, as shown in sections, and formed as a V notch longitudinally, the bottom of the pools being lined with setts and clay puddle.

The weir in another case is, as shown in section Fig. 10, and the difference in level not being great, a subsidary weir is constructed, and acts in place of a pool, inasmuch as it holds water when there is none flowing over the weir.

The idea is to have such a construction that water is always retained in such a way that the fish are able to make use of it for jumping in the dry season.

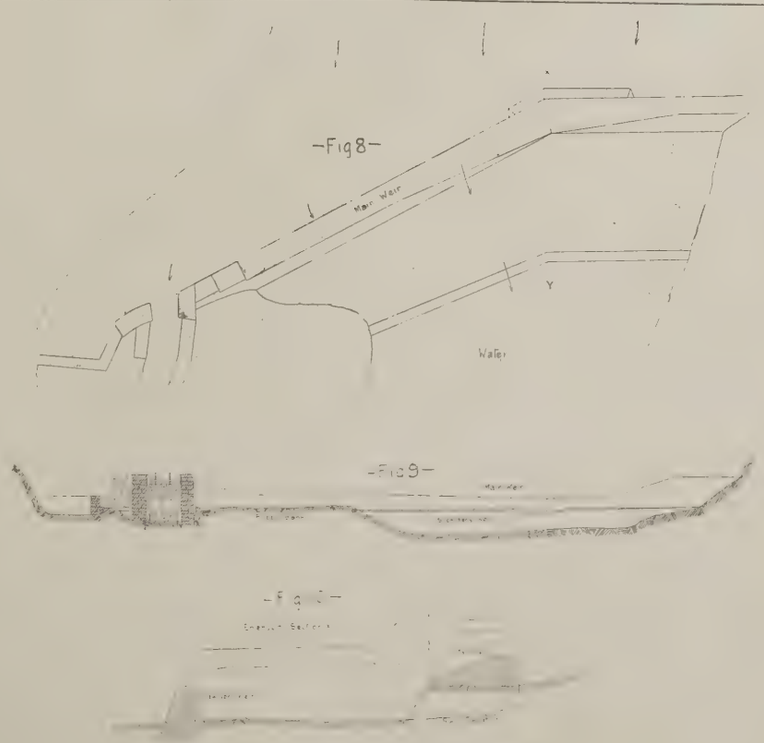
The late Mr. Henry Barnato, whose estate is estimated at five millions sterling, has left to his trustees the sum of £250,000 for the purpose of founding a hospital or other charitable institution in memory of his late brother "Barney" Barnato.

SOCIETIES' REPORTS.

R.I.B.A.

Mr. Edwin T. Hall, vice-president, at the invitation of the Local Government Board, recently gave evidence before a committee appointed by the Board of Trade to inquire into the relationship between architects of public buildings erected from loans sanctioned by the Board and engineers who advise in respect of enginering work required for such buildings, the point being considered whether the latter work should be withdrawn from the control of the architect. A printed copy of Mr. Hall's evidence was subsequently sent by the committee to the Institute council, with the intimation that the commitee would be glad to receive any representations the Institute desired to make on matters coming within the scope of their inquiry. Among these was the question how it should be determined what plant to instal at poor-law institutions—to what extent, for instance, it was desirable that the installation of plant at such institutions should be under the direction of the architect. The matter was considered by the Council at a meeting in October last, when the following resolution was passed: "That the Council of the Royal Institute consider it imperative in the interests of the employers that the architect of such public buildings should have the control, direction and supervision of everything necessary to bring to completion the building which he has designed, and that they endorse the evidence given on this point by Mr. Hall; and further that in each separate case the plant to be installed should be determined by the employers in consultation with the architect." A copy of this resolution was forwarded to the Local Government Board with an expression of the Council's appreciation of the courtesy shown by the Board in affording them an opportunity of expressing their views upon the point.

In a letter addressed last spring from the Institute to the chairman of the London County Council, in which, while acknowledgment was made of the courteous consideration given by the London County Council and its officials to suggestions made by the Institute from time to time upon architectural matters of public importance, it was pointed out how much more usefully suggestions of this kind could be made in the initial stages of a scheme than after it had been developed. The letter went on to suggest that when such matters as street planning, the design of buildings on land leased by the Council, bridges, or monumental works under the control of the Council are under consideration, the Institute might be invited to depute one or two of its members specially competent to deal with the parti-



ILLUSTRATING NOTE ON "FISH PASSES."

cular subject involved, to confer with the Council or its officers charged with the matter, and give their views on its architectural aspect. Should this procedure be found satisfactory, it might be thought desirable at a later period to constitute an Advisory Committee of a few architects, with perhaps a painter and sculptor, whose experience and advice could be placed gratuitously at the disposal of the Council. This in its turn, the signatories hoped, would develop into a body corresponding with the "Conseil des Batiments Civils" of Paris, to which the architectural development of France owes so much. The letter was signed by Mr. Thos. E. Collcutt (President), Sir Aston Webb, R.A. (Chairman Town Planning Committee), John W. Simpson (Chairman Art Committee), Alexander Graham (Hon. Secretary).

The London County Council referred this letter to their Improvements Committee, and the following reply has been addressed to the President:—

"Spring Gardens, S.W.
"November 16th, 1908.

"The President R.I.B.A.,

"Sir,—The Chairman of the Council has laid before the Improvements Committee your letter of February 21st with regard to the architectural features of improvements. The committe are of opinion that the suggestions which the Royal Institute of British Architects have been good enough to make are of great interest and importance, and they desire me to express their thanks for the action taken by the Royal Institute. The matters mentioned in your letter have engaged the careful attention of the committee, but, as Pariament is now discussing proposals for new legislation which, if agreed to, may have great effect on the whole question of improvements, they have come to the conclusion that it would be undesirable to advise the Council at present to come to any definite decision thereon. The committee thought that the Royal Institute would wish to have this intimation of their views, with an assurance that, as soon as a decision shall have been come to by Parliament on the proposals in question, the committee will again consider your letter.—I am, sir, your obedient servant

"G. L. GOMME.
"Clerk of the Council."

Gloucestershire Architectural Association.

At an ordinary meeting of this association, held in the Town Hall, Cheltenham, the president, Mr. F. W. Waller in the chair, Mr. L. W. Barnard was elected a Fellow. Mr. A. E. Hudson, M.R.San.Inst., Chief Sanitary Inspector of Cheltenham, read a paper entitled, "Some Notes on Drainage and Sanitary Plumbing," in which he dealt with many of the common defects found even in much of the modern so-called good-class work, and pointed out how they might readily be remedied. The paper was illustrated with many lantern slides, diagrams, models, and actual fittings.

Leeds and Yorkshire Architectural Society.

Mr. Percy Robinson, F.R.I.B.A., in his presidential address, reviewed the work of last session, and insisted on the importance of art education both to the public and the architect, particularly in view of the building developments that are likely to arise in consequence of the extension of systems of cheap and rapid transit, which are likely to do away with the present anomaly of dear land overcrowded and cheap land lying waste. He took an optimistic view of the future, noting with satisfaction that the "encouraging signs of a more general awakening of public interest in matters relating to our art," and the prospect that "there are likely to be great opportunities arise to evolve out of the conditions of our time an architecture which shall be true to that time."

On November 26th, Mr. Arthur Keen gave a lecture on "The Churches of Sir Christopher Wren in the City of London," before the Leeds and Yorkshire Architectural Society. After referring to the enormous number of old buildings still in existence in London, Mr. Keen pointed out that the most remarkable series of all was the group of buildings of all kinds with which Wren had enriched the City and its surroundings—palaces, private houses, hospitals, and city halls, churches, and a great cathedral, monuments, schools, and many others. The most striking feature of ancient London had been that in the square mile of the City there were 113 parish churches and chapels. Ninety-three of these were destroyed by the fire, and Wren rebuilt fifty of them. The author pointed out that, as the result of the Puritan revolution in England, public worship had become congregational in character, the sermon being the principal thing connected with it, so that no chancels were required, but wide open naves, good lighting, spacious galleries and western organs were essential, all of which were exactly in keeping with Wren's conception of the right treatment of churches in the "good Roman manner" in which he worked. St. Mary-le-Bow, the first to be rebuilt after the fire, showed how utterly Wren departed from every tradition that had governed church-building up to his time. Wren never hesitated to put large galleries in his churches, if they were needed, but he treated them so admirably that they never interfered with the more definitely architectural features and the general scheme of design; in fact, they contributed very materially to the composition of the interiors, by giving deep, broad masses of shade to contrast with the columns and vaulted ceilings. The value of a well-designed organ standing boldly out in a church, as Sir Christopher always placed his organs, instead of in the modern fashion in an organ chamber, was illustrated by some beautiful examples. The lecture was mainly confined to the interior of the churches, but a good many views of towers and lanterns were given, and it was pointed out how much more effective and stately the towers must have looked in the seventeenth century, when the surrounding buildings were about half the height of the present ones, than they do at the present time. All the typical churches were then dealt with in detail, and the extraordinary versatility of the designer was shown, first in the variety of the plans adopted, and then in the endless change and interchange in the use of the recognised materials of architectural design, all used with infinite resource and contrivance. The plans were shown to be progressive from the simplest possible oblong, without either aisles or recesses, up to such a complex scheme as the many-columned, domed, and vaulted church of St. Stephen, Walbrook. The two destroyed churches of St. Antholin and St. Benet Fink were described as fine examples of domed design, and the domed churches still remaining—St. Mary-at-Hill, St. Swithins, St. Mildred's, St. Mary Abchurch, and St. Stephen's were all described and illustrated in turn. A vote of thanks to the lecturer was proposed by Mr. E. O. Dodgson, and seconded by Mr. Butler Wilson, and supported by Mr. C. B. Howdill.

Devon and Exeter Architectural Society.

Mr. T. A. Andrews, Exeter, in a paper on "Some Peculiarities in the Construction of Hollow Walls," recounted some unusual experiences with which he had met in connection with this system of building. The paper gave rise to an interesting discussion.

Junior Institute of Engineers.

Visit to Selfridge's.—With the permission of Mr. Selfridge, the members of the Junior Institution of Engineers were recently enabled to visit the Selfridge Store Building in course of erection at 410, Oxford Street, London. They were shown over by the architect, Mr. R. Frank Atkinson, F.R.I.B.A., and Mr. S. Bylander (member of the Council), chief engineer to the contractors, Messrs. Waring and White (1906), Ltd. The building is of the warehouse class, the frontage to Oxford Street being about 250 ft., and to Duke Street 175 ft. The columns are spaced 24 ft. centres in one direction, and 22 ft. centres in the other, forming floor panels 24 ft. by 22 ft. One girder is placed half-way, making the span of the reinforced concrete floor 12 ft. The building has three basements, and in addition to the ground storey there are four upper storeys, making eight storeys in all. The third basement, however, extends only over a small part of the site, and is used for machinery. The whole of the site is surrounded by ordinary concrete retaining walls, except opposite the third basement, where the foundations extend 60 ft. below the pavement level, at which point a reinforced wall is built. The height of storeys, except ground and first floors, is about 15 ft. from floor to floor. There are nine passenger elevators, about 6 ft. square, two freight elevators, and five staircases. The steelwork is protected from fire by at least 2 in. of clinker concrete in all cases. The facade to Oxford Street and Duke Street is Portland stone; that to Somerset Street is brick. The exterior walls are self-supporting, and the interior walls are carried on steel. The thicknesses of walls throughout are in accordance with the London Building Act, and no reduction in thickness for interior walls has been permitted. The cubical content of each part of the building is limited in accordance with the Building Act, and hence the necessity of small rooms and many interior walls. The girders in the floors have been figured to a total load of 220 lb. per sq. ft. The main girders and columns are figured for the same load, except for the main girders, for which ten per cent. reduction has been allowed and twenty per cent. for the columns for the lower tiers. The steelwork has been designed in accordance with the before-mentioned load, with a factor of safety of 4. The load on the subsoil is 5,000 lb. per sq. ft. The concrete floors are 6½ in. thick for a span of 12 ft. The fireproof partitions are made of 2 to 3-in. concrete blocks.

Federation News.

MONTHLY REPORTS.

BURY AND DISTRICT ASSOCIATION.

Secretary: R. Hall.

The members of the Bury and District Master Builders' Association held their annual dinner at the Boar's Head Hotel, Fleet Street, on Friday evening, December 4th, when about 70 members and friends were present, including Mr. W. Bullen, of Liverpool (president of the Lancashire, Cheshire, and North Wales Federation), Mr. G. Macfarlane, past president of the National Federation, and Mr. Robert Hall, secretary. Mr. John H. Hall proposed "The Lancashire, Cheshire and North Wales Federation," coupled with the name of the president (Mr. W. Bullen). Mr. Bullen, in response, said that he had occasionally when on a visit to some of the branches of the Federation, to give words of criticism and stimulation; but in Bury he had nothing of that kind to do. The branch was actuated by the best spirit and was worked on the right lines. They had in Mr. Hall one of the best secretaries in the Federation. Times were bad, he said—in fact, they could not well be worse, but they all hoped to see a change, being confident that no change could be for the worse. Mr. J. E. Tinline proposed the "National Federation of Building Trades," coupling with it the name of Mr. Macfarlane, one of the past presidents. Mr. Macfarlane, in the course of his reply, spoke of the new arrangement made by the Federation with the BUILDERS' JOURNAL, pointing out how excellent a trade and professional paper that was, and urging the need for active support from all the members of the branch. He knew that many of them were subscribers, and he felt that all would reap advantage by becoming such. Referring to trade matters generally, Mr. Macfarlane said within the memory of man there had never been such depression in the trade as there was at the present time. It was now 53 years since he first began to push the jack-plane, and he had been for 42 years in business for himself as a builder, and during that time he had never known such a period as the trades were now passing through. There must be many causes for this lengthened depression in the building trades. He believed that there were twelve per cent. of unemployed among the carpenters and joiners, and he was afraid that in the other trades the conditions were nearly as bad. What was to become of the country? Money was being poured out on education like water, but what was the product? The stature, weight and chest-girth of the men of this country were diminishing, more especially within the last fifteen years. The building trades suffered very much from the high rates that were being levied upon them in towns. He was convinced that these rates had a good deal to do with the state of trade. At the present time people were too frightened to build. They would rather stay on in the old places than build, for each one would say, "If I increase my rent I increase my rates also"; and the rates were more than one-quarter—they were getting near one-half—of the rent. Considerations like these must tell with people who were proposing to build. Their town councils appeared to be running riot, and what with the rates and the stringency of the building by-laws, it was becoming impossible to build a cottage that would pay. They knew that five shillings a week was enough for any workman to pay for rent, but between the land and the building by-laws no private individual could build a cottage to let at that amount that would pay. It was worth nobody's while to build cottages. They had all heard the old proverb, "As safe as houses." But very few used that proverb now. There was a slump in houses, and in the face of that he thought it ought to be borne in upon their corporations and public bodies that they had come to a crisis in finance that they must face, or they would bring red ruin upon the country.

Mr. Macfarlane gave "The Bury Association." In doing so he said their Association was looked up to with respect by every other association in the Federation. He hoped the day of prosperity would soon dawn for Bury and for Lancashire.

Mr. Howard, the senior vice-president, responded.

Other toasts proposed were "Our Guests," which was given by Mr. A. L. Shaw, and responded to by the representatives of the Operatives' Association, who were present; and "The Past Officers and Secretary," proposed by Mr. T. Kenny and responded to by Mr. P. Barton and Mr. Robert Hall. Mr. J. Hutchinson also proposed "The President," who briefly responded.

SHEFFIELD ASSOCIATION.

Secretary: T. Smith.

The following paragraphs were, for want of space, held over from the report appearing in last week's issue.

Letters were read from the office of the BUILDERS' JOURNAL calling attention to the reduction in the price of the journal to 8s. 6d. per annum for members of associations, and members were urgently requested to become subscribers, as much in their own interest as in the interest of the National Federation, who derived a benefit from the success of the journal, which, as the organ of the National Federation, was the only medium through which members could keep thoroughly conversant with what was occurring in the trade throughout the country. Several non-subscribers were present, and ten additional subscriptions were taken.

A letter was read from the secretary of the Yorkshire Federation covering copies of the paper he had written on "Municipal Trading," a copy of which had been sent to every member of the association. Mr. Hodkin said it was the best exposition of the case he had ever seen, and, on his motion, seconded by Mr. Mastin, the secretary was instructed to send a copy to every member of the Sheffield City Council.

The treasurer (Mr. A. Mastin), whose reappearance at the meeting of the association after his recent severe illness was warmly appreciated, presented his monthly report, which showed continued progress in the funds of the association. The amount collected for subscriptions and levies this year, despite the state of trade, was the highest in its history, being £66 8s. 10d. more than for the whole of 1906, and £29 16s. 10d. in advance of last year. This was without reckoning further profit from publication of the Telephone Calendar. Mr. Mastin said that this excellent financial showing was doubtless due in some measure to the new basis of assessment, which was now made on the actual wages paid by ordinary members, who made such returns privately to the secretary, the particulars being entered in a locked book which was not disclosed to any other person except the professional accountant of the association. Beyond this, their membership had increased, and this naturally brought a further accession of income. For these altered conditions they were to some extent indebted to the secretary, and Mr. Mastin moved that a committee be appointed to consider the question of giving suitable additional remuneration to the secretary for the extra work which had been and would be necessitated. Mr. Cook seconded, and the motion was unanimously carried, as was also a further resolution appointing the committee to consist of the president and vice-presidents and the past-presidents of the association.

Two new members having been elected, the meeting proceeded to discuss the newly appointed vigilance committee. Some doubt appeared to exist as to its scope and duties, but it was explained that the operations of the committee were in the main comprised in watching on behalf of the association the actions of the City Council in any matters which directly or indirectly affected the building trade. Urgent matters of a general nature would still be dealt with by the emergency committee.

Delegates to the Yorkshire Federation were elected for the ensuing year.

The secretary gave a report in regard to the new Telephone Calendar, and the way in which he proposed to use it in increasing the membership of the association.

The matter of the publication of a book containing day-work prices, etc., together with the working rules of all the operatives' societies and other useful matter, was considered, and the name of Mr. A. T. Biggin was added to the committee previously appointed. Mr. J. Biggin observed that such a book would be a boon to the association. Those associations who had day-work prices in successful operation told them they were behind the times at Sheffield.

Mr. Mears, the vice-president of the association, apologised for raising another matter at the fag-end of a meeting which had lasted nearly three hours, but he wished to give notice that at the next meeting he would introduce a discussion as to who should be considered to be eligible as members of the association, and the way in which the national crest should be used. He claimed that the National crest should be the mark of a craftsman, and not be allowed to a man who might casually drift into the building trade.

Mr. J. A. Watson took up the discussion, and instanced the case of plumbers who had to conform to a certain standard of efficiency in order to obtain their diploma. He also held that the National crest did not rightly appear on the stationery of a merchant, and advocated that some alteration on the crest for merchants should be suggested to the National Federation. It was pointed out that the words "associate member" might be placed on the band at the bottom of the crest, and, underneath, the name of the association of which he was a member might be added; but some members thought this did not constitute a sufficient differentiation.

Mr. Biggin said the National had decided that members of an association affiliated to the National had a right to use the crest, and they could not get beyond that. The matter was then left for further discussion at next meeting.

WAKEFIELD AND DISTRICT.

Secretary: J. Beaumont.

The annual meeting of the members of the Wakefield and District Association was held at the Strafford Arms Hotel, Wakefield, on Thursday evening, December 3rd; Mr. Tom Lee (president) was in the chair, and he was supported by an average number of members.

Mr. J. Pashley, who had been nominated along with the president for the position of president for the ensuing year, expressed a desire to withdraw his nomination in favour of Mr. Lee, and this course was agreed to by the meeting.

Alderman Judge thereupon formally moved the re-election of Mr. Lee as president for the ensuing year, and this was seconded by Mr. Elvey and carried unanimously. In returning thanks for his re-election, Mr. Lee spoke at some length on the work of the association and the Yorkshire Federation during the past year, and referred to the excellent work done by Mr. H. Fallas as the association's representative on the Yorkshire Executive Council, also of the proposed visit of the Federation to Wakefield, on the 17th instant, and urged upon the members of the association the importance of attending this meeting.

On the conclusion of the president's address, the election of the vice-presidents and general committee was taken by ballot and resulted as follows:—For vice-presidents, Mr. G. Crook, Mr. H. Fallas, Alderman Judge, and Councillor Spink. General Committee: Bricklayers' and Masons' Section, Mr. C. S. Denison, Mr. E. A. Elvey, Mr. R. L. Leake, Mr. D. F. Parker, Mr. J. Pashley. Joiners' Section, Mr. W. J. Atkinson, Mr. H. Blackburn, Mr. J. E. Bramall and Mr. J. Lazenby. Plasterers' Section, Mr. J. W. Sanderson, and Mr. T. E. Senior. Plumbers' Section, Alderman Atkinson, Mr. W. H. Moss. Yorkshire Federation Counson, Mr. W. H. Moss, Mr. Crook, Mr. Fallas, and Alderman Judge had been nominated in conjunction with the president, as representatives of the association on the Yorkshire Federation Executive Council, but on the president informing the meeting that Mr. Fallas had been nominated on the Finance and Emergency Committee of the Council, Alderman Judge withdrew his own nomination, and on his proposition Mr. Crook was elected as the emergency representative of the association on the Council.

Mr. J. Beaumont was re-elected secretary on the proposition of Mr. Fallas, seconded by Mr. Elvey.

The secretary submitted the accounts for the past year duly audited by Alderman Judge and Mr. D. F. Parker, which showed a balance in hand of £29 0s. 8d., as compared with £24 13s. 7d. in hand last year. Alderman Judge moved the adoption of the accounts, and this was seconded by Mr. Elvey and carried.

The auditors were warmly thanked for their services on the motion of Mr. Pashley, seconded by Mr. Elvey, and supported by the president, Alderman Judge, responded on behalf of himself and Mr. Parker.

On the proposition of Mr. Elvey, seconded by Mr. Fallas, the president, Alderman Judge, and the secretary, were appointed a special committee to make all the necessary arrangements for the visit of the Yorkshire Federation to the city on the 17th instant. Alderman Judge incidentally mentioned that the Mayor of the City had promised to receive and welcome the members of the Federation.

During the meeting six additional members of the association decided to subscribe to the BUILDERS' JOURNAL.

OTHER REPORTS.

Newport Association.

Newport (Mon.).—The forty-first annual dinner of the Newport Master Builders' Association was held at the King's Head Hotel on December 8th, the president (Mr. A. W. Brownscombe) in the chair. He was supported (during a part of the evening) by the Mayor (Councillor Graham W. White), the ex-Mayor (Councillor T. Parry), Alderman M. Mordey, Alderman W. Clifford Phillips, Alderman S. Cotterell (of Bath), Councillor W. A. Linton, Mr. R. Richards (secretary), and others, the company numbering nearly ninety. After the usual loyal toasts, Mr. L. H. Hornby proposed "The Town and Trade of Newport," and Councillor T. Parry, in responding, expressed his belief that there was a very bright future in store for the builders of Newport. During the next year the County Council were going to build a training college at Caerleon at a cost of £20,000 or £30,000, and he would like to see a Newport builder get the contract. Alderman M. Mordey also replied. Mr. R. W. Moon, proposing "The Architects and Civil Engineers," observed that while it was necessary to have a borough architect and engineer, yet he felt that some opportunity should be given the younger men of the profession to display their abilities. The lines upon which existing school buildings had been laid down were narrow and capable of great improvement. The toast was responded to by Mr. E. H. Fawckner, F.R.I.B.A., and Mr. W. Conyers Kirby, both of whom expressed hearty good wishes for the success of the builders, and the hope that in the development of the town they would have a full share. The toast of "The Building Trade," was proposed by Mr. F. J. Heybyrne, and Councillor W. A. Linton replied, remarking that the future locally was promising. Besides the works that had been already mentioned, a contract had just been signed for the new technical school, which should leave at least £15,000 in the hands of the working men.

Councillor W. M. Blackburn proposed "The Timber, Stone, Brick, and Kindred Trades," and Mr. E. De Vere Brewer, Alderman Cotterell (of Bath), and Mr. C. F. Williams responded. Mr. George Martin proposed "The Visitors," the Rev. Leonard Ashworth, Messrs. M. Shepherd, L. J. Brown, and Claude Lay responded. "The President" was proposed by Mr. W. Jewell, and Mr. W. Brownscombe, in reply, thanked the Master Builders' Association for their loyal support during his year of office, and expressed satisfaction that it had not been called upon to suffer the troubles of disputes with workmen. The toast of "The Press" was proposed by Mr. J. J. Partridge.

Hull Association.

Hull.—The annual meeting of the Hull branch of the Yorkshire Federation of Building Trade Employers was held at the Builders' Exchange, Posterngate, on December 8th, the retiring president, Mr. J. T. Levitt, in the chair. The treasurer, Mr.

G. H. Scorrer, in presenting the financial statement, was pleased to be able to report a most successful year's working, and that the funds of the association were never in a more flourishing condition. After a vote of thanks had been accorded to all retiring officers, the following were elected to serve for the ensuing year:—President, Mr. E. Quibell; vice-president, Mr. R. Finch; treasurer, Mr. J. H. Fenwick; hon. secretary, Mr. A. Peers; auditors, Messrs. Buckley and Hall; solicitors, Messrs. Watson, Sons, and Carrick; Management Committee, Messrs. F. Abba, R. E. Ashbridge, F. Bilton, A. Christopher, J. D. De Lacy, E. M. Darneley, H. Drewery, C. Greenwood, M. Harper, G. Houlton, W. Hodgson, J. Jackson, H. J. Kirkwood, R. Metcalfe, J. Peers, J. E. Railton, F. Singleton, H. Stephenson, G. H. Scorrer, Councillor G. L. Scott, J. H. Simpson, J. Townsley, J. Wilson, J. T. Levitt, and W. Wright; delegates to the Yorkshire Federation, Messrs. E. M. Darneley, R. Finch, J. H. Fenwick, M. Harper, D. Knowles, J. T. Levitt, G. H. Scorrer and J. Townsley; delegates to the National Federation, Messrs. E. Quibell, R. Finch, and J. T. Levitt; delegate to Institute of Builders, Mr. E. M. Darneley. It was decided that August Bank Holiday week be made a general holiday throughout the building trades of Hull. The opinion was that this arrangement would be a boon to all concerned, as it would make it possible for many to get away for a holiday who otherwise would be unable to do so, and it would also make a good opportunity for the overhauling of machinery, etc. It would not cause a very great additional stoppage of the building trade, seeing that the Bank Holiday made a break into the week, and also, the Hedon races were held on two other days in the same week, and these this year caused considerable inconvenience to the building trade generally.

Southern Counties Federation.

Portsmouth.—The half-yearly general meeting of the Southern Counties Master Builders' Federation was held at the "Sussex" Hotel, Portsmouth, when a large and representative gathering was presided over by Mr. W. F. Wallis, of Maidstone, the retiring president of the Federation, supported by Mr. Thomas Costigan, secretary, etc. The half-yearly report was read, in which it was stated that throughout the Southern Counties and the whole country, the bad condition of the building trade had been deplorable, and in consequence of recent legislation it was thought that the increased cost of carrying on business would be great. The district and builders generally owed deep thanks to the president of the Federation for his constant and able efforts in doing his best before Parliamentary Committees in protecting building trade interests. The report also spoke of the great efforts which had been made by the workmen and their societies to combine for their own benefit, and masters were urged to combine, and not throw the onus of protecting the trade upon the few. The following officers were elected: President, Mr. Harold Marshall (formerly senior vice-president and ex-president of the Southampton Master Builders' Association); vice-presidents, Mr. G. R. Chamberlain and Mr. S. Salter; and auditor, Mr. John Croad, of Gosport. Two representatives were elected on the National Federation Council, one on the administrative committee and another on the conciliation board.

Scarborough Association.

Scarborough.—Mr. A. W. Sinclair presided at the annual meeting of the Master Builders' Association, held at the Albemarle Hotel, and was supported by Mr. O. Smith, Mr. W. Malton, Mr. R. H. Carr, Mr. R. Hunter, Mr. R. W. Watkinson, Mr. Chris. Pecket, Mr. J. Hardgrave, and Mr. G. B. Parker (secretary). The annual report, which recorded a very satisfactory year, having been read and adopted, the following officers were elected for the year:—President, Mr. O. Smith; vice-president, Mr. R. Watkinson; auditor, Mr. W. Malton; representatives to Yorkshire Federation and National Federation, Mr. A. W. Sinclair; and secretary and treasurer, Mr. G. B. Parker. The following were elected on the Conciliation Board: The president and vice-president, Councillor Moore, Mr. A. W. Sinclair, Mr. R. H. Carr, and Mr. W. T. Petch.

Wigan Association.

Wigan.—The annual dinner of the Wigan and District Building Trades Employers' Association was held on December 8th, at the Clarence Hotel, Wallgate, when fifty-six persons were present. The president, Mr. W. Webster, occupied the chair, and Mr. John Smith, vice-president, the vice-chair, and among those present were Councillors A. E. Mather, A. Higham, and J. Walkden, Mr. O. Pilling, hon. treasurer, and Mr. R. Hollords, secretary. Councillor Higham, in proposing the toast of "The President," mentioned that Mr. Webster had been connected with the association officially for more than fifteen years, and for twelve years had been its secretary. Mr. Dawson proposed "The Vice-chairman," and Mr. J. Howard that of "The Town and Trade of Wigan." The latter gentleman took the opportunity of remarking that the painting done for the corporation by direct labour had cost three times as much as it would have done if a contractor had been employed. He gave other instances in which the corporation had been unfortunate in dispensing with the contractors. The mayor, in responding, said that Mr. Howard's remarks had strongly impressed him. Councillor Mather, Mr. F. Eyre, and Mr. O. Pilling, also spoke.

Proposed New Works.

Aberystwyth.—The Local Government Board have formally sanctioned the borrowing of £2,880 for the erection of eighteen houses in Poplar Row and Skinner Street.

Barnstaple.—Secondary schools, which it is proposed to erect here are estimated to cost £10,000.

Belper.— M. G. H. Strutt, chairman of the Derbyshire County Council, has given £20,000 for the erection of a higher grade school, pupil-teachers' centre, and baths at Belper.

Cardiff.—Rumney Bridge is to be reconstructed at a cost of about £6,000, to be jointly borne by Monmouthshire County Council and Cardiff City Council.

Conway.—Mr. F. O. Stanford, of the Local Government Board, has held an enquiry with respect to an application by the council for leave to borrow £1,200 for converting the old post-office into municipal offices. The amount includes furnishing.

Dewsbury.—The Board of Management of the Dewsbury and District Infirmary has accepted tenders for the erection of a nurses' home, to cost about £1,400, exclusive of furniture.

Derby.—Mr. Edgar Dudley, Local Government inspector, has held an enquiry here with respect to an application by the Corporation for leave to borrow £12,525 for street improvements.

Dundee.—The city architect has been asked to report on the question of building a city hall.

Fraserburgh.—At the latest monthly meeting of the Fraserburgh Town Council, applications for authority to build were submitted and approved for dwelling-houses to be erected by Mr. Arthur Findlay, and Mrs. Annabella Wallace, in the new street running between Dennyduff Road, and College Rounds; semi-detached dwelling-houses to be erected in Dennyduff Road, by Messrs. William Rennie and John Williamson; dwelling-house adjoining the Free West Manse, to be erected by Mr. Abercromby M'Beath, in a proposed new street running westwards from King Edward Street.

Glasgow.—The reconstruction of the Royal Infirmary, with accommodation for 660 patients, is estimated to involve a total cost of £500,000. The internal plans have been revised by Sir Henry C. Burdett and Dr. Donald James Mackintosh.

Hove.—The proposed extension of the Hove Sanatorium has been under the consideration of the General Purposes Committee of the Hove Town Council. The matter was brought before them in the form of a special report of the Sanitary Committee, in which the Council is reminded that the Local Government Board have sanctioned the borrowing of the following amounts in connection with the scheme: Administration block, £2,400; lodge and discharging block, £1,130; water tower £1,460; destructor, £100; drainage, £1,150; roads, £190. The Sanitary Committee express the opinion that the time has now arrived when these works should be carried out, and they therefore recommend that instructions be given for tenders to be obtained for that purpose. They also recommend that agreements with reference to the improved water supply and the proposed sewer to connect with the existing Portslade-by-Sea sewer be completed and brought up for sealing. The General Purposes Committee, in forwarding the report to the Council, state that they affirm these recommendations.

Leith.—The town council are considering a report regarding a proposal to erect a refuse destructor at a total cost of about £16,000.

Newport, Mon.—A garden suburb, with 300 houses, for "the better class of worker," is to be formed on an estate, comprising about 45 acres, on the eastern side of the town. The planning of the houses limits the number to about ten per acre, as compared with the usual average of thirty. The cost of building the houses will be about £300 to £325 each. The general scheme has been designed by Mr. J. W. Hunte (of Messrs. Newland, Davis, and Hunt), in conjunction with Mr. T. H. Mawson, of Windermere.

Manchester.—The corporation baths committee have approved of a scheme for the erection of new wash-houses in St. John's Ward, at a cost of £7,000; in Armitage Street, Ardwick, at a cost of £10,000; and in Miles Platting, also at a cost of £10,000.

Northam, Devon.—The Northam U.D.C. propose to reconstruct various footpaths at an estimated cost of £1,167.

Nottingham.—An extension of the lunatic asylum, at a cost of £10,800, has been decided upon. The Corporation have also agreed to ask Local Government Board sanction to a loan of £22,000 for the formation of a new cemetery. The cemetery chapels are to be built of stone from Bulwell quarries.

Otley.—Committees have been formed for the selection of a suitable site for a grammar school for Otley. Mr. Ernest S. Mead, of East View, Otley, has been appointed clerk to the committees.

Pakefield.—The parish council have sent a deputation to Mr. John Burns, President of the Local Government Board, to ask for a grant of £10,000 towards coast defence work. It was represented that during the past six years, 12 acres, comprising much valuable building land, fourteen houses, three shops, and twenty-five cottages, have been swept away by the encroaching sea. Building sites to the south of the village, valued in 1899 at £25,941, are now in the market at £7,500, and the owner has spent £3,000 on groynes and a sea wall. Mr. Burns expressed his sympathy, and promised to see what could be done.

Preston-on-Tees.—An effort is being made to raise £5,000 for the erection of a new church here.

Reigate.—The Surrey County Education Committee have decided to erect, at Whyteleafe, a secondary school for girls.

Stockport.—A Local Government Board enquiry has been held with respect to an application by the Stockport Corporation for sanction to borrow £25,650 for the reconstruction and widening of Broadstone Road, Reddish.

Sunderland.—At a recent meeting of the corporation building committee, only twelve plans were submitted. Amongst those approved were the following:—W. and T. R. Milburn, for Glaholm and Robson, machine shop; R. Batty, six houses; G. T. Brown, for H. E. Pitt, house.

Yardley.—Mr. A. G. Drury, Local Government Board inspector, has held an enquiry with respect to an application by the Yardley R.D.C., for sanction to borrow £2,240 for sewerage works, £325 for purchase of land for depot purposes, and £6,718 for recreation ground purposes.

Proposed London Buildings.

The following new works have received the consent of the Building Act Committee of the London County Council:—

Erection of porches and barge-boards to twelve houses on the western side of Cranston Road, Forest Hill, as shown on the plans, submitted with the application of Mr. A. R. Westworth, on behalf of Mr. S. C. Kirby.

Extension of the periods within which the erection of buildings on the northern side of Canterbury Grove, Norwood, was required to be completed be granted, on condition that the buildings referred to be completed within two and-a-half years from June 11, 1907.

Erection of buildings upon a site abutting upon Cambridge Circus, Minerva Street, Centre Street and Felix Street, Bethnal Green, as shown on the plans, submitted with the application of Mr. W. E. Wallis, on behalf of the governors of the Peabody Donation Fund.

Erection of buildings on the southern side of Atwell Street, Peckham, as shown on the plan submitted with the application of Mr. A. E. Mullins, on behalf of Mr. W. Monks.

Erection of a building upon the site of Nos. 22 and 23, New End, Hampstead, and the erection of a building at the rear, as shown on the plan, dated 31st October, 1908, submitted with the application of Mr. J. D. Hunter, on behalf of Miss H. S. Creed.

Formation or laying-out of two new streets for carriage traffic to lead from Spring Hill to Craven Walk, Clapton Common, as shown by the plan, sections, and particulars, dated 16th October, 1908, as modified by the amended section, dated 21st November, 1908, submitted by Mr. H. B. Michell, on behalf of the British Land Company, Ltd.

Formation or laying out of three new streets for carriage traffic on the Craven Park Estate, Clapton, as shown by the plan, sections and particulars, dated 10th November, 1908, by Mr. J. Elwood, on behalf of Mr. D. S. Barclay.

Formation of an opening between the Regent entrance of the Piccadilly Hotel, and the adjoining shop to the westward as shown on the plan, submitted with the application of Messrs. W. Woodward and Sons, on behalf of the Piccadilly Hotel Company.

Erection of a house on the southern side of Logan Place, Kensington, with a chimney stack, eaves, rain-water and soil pipes, and gutter projecting into the open space provided at the rear, on the application of Mr. E. W. Marshall, on behalf of Mr. C. Rea.

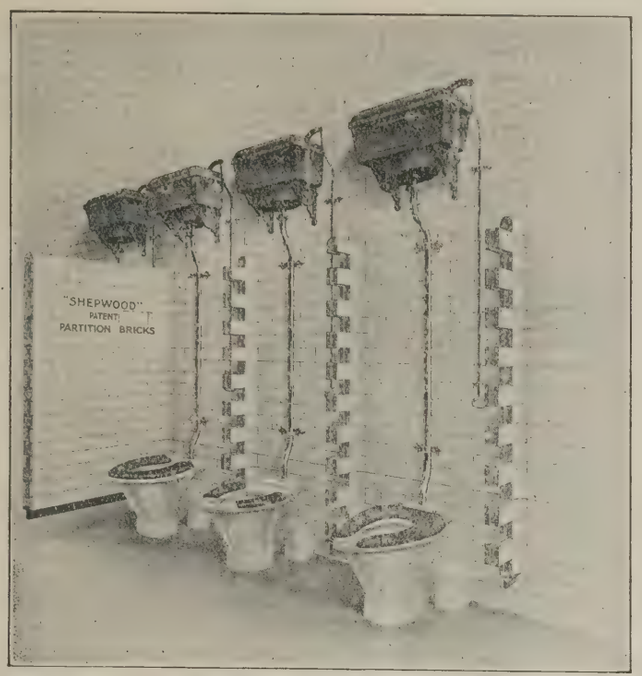
Erection of additions to the Battersea Polytechnic, Battersea Park Road, Battersea, to abut upon Forfar Road and Lurline Gardens, on the application of Messrs. Mountford and Clapham, on behalf of the Board of Governors of the Polytechnic.

Insurance.

Subscribers to "The Builders' Journal" are entitled to a Free Insurance for £500. Every subscriber should apply for this, sending a postcard with the name of the newsagent with whom the order has been placed. Subscribers can also obtain a General Accident and Sickness Insurance (the "Lighthouse" policy) at a reduced premium, which includes the Annual Subscription to this Journal. A pamphlet giving full particulars can be obtained free on application.

Free £500 Accident Insurance Coupons have this week been sent to the following:

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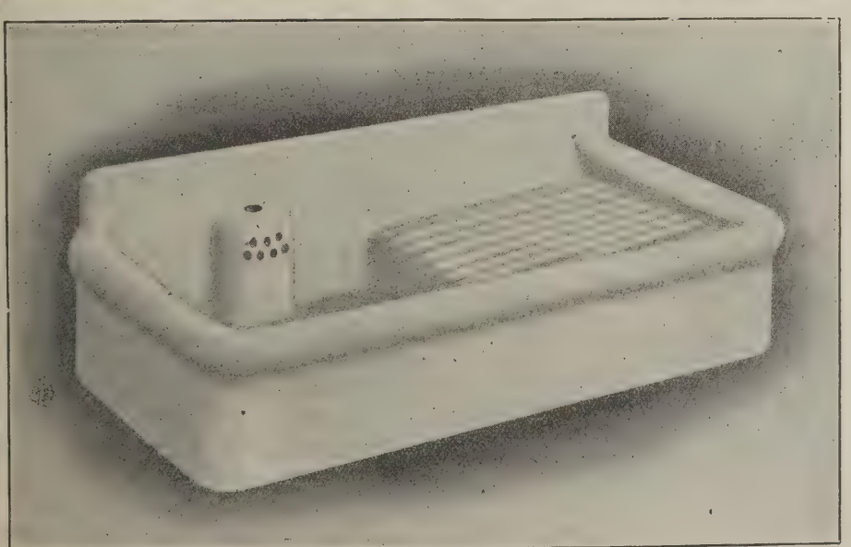


Fig. 1258.—FLUTED DRAINER SINK WITH HIGH BACK.

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Offices: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—Caxton House, Westminster. PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—817 Gerrard. PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

The Subscription Rates per annum are as follows:—

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At all newsagents and bookstalls	8	8
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Tenders.

Addressed postcards, on which lists of tenders may be stated, will be sent free on application to the Manager, BUILDERS' JOURNAL, Caxton House, Westminster.

Information from accredited sources should be sent to "The Editor," at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Barnet (Herts.).—For erection of extensions to the Girls' Grammar School, Barnet, Herts, for the Governors of Queen Elizabeth's Grammar School, Barnet. Mr. John Ladds, architect, 93, Pemberton Road, Harringay, N.:—

35 tenders received.

Clark and Sons,* Cambridge £4,312

*Accepted subject to approval of Board of Education and the L.G. Board. To be completed in 7 to 8 months.

Birkenhead.—For erecting a stable and for earthworks in connection with forming a private garden at Palm Grove Nursery, for Mr. R. Barrow. Mr. J. W. Rodger, architect, 14, High Street, Cardiff:

J. C. Boardman and Sons ...	£849 7 9
J. and F. Savage	700 6 6
J. Downham	583 19 6
T. W. Thomas	576 5 9
G. P. Snape	554 17 6
C. W. Green,* Miles Street, Liverpool	549 0 0

*Accepted.

Bracebridge (Lincs.).—For additions to the Bracebridge girls' school, near Lincoln, for the Kesteven County Council Education Committee. Mr. W. B. Purser, A.M.I.C.E., county surveyor, 53, High Street, Grantham:—

Wright and Son	£1,195
Hockley and Co.	1,046
Newton	1,066
Hedley	1,029
Halker Bros.	989
Close and Son	987
Lincoln Co-operative Society* ...	959

*Accepted.

Chester.—Accepted for two new public elementary schools for 200 and 660 children respectively, to be erected in Egerton Street, and Cherry Grove, Boughton, Chester, for the City Council. Messrs. W. T. Lockwood, F.R.I.B.A., 88, Foregate Street, and Douglas and Minshull, 6, Abbey Square, Chester, architects.

J. Mayers, Son and Co., 4, Canal Side, Egerton Street, £2,621 5s.; Boughton, £9,229.

Dawlish (Devon).—For the construction of the Dawlish West Waterworks, for the Newton Abbot Rural District Council:—

C. G. Osepton, Havant	£4,637 0 0
J. Budge, Stonehouse	4,378 0 0
K. T. Kelf and Son, Plymouth	3,868 0 0
R. H. B. Neal, Ltd., Plymouth	3,707 10 7
Shillabeer and Son, Plymouth	3,520 0 0
E. Pike, Torquay	3,512 11 7
E. R. Lester, Plymouth	3,320 0 0
Mitchell and Son, Manchester	3,229 5 2
Woodman and Son, Exeter ...	3,227 14 8
H. V. Smith and Co., London...	3,226 13 3
N. Pratt, Clyst St. Mary ...	3,193 0 0
W. C. Shaddock, Plymouth ...	3,171 0 3
J. B. Cooper and Co., Bristol	3,105 9 8
J. Dixon, Wantage...	3,161 16 9
F. Vowler, Starcross	3,150 0 0
Pethick Bros., Ltd., Plymouth	3,114 0 0
R. C. Brebner and Co., Edinburgh	3,086 18 3
W. E. Bennett, Bodmin ...	3,046 10 0
Hawking and Best, Teignmouth	3,024 4 3
E. Harris, Clyst Hydon ...	3,000 0 0
Steer and Pearce, Plymouth	2,946 6 11
G. Pollard and Co.,* Taunton	2,770 0 0

*Accepted.

Durham.—Accepted for extensions to the technical schools in Durham City, for the County Education Committee.

J. H. White, Sunderland, £5,479.

Gloucester.—For erection of mission hall and Sunday-school in Seymour Road, for the Building Committee of Bristol Road Wesleyan Mission Mission Hall. Mr. J. F. Trew, architect, County Chambers, Station Road, Gloucester:—

Childs and Townsend	£6,920 0 0
Gage and Price	6,348 3 7
W. J. B. Halls	6,304 0 0
K. Freeman and Sons	6,289 19 0
W. F. Drew	5,996 6 2
J. G. Norman	5,822 19 7
Gillett and Nicholas	5,618 8 1
W. Jones	5,529 0 0
A. J. Colborne	5,507 4 9
J. Simmonds	5,500 0 0
J. Long and Sons, Ltd. ...	5,347 0 0
W. T. Nicholls	5,333 0 0
J. H. Gurney	5,170 0 0
W. Crane, Ltd.,* Nottingham ...	4,731 2 3

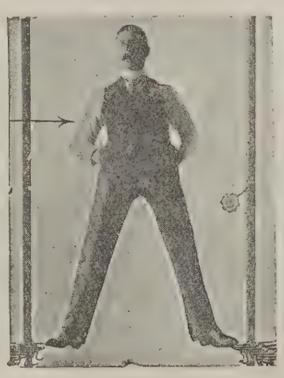
*Accepted subject to reductions.

Wolverhampton.—Accepted for extension of the workhouse nurses' home, for the Guardians.

H. Gough, £3,973.

Tenders continued on page viii.

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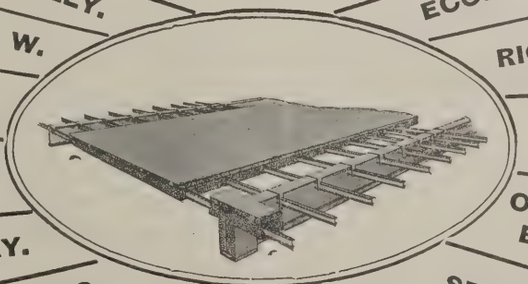
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(*Tenders continued from page vi.*)

Hereford.—For erection and completion of a mortuary chapel, at the Cemetery, Westfaling Street, for the Hereford Town Council. Mr. John Parker, city surveyor:—

Beavan and Hodges, Victoria Street	£885
C. Cooke, St. Owen Street	870
E. W. Wilks and Son, Eign Street...	819
Collins and Godfrey, The Cross, Tewkesbury	789
W. Jones, Worcester Street, Gloucester	770
Turford and Southward, Gravel Hill, Ludlow	723
W. Bowers and Co., Bath Street ...	718
W. Powell,* White Horse Street ...	697

*Accepted.

London.—For alterations and additions at the Blenheim Club, King Street, St. James's, for the Club Trust, Ltd. Mr. Geo. A. Lansdown, F.R.I.B.A., architect, 9, Regent Street, S.W.:—

Eastlakes, Ltd.	£1,666
Johnson and Co.	1,470
W. Johnson and Co., Ltd.	1,457
H. and E. Lea	1,232
J. Marsland and Sons*	1,225

*Accepted.

Minehead (Somerset).—For erecting a house on the North Hill, for Mr. R. H. Holman. Messrs. Andrew and Hosegood, architects and surveyors, Willington, Somerset:—

J. H. Hurford	£1,650
Parker and Sons	1,495
Passmore and Derrick	1,450
J. W. Burt and Sons	1,330
J. Burgess and Sons	1,298
J. B. Marley*...	1,295

*Accepted.

Port Talbot (Wales).—For erection of a new Congregational Chapel at Port Talbot, for the Building Committee of Tabernacle Newydd. Messrs. Evans and Jones, architects, 5, Station Road, Port Talbot:—

Lloyd Bros., Argyle Yard, Swansea	£3,992 0 0
Price Bros., Pontcanna Road, Cardiff	3,847 13 7
M. Cox	3,805 0 0
J. Davies, Aberavon	3,645 0 0
W. P. and E. Williams	3,600 0 0
E. Thomas and Sons, Seven Sisters	3,575 0 0
D. Davies and Sons, Trade Street, Cardiff	3,525 0 0
J. Nicholas,* Saw Mills ...	3,427 16 0

*Accepted.

Kingswood.—For the erection of a house. Messrs. La Trobe and Weston, F.R.I.B.A., 44, Corn Street, Bristol:—

Perrott	£1,373
Foster	1,285
Beach	1,277
Downs and Son	1,240
Chorley and Son	1,202
C. Taylor	1,169
Walters and Son	1,165
E. Clark and Sons	1,111
Hodges	1,096
Marsh and Stone	1,075
Adams and Jefferies	1,060
S. Milsom	1,050
O. Lovell	1,049
Marsh	1,035

Leeds.—Accepted for the whole or any portion of work required in erection of firemen's dwellings nd hose tower, in Park Street, for the Watch ommittee. Mr. P. Robinson, F.R.I.B.A., 53, Albion Street, Leeds, architect.

H. Atkinson and Sons, Carlton Street, Leeds, £4,647.

Llwynypia.—For erecting a house for Messrs. the Glamorgan Coal Co., Ltd. Mr. Edgar G. C. Down, A.R.I.B.A., 31, High Street, Cardiff. Quantities by architect:—

Evans Bros.	£5,453 0 0
S. Shepton and Son	5,391 15 0
W. Thomas and Co.	5,183 0 0
E. Turner and Sons	5,037 0 0
A. Richards	5,010 0 0
Stephens, Bastow and Co. ...	4,978 0 0
Blacker Bros.	4,800 0 0
Gough Bros.	4,716 0 0
E. R. Evans and Bros.... ...	4,595 0 0
G. Hallett,* Cardiff	4,500 0 0

*Accepted.

Middleton Junction.—For alterations to Middleton Junction Store, for Middleton Co-operative Society. F. W. Dixon and Son, architects, Oldham and Trevelyan Buildings, Manchester:—

C. S. Sexey	£1,194
R. Taylor	1,150
J. H. Heywood and Sons	1,100
R. Partington and Son	960
W. and H. Thorp	954
S. Pollitt and Sons*	948
C. Alderson	944

*Accepted.

Swansea.—For rebuilding Nos. 2 and 3, High Street, Swansea, for Messrs. D. Jones and Co., Ltd. Mr. C. T. Ruthven, architect, Swansea:—

G. Mercer, Llanelly	£2,260 0 0
D. Davies and Son, Cardiff ...	2,223 0 0
C. Marles	2,200 0 0
D. Jenkins, Ltd.	2,175 0 0
Lloyd Bros.	2,150 0 0
H. Billings	2,125 0 0
T. Richards	2,000 0 0
R. Lacy	1,985 10 0
J. Marles and Sons	1,985 0 0
J. and F. Weaver,* Manselton	1,959 0 0

*Accepted.

Winchcombe (Glos.).—For erection of a residence at Winchcombe Street, Cheltenham:—

T. H. Kingerlee and Son	£2,411
F. J. Green	2,127
R. West	2,100
J. E. White	1,885
J. A. Oakley	1,851
R. R. Skemp,* Cheltenham	1,850

*Accepted.

Coming Events.

Thursday, December 17.

YORKSHIRE FEDERATION.—Meeting at Wakefield.

Friday, December 18.

INSTITUTION OF MECHANICAL ENGINEERS. — Ordinary General Meeting, 8 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION. — Sir Charles A. Nicholson, Bart., M.A., F.R.I.B.A., on "Churches of Northern France."

Tuesday, December 22.

ARCHITECTURAL ASSOCIATION OF IRELAND (Dublin). —Discussion: "Which past style of Architecture is most suitable for Modern Domestic Work?"

Monday, January 4, 1909.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. Thomas H. Mawson, Hon. A.R.I.B.A., on "The Peace Palace at the Hague."

Friday, January 8, 1909.

ARCHITECTURAL ASSOCIATION.—Mr. H. D. Searles-Wood, F.R.I.B.A., on "Building Materials," 7.30.

BIRMINGHAM ARCHITECTURAL ASSOCIATION. — Mr. James B. Fulton, A.R.I.B.A., on "The Renaissance in Spain."

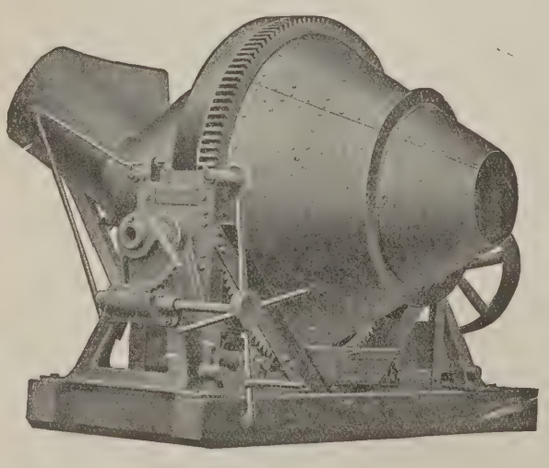


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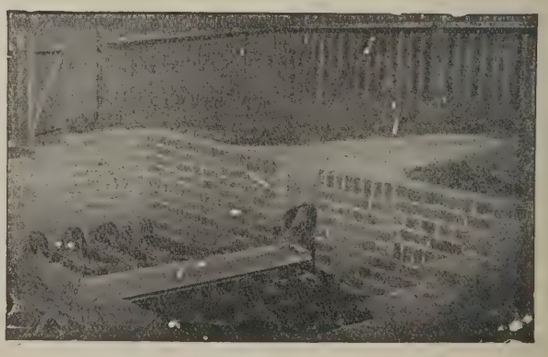
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COMPLETE LIST OF CONTRACTS OPEN.

With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Dec. 17. CASTLE CARY.—Construction of the Castle Cary Water Company's works. Plans, etc., prepared by W. Phelps, C.E., the company's engineer, may be inspected at the office of the company, Bailey Hill, Castle Cary, Somerset. Copies of the specification, etc., can be obtained on deposit of £2 2s. Tenders must be delivered by Dec. 18.

Dec. 17. LEEDS.—Erection of a handicraft centre, cookery room and boundary walls at the Rodley Council school, for the Leeds Education Committee. Quantities may be obtained on application to the architect's section. Tenders may be sent in by 10 a.m. on December 17, to J. Graham, secretary for education, Education Department, Calverley Street, Leeds, endorsed "Tender for Rodley Council School.

Dec. 17. ST. CLEARS, CARMARTHENSHIRE.—Complete renovation of Bethlehem Congregational Chapel, St. Clears. Drawing and specification may be seen on application to Rev. D. G. Williams, Brynawel, St. Clears, or at the office of D. E. Thomas and Son, architects, 17, Victoria Place, Haverfordwest. Sealed tenders, endorsed "Bethlehem Chapel Renovation," to be delivered to B. Salmon, Blaenpant St. Clears, by Dec. 17th.

Dec. 17. GILLINGHAM, Kent.—Removal of the landing stage and brow at the Borough Wharves to its original position alongside the Western Arm of Gillingham Dock. Specification, form of tender and other particulars can be obtained on application to J. L. Redfern, borough surveyor, Corporation Offices. Sealed tenders, addressed to the chairman of the General Purposes Committee, endorsed "Tenders for Removal of Landing Stage," are to be sent to F. C. Boucher, town clerk, Corporation Offices, Gillingham, Kent, before noon on Dec. 17.

Dec. 17. CORK.—Erection of 232 labourers' cottages, and fencing same number of cottage plots, at a cost not exceeding £140 per cottage, for the R.D.C. A contractor may tender to erect all the cottages and fence all the plots, or for such number thereof as he may deem proper. The works are to be completed within six months from date of acceptance of respective tenders under a penalty for delay at the rate of £5 per week per cottage. Plans and specifications and tender forms can be obtained from the clerk to the R.D.C. on payment of 5s., and tenders are to be lodged in his office, Boardroom, Workhouse, Cork, not later than 12 o'clock noon on Dec. 17. Securities required. A deposit of £5 per cottage is required with each tender. Bonds must be completed within seven days from the date of acceptance of tender, otherwise said deposit will be forfeited. Deposits are required to be lodged at clerk's office, and an official acknowledgment obtained. Council will not be responsible for deposits enclosed with tenders. The cottages are to be erected in the following Electoral Divisions of the R.D.: Ballincollig 6, Ballygarvan 8, Bishopstown 8, Blackrock 1, Blarney 18, Caherlag 34, Carrigaline 16, Carrignavar 1, Carrigrohanebeg 2, Douglas 17, Dripsey 1, Dunderrow 3, Greenfort 3, Inniskenny 13, Killeagh 4, Knockantota 1, Knockraha 6, Lehenagh 14, Matchy 3, Monkstown 6, Ovens 7, Queenstown (Rural) 6, Rathcooney 11, Riverstown 6, St. Mary's 24, Whitechurch 12. These numbers include 50 cottages authorised on appeal by the Recorder of Cork. A schedule giving the reference number, townland and name of occupier on whose land each cottage is to be built, may be obtained at the clerk's office. The council will, on the day abovenamed, also receive tenders for fencing one additional allotment in Carrignavar electoral division, one in Inniskenny electoral division and four in Queenstown rural electoral division, at a price per perch not to exceed 12s. 6d.

Dec. 19. WIGAN.—Alterations at the Corporation Baths Millgate, Wigan, for the Wigan Corporation. Plans and specifications can be seen and forms of tender obtained at the office of the borough engineer, King Street West, Wigan. Tenders, endorsed "Baths," must be delivered to H. Jevons, town clerk, Municipal Offices, Wigan, not later than Dec. 19, and those from firms within the borough only will be considered.

Dec. 19. BRAINTREE.—Extension of engine-house No. 1, erection of producer house, coal store, and construction of foundations for new pumping machinery for the U.D.C. at their waterworks pumping station. The drawing and specification can be inspected, and the form of tender obtained, either at the office of P. Griffith, M.I.C.E., engineer, 54, Parliament Street, Westminster, S.W., or at the office of the surveyor to the Council, Vestry Hall, Braintree, on deposit of £2 2s. Sealed tenders, endorsed "Tender, Contract No. 3," to be delivered to H. J. Cunnington, clerk, Braintree, by Dec. 19.

Dec. 21. PADIHAM. — Erection of a new elementary school, at Padiham, near Burnley, for the Lancs. Education Committee, to accommodate 620 scholars. The plans may be seen and bills of quantities obtained at the office of H. Littler, county architect, 16, Ribblesdale Place, Preston, by payment of a deposit of £2. Tenders must be delivered before twelve o'clock noon on Dec. 21, sealed and endorsed, to F. Shutt, Education Office, Padiham.

Dec. 21. BIRKENHEAD.—Construction of a stone boundary wall at the Flaybrick Hill Hospital, for the Birkenhead Corporation. Plans, specifications, and particulars can be seen, and bills of quantities and form of tender obtained, on application at the office of C. Brownridge, borough engineer and surveyor, upon a deposit of the sum of 10s. Fair wages clause. Tenders, upon the form supplied, sealed and endorsed "Tender for Boundary Wall, Flaybrick Hill," to be sent in to J. Fearnley, town clerk, Town Hall, Birkenhead, not later than 12 o'clock noon on Dec. 21.

Dec. 21. ABERDEEN.—Additions and alterations to be made to the City Hospital, Aberdeen, for the Town Council. Estimates are wanted for the mason, carpenter, plumber, plasterer, slater, painter and glazier, bellhanger, iron, and heating engineer works. Plans and specifications may be seen and schedules of quantities obtained at the office of J. Rust, City Architect, 224, Union Street, Aberdeen, and sealed offers marked "Tender for —— Work," to be lodged with him, not later than Dec. 21, at 12 noon.

Dec. 21. GLASGOW.—Construction of shops at the corner of Leith Walk and Manderston Street, for the Directors of the Caledonian Railway Co. Drawings may be seen at the office of the Company's Engineer, Buchanan Street Station, Glasgow, where copies of the specification and schedule may be obtained on payment of £2 2s. Sealed tenders, endorsed "Tender for Construction of Shops at Corner of Leith Walk and Manderston Street," to be lodged with J. Blackburn, secretary, Caledonian Railway Company's Offices, 302, Buchanan Street, Glasgow, on or before Dec. 21.

Dec. 21. WEST RIDING.—Alterations and improvements to Cononley New School, near Keighley; Salterforth New School, near Keighley; Worsborough Dale New School, near Barnsley; Thorne Provided School. Alterations and additions to Langsett Provided School; repairs and improvements to High Green Provided School; drainage and asphalting, Menston Provided School, for the West Riding Education Committee. Plans may be seen and bills of quantities obtained on application to the office of J. Vickers-Edwards, county architect, County Hall, Wakefield. A deposit of £1 is required in each case. Deposits must be posted, addressed to the West Riding Treasurer, County Hall, Wakefield. A separate letter must be sent to the West Riding Architect, asking for the quantities. Sealed tenders, properly endorsed, to be forwarded to the County Architect, not later than 10.30 on the morning of Dec. 21st.

Dec. 22. BLACKLEY.—Taking-down and setting-back of a dwarf wall and fence at the David Lewis Recreation Ground, Blackley, for the Manchester Improvement and Buildings Committee. Specification and form of tender may be obtained on application at the city surveyor's office, Town Hall, Manchester, on payment of £2 2s. Sealed tenders, enclosed in the official envelope and addressed to the chairman of the Improvement and Buildings Committee, to be delivered at the above office not later than noon on Dec. 22nd.

Dec. 22. NELSON, LANCS.—Extension to the post-office premises in Tickle Street, for the General Purposes Committee:—(1) Excavator, drainer, mason, bricklayer, and concretor's work; (2) carpenter and joiner's work; (3) plumber and glazier's work; (4) painter's work; (5) plasterer's work; (6) slater's work. Plans and specification may be seen and forms of tender obtained on application at the office of B. Ball, borough engineer and surveyor. Tenders, endorsed "Post Office Extension, —— Work," to be sent to J. H. Baldwick, town clerk, Town Hall, Nelson, by Dec. 22nd.

Dec. 22. BRIDGWATER.—Erection of a new Council school, for about 200 children at Somerset Bridge, Bridgewater, for the County Education Committee. Drawings, specification, and conditions of contract can be seen, and further information obtained, at the offices of Cottam and Samson, architects, Bridgwater, who will supply bills of quantities on and after Dec. 14. Sealed tenders endorsed "Tender, Somerset Bridge School," must be delivered at the County Education Office not later than 12 noon on Dec. 22.

Dec. 22. LONDON, N.E.—Conversion of the swimming bath at the Schools at Brentwood into a separate Infants' School, for the Guardians of the Hackney Union. Specifications, conditions of contract, and form of tender can be obtained of F. R. Coles, clerk to the Guardians, Clerk's Offices, Sidney Road, Homerton, N.E., between 10 a.m. and 4 p.m., and the plans may be seen at his office by persons desirous of tendering. Securities required. Sealed tenders, endorsed "Conversion of Swimming Bath to Infants' School," must be delivered at the clerk's office not later than 2 p.m. on Dec. 22.

Dec. 23. WOLVERHAMPTON. — Erection of additional classrooms, etc., at Bingley Street Council School. Particulars and conditions may be obtained on application to T. H. Fleeming, architect to the committee, 10, Queen Square, Wolverhampton. Tenders, addressed to "The Chairman, Sites and Buildings Sub-Committee, Education Offices, Town Hall, Wolverhampton," must be received not later than noon on Dec. 23. Fair wages clause.

Dec. 23. NAVAN CO. MEATH.—Fittings and furniture for the New Crown Post Office at Navan, Co. Meath. Tenders will be received up to but not later than 10 a.m. on Dec. 25. The plans and specification can be seen at the office of H. Williams, secretary, Office of Public Works, Dublin, where forms of tender may be obtained. The envelope containing the tender and the detailed estimate must be endorsed.

Dec. 23. DUNDEE.—Construction in Hennebique's ferro-concrete of No. 3 section of the Eastern Wharf reconstruction (about 260 lin. ft). The general plans, specifications, and bills of quantities may be seen or obtained at the office of J. H. Thompson, Harbour Engineer, Harbour Engineer's Office, Dundee. The contractor will be required to deposit a fee of £5 5s. before being allowed to inspect or receive these documents. Sealed tenders, marked "Tender for No. 3 Section of the Eastern Wharf Reconstruction," must be lodged with the Harbour engineer, not later than Dec. 23, at 10 o'clock, morning.

Dec. 26. WICK.—Execution of the mason, carpenter, slater, plasterer, plumber, glazier, and painter work, also the iron and heating engineer work, of the new higher grade school proposed to be erected by the Wick (Burgh) School Board. The plans and the specifications may be examined at the office of D. W. Georgeson, clerk, or at the office of D. and J. R. M'Millan, board's architects, 105, Crown Street, Aberdeen, from whom schedules of quantities may be obtained on application. Offers, marked "Tender for New School," must be lodged with the clerk on or before Dec. 26.

Dec. 28. RHONDDA.—Erection of an infirmary at their workhouse, Llwynypia, Rhondda, for the guardians of the Pontypridd Union. Plans and specification can be seen, and bills of quantities obtained at the offices of A. O. Evans, architects, Pontypridd, on payment to W. Spickett, clerk to the guardians, Union Offices, Pontypridd, of a deposit of £3 3s. Sealed tenders, endorsed "Tender for Infirmary," to be sent to the clerk to the guardians, on or before Dec. 28.

Dec. 28. BROUGHTON.—Erection of a new council school for 180 children at Broughton. Persons desirous of tendering may see plans, specification, and conditions of contract, and obtain bills of quantities and other information, at the office of W. J. Taylor, county surveyor, The Castle, Winchester, between the hours of nine a.m. and five p.m. (Saturdays nine a.m. and one p.m.). A deposit of £2 2s. will be required for a copy of the bills of quantities and form of Tender. Deposits must be made by cheque, payable to the Hants County Council and crossed "Bank of England," or particulars will not be sent. Tenders endorsed "Proposed Council School, Broughton," are to be delivered to H. Barber, clerk to the C.C., The Castle, Winchester, not later than 10 a.m. on Dec. 28.

Dec. 28. LYMINGTON.—Erection of a new council school for 158 children at Lymington. Persons desirous of tendering may see plans, specification, and conditions of contract, and obtain bills of quantities and other information, at the office of W. J. Taylor, county surveyor, The Castle, Winchester, between the hours of nine a.m. and five p.m. (Saturdays nine a.m. and one p.m.). A deposit of £2 2s. will be required for a copy of the bills of quantities and form of tender. Deposits must be made by cheque, payable to the

Hants County Council and crossed "Bank of England," or particulars will not be sent. Tenders, endorsed "Proposed Council School, Lymington," are to be delivered to H. Barber, clerk of the C.C., The Castle, Winchester, not later than ten a.m. on Dec. 28.

Dec. 30. LONDON, S.E.—Execution of certain work in connection with the provision of additional lavatory accommodation for the Guardians of the Poor of the Parish of Lambeth, at their workhouse in Prince's Road, Kennington Road, S.E. Tender forms and specifications of works, with conditions annexed, will be supplied on application to the office of J. L. Goldspink, Clerk to the Guardians, Guardians' Board Room and Offices, Brook Street, Kennington Road, S.E. The tenders, which must be sealed and superscribed "Tender for Lavatory Accommodation," must be sent to the clerk, or placed in the box provided for their reception in the office of the Clerk to the Guardians by the contractors or their representatives, if they so desire, on or before ten o'clock on Dec. 30, and will be opened in the Board Room at noon on that day.

Jan. 2. CLEATOR.—Erection and completion of a mixed elementary school at Cleator for 350 children, for the Cumberland Education Committee. Contractors desirous of tendering are requested to submit their names forthwith to G. D. Oliver, F.R.I.B.A., county architect, Carlisle, stating the trades for which they desire to tender. Plans and specification may be seen and quantities and all information obtained at his offices upon the receipt of a deposit of £1 1s. for a full set of quantities or 10s. 6d. for each separate trade. Endorsed tenders to be delivered to C. C. Hodgson, secretary to the Education Committee, The Courts, Carlisle, not later than 10 a.m. on Jan. 2.

Jan. 6. USWORTH.—Erection of 50 workmen's dwellings at Usworth, in the rural district of Chester-le-Street. Plans, specifications and general conditions of contract can now be seen and bills of quantities obtained at the office of Brown and Spain, architects, 51, Fawcett Street, Sunderland. Sealed tenders, endorsed "Usworth Housing," to be delivered to R. Simey, clerk of the C.C., Shire Hall, Durham, not later than Jan. 6.

Jan. 7. BRACEBRIDGE HEATH.—Contract No. 4.—Construction of an absolutely watertight covered concrete service reservoir of 6,000,000 gallons capacity, and subsidiary works at Bracebridge Heath, near Lincoln, for the Lincoln Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of N. McK. Barron, Waterworks Engineer, Lincoln, upon payment of the sum of £5 5s. Sealed tenders, endorsed "Tender for Reservoir," and addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, deputy town clerk, Bank Street, Lincoln, on or before Jan. 7.

Jan. 7. WESTGATE, Lincoln.—Contract No. 5. Construction of a brick tower 106 ft. high to T. W. L. to support a spherical bottomed steel tank, containing 300,000 gallons of water, and subsidiary works, at Westgate, Lincoln, for the Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained, at the office of the engineer, Mr. N. McK. Barron, Waterworks Engineer, Lincoln, upon payment of the sum of £5 5s. Sealed tenders, endorsed "Tender for Water Tower, Section No. 1," and addressed to the chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, deputy town clerk, Bank Street, Lincoln, on or before Jan. 7.

Jan. 7. WATFORD.—Erection and completion of a new manual instruction centre at the Victoria Senior Boys' County Council School at Watford, for the Education Committee. Persons desirous of tendering for the work may see the drawings, specification, agreement, etc., at the County Surveyor's Office, Hatfield, on or after Dec. 18, between the hours of 10 a.m. and 4 p.m. (except on Saturday, when they may be seen from 10 a.m. till 12 noon). A copy of the schedule of works (quantities) and a form of tender can be obtained at the County Surveyor's Office on or after the above-mentioned date upon payment of £2 2s. Sealed tenders, endorsed "Tender for Manual Instruction Centre, Watford," must be delivered to U. A. Smith, county surveyor, County Surveyor's Office, Hatfield, not later than 5 p.m. on Jan. 7.

Jan. 14. LITTLE COATES, LINCOLN.—Building an Elementary School at Little Coates, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31st, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S. M. Grant, Secretary, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14th.

Jan. 14. HEALING, LINCOLN.—Building an Elementary School and Teacher's House at Healing, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S. M. Grant, secretary, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14.

Jan 14. INGOLDMELLS, LINCOLN.—Building an Elementary School and Teacher's House at Ingoldmells, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31st, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S. M. Grant, Secretary, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14.

Jan. 18. MACCLESFIELD.—Erection of two detached blocks for 43 patients each at the Parkside Asylum. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., county architect, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to A. C. Procter, clerk to the Visitors, 23, King Edward Street, Macclesfield, at or before 10 a.m. on Jan. 18, endorsed "Tender for Detached Blocks, Parkside Asylum."

Jan. 18. MACCLESFIELD.—Erection of two detached blocks for forty-three patients each at the Parkside Asylum, Macclesfield. Plans and specifications can be seen at the office of H. Beswick, F.R.I.B.A., county architect, Chester, and quantities obtained on deposit of £1. Tenders are to be delivered to A. C. Procter, clerk to the Visitors, 23, King Edward Street, Macclesfield, at or before 10 a.m. on Jan. 18, endorsed "Tender for Detached Blocks, Parkside Asylum."

No date. WHITCHURCH. — Erection of Stabling at Hepstay House, Whitchurch. Plans and specifications can be seen of D. E. Jones, Hepstay House, Whitchurch, Glam.

No date. RATHBONE.—Building an addition to residence of A. Aylmer, J.P., Rathmore, in accordance with plans and specifications which may be seen at the office of F. Bergin, B.E., 36, Westmoreland Street, Dublin.

No date. LLANDDANIEL.—Erection of a Church Room at Llanddaniel, near Gaerwen, Anglesey. Copies of plans and specification may be seen on application to R. Hall, F.R.I.B.A., architect, Masonic Chambers, Bangor.

No date. DUNSTON.—Erection of the new Dunston Excelsior Club. Builders willing to tender please forward their names to White and Stephenson, Grey Street, Newcastle, or to the secretary of the above club, Dunston.

No date. WHITBY.—Erection of proposed residence, Carr Hill, Whitby. Contractors desirous of tendering for the above works must apply to H. G. Walker, architect and surveyor, Golden Lion Bank, Whitby, when quantities will be sent them when ready.

No date. BRONDEGWYN. — Forming playgrounds and building boundary walls at Brondegwyn Council School, for the Merioneth Education Committee. The plan and specification may be obtained on application to Deakin and H. Jones, architects, Plas Ynys, Borth, R.S.O.

No date. CAERPHILLY.—Erection of two chapels, one to be built at Taff's Well Cemetery and the other at Penyrheol Cemetery, for the Caerphilly D.C. Plans and specifications may be seen and quantities obtained at the office of S. Williams, M.S.A., architect, Borough Chambers, Wharton Street, Cardiff, or at Rectory Road, Caerphilly. Sealed tenders to be sent to W. Spickett, clerk of the Council, Council Offices, Caerphilly, endorsed "Tender for Chapels."

ENGINEERING.

Dec. 17. LEEDS.—New heating apparatus for several of the Council Schools. Contractors desirous of tendering are requested to apply to the Architect's Section, when specifications and full particulars will be forwarded. Tenders are to be sent to J. Graham, secretary for Education, Education Department, Calverley Street, Leeds, not later than 10 a.m. on Dec. 17, endorsed "Tender for Heating Apparatus for Schools."

Dec. 17. CARDIFF.—Re-construction of Monthermer Road Bridge, crossing the Rhymney Railway in the city of Cardiff. Drawings, specification and bill of quantities may be seen at the office of W. Harpur, M.I.C.E., city engineer, City Hall, and copies of the same, with form of tender, may be obtained on payment of £2 2s. Sealed tenders, endorsed "Tender for Monthermer Road Bridge," to be delivered at the office of J. L. Wheatley, town clerk, City Hall, Cardiff, not later than 10 a.m. on Dec. 17.

Dec. 21. BARNET.—Supply, erection, and setting to work of certain pumping plant, comprising borehole pump driven by oil or gas engine, for the Guardians of the Barnet Union. Further particulars and form of tender, may be obtained at the office of the engineer, J. C. Melliss, M.Inst. C.E., 264, Gresham House, Old Broad Street, London, E.C., on payment of the sum of £2. Tenders properly endorsed, are to be delivered to G. D. Byfield, clerk to the guardians, clerk's office, High Street, Barnet, Herts, at or before noon on Dec. 21.

Dec. 22. BURNLEY.—Widening of the Bridge carrying the railway over Cog Lane, and Construction of Retaining Walls adjacent thereto, at Gannow Junction, Burnley, for the directors of the Lancs. and Yorks. Railway. Plans can be seen, and copies of tender, quantities, and specification obtained, on application at the Engineer's Office, Hunt's Bank, Manchester. Tenders, endorsed "Tender for Widening Bridge over Cog Lane, etc.," Burnley," to be in the hands of R. C. Irwin, secretary, Hunt's Bank, Manchester, not later than ten o'clock on the morning of Dec. 22nd.

Dec. 23. BRADFORD.—Supply and erection of two 3,000 k.w. turbo-generators, complete with condensing plant, motor-driven auxiliaries, and steam, exhaust and circulating pipework, for the Corporation. Copies of the specification, general conditions of contract, and forms of tender, may be obtained from T. Roles, city electrical engineer and manager, Electricity Offices, Whitaker Buildings, Bradford, on payment of the sum of £2 2s. Sealed tenders, on the forms, must be sent fully filled in to F. Stevens, town clerk, Town Hall, Bradford, not later than the first post on Dec. 23, endorsed "Contract 'R. 6'." Fair wages clause.

Dec. 30. LIMERICK.—Supplying and setting one steel Cornish boiler, 20 ft. long and 6 ft. diameter, for 80lbs. working pressure, for the Water Committee at their works at Reboge. Particulars may be obtained on application to J. J. Peacocke, B.A., B.E., city surveyor, Town Hall, Limerick. Tenders must be delivered by noon on Dec. 30, to W. J. DeCourcey, secretary, Water Committee, Town Hall, Limerick.

Dec. 30. LONDON, S.E.—Supplying and fixing a 150 shirt capacity washing machine at their workhouse, Prince's Road, Kennington Road, S.E., for the Guardians of the Poor of the parish of Lambeth. A general description of the work required, together with form of tender, can be obtained from the office of J. L. Goldspink, clerk to the guardians, Guardians' Board Room and Offices, Brook Street, Dennington Road, S.E.. The tenders, which must be sealed and superscribed "Tender for Washing Machine," must be sent to the clerk to the Guardians, or placed in the box provided for their reception in the office of the clerk to the guardians by the contractors or their representatives, if they so desire, on or before 10 o'clock on Dec. 30, and will be opened in the board room at noon on that day.

Jan. 2. LETTERKENNY.—Carrying out of the Lough salt water scheme for supplying the Letterkenny Urban District and the Donegal District Asylum for the water for the U.D.C., in accordance with plans and specification deposited at the office of the Council, Main Street, Letterkenny, where same can be inspected by intending contractors. The works include the following:—(1) Intake well at Lough Salt; (2) The supplying and laying of 9 miles 520 yards of 5-in. C.I. main, from Lough Salt to the Asylum Tank at Windy Hall, Letterkenny, with the necessary valves, etc.; (3) alterations at tank and connection of supply to Asylum and town; (4) Supplying and laying 5-in. C.L. main from tank to connect to town service; (5) The maintenance of the works for 12 months after completion. The contractor will be required to enter into a bond with at least two solvent sureties in the penal sum of £5,000 for the due performance of the contract. Tenders will be received by J. G. Larkin, town clerk, Town Council Office, Main Street, Letterkenny, up till five o'clock p.m., on Jan. 2nd, and will be considered by the Council at their meeting on Jan. 14th, at 12 o'clock noon.

Jan. 4. GREAT BERKHAMPSTEAD.—Reconstruction of King's Road Bridge, for the U.D.C. The removal of the existing iron superstructure, carrying the King's Road over the Grand Junction Canal, and the erection of a new steel bridge. The plans and specification can be inspected, and form of tender obtained at the offices of E. H. Adey, surveyor to the U.D.C., 177, High Street, Berkhampstead, Herts, or Thomas and Thomas, civil engineers, 191, Edgware Road, Paddington, W. Tenders to be sent in envelopes, endorsed "Tenders for Bridge," on or before noon on Jan. 4th, to the office of the surveyor.

Jan. 7. WESTGATE, Lincoln.—Contract No. 6. Supply and erection of an absolutely watertight steel tank of 300,000 gallons capacity, and subsidiary works, at Westgate, Lincoln, for the Corporation. Drawing, specification, and form of tender may be obtained at the office of the engineer, N. McK. Barron, Waterworks Engineer, Lincoln, upon payment of the sum of £5 5s. Sealed tenders, endorsed "Tender for Water Tower, Section No. 2 Tank," and addressed to the chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, deputy town clerk, Bank Street, Lincoln, on or before Jan. 7.

Feb. 22. SYDNEY, N.S.W.—Supply and erection in Sydney of five water-tube boilers, each capable of evaporating 24,000 lbs. of water per hour, with economisers, stokers, feed pumps, pipework, etc., for Preece and Cardew, on behalf of the Sydney Municipal Council. Tenders for the whole of the plant only will be considered. Specification, drawing, and form of tender may be obtained from Preece and Cardew, 8, Queen Anne's Gate, Westminster, S.W., on payment of a deposit of £1 1s. Extra copies of the specification may be obtained on payment of 7s. 6d. each (not returnable). A cash deposit or marked cheque for the sum of £1,000 will require to be deposited with the

city treasurer, Town Hall, Sydney, when the tender is sent in. Sealed tenders, endorsed "Tender for Electric Lighting Plant," are to be addressed to the Town Clerk, Town Hall, Sydney, N.S.W., and must be delivered at the Town Hall, Sydney, not later than 4 p.m. on Feb. 22.

IRON AND STEEL.

Dec. 23. LONDON, E.—Works in connection with certain new gates and iron fencing, etc., at the Forest Gate Branch Workhouse, for the Guardians of the Parish of the Poplar Borough, in accordance with specification prepared by their architects, J. and W. Clarkson, 136, High Street, Poplar, E. Persons desirous of tendering for the work must send their names to the architects not later than Dec. 16. The conditions of contract and a copy of the specification and form of tender may be obtained upon payment to the architects of a deposit of £2 2s. Tenders, sealed and endorsed "Tender for Gates, Fencing, etc., at the Forest Gate Branch Workhouse," addressed to G. H. Lough, clerk to the Guardians, 45, Upper North Street, Poplar, E., must be delivered not later than 6.30 p.m. on Dec. 23. Securities required. Fair wages clause.

Jan 5. LONDON, E.C.—Supply and delivery of 40 through spans of 150 ft., for the Bengal and North-Western Railway Co., Ltd., as per specification to be seen at the Company's offices. Tenders, addressed to A. Izat, managing director, 237, Gresham House, Old Broad Street, London, E.C., and marked "Tenders for Spans," are to be lodged not later than noon on Jan. 5. For each specification a fee of 20s. will be charged, which cannot, under any circumstances, be returned.

Jan. 5. BLACKROCK (Co. Dublin).—Supply of the following goods for the U.D.C.: 3,200 yds. lin. 6 in. watermains, 660 yds. lin. 4 in. watermains. To be delivered at such places in the Blackrock District as the Council may direct. Specification for the pipes can be seen at the Town Hall. As far as possible all goods must be of Irish manufacture. Tenders, which are to be on the prescribed forms, and accompanied by the schedule of prices, for specials, must be lodged with R. F. Heron, town clerk, Town Clerk's Office, Town Hall, Blackrock, Co. Dublin, on or before 4 p.m. on Jan. 5.

PAINTING.

Dec. 19. WIGAN.—Cleaning, Painting, etc., of the interior of the first-class Swimming Bath, for the Wigan Corporation. Specification can be seen and other information obtained, at the office of the borough engineer, King Street West. Tenders, endorsed "Baths Painting," to be delivered to H. Jevons, town clerk, Town Clerk's Office, Wigan, not later than Dec. 19.

PLUMBING & SANITARY

Dec. 17. CORK.—Execution of the following works, according to plans and specifications, which may be inspected at the Boardroom, Cork Workhouse, for the R.D.C. (a) Laying sewer, building manhole, etc., at Glanmire Village; (b) cleaning out and deepening existing well, and erecting pump at Barnagore, Ovens; (c) repairing well, supplying and erecting new pump at Coolmore, near Ringaskiddy; (d) enclosing well at Glenville. Each tender must be made on the official form and be signed by the person proposing to execute the work, and contain the names and addresses of two solvent persons who are willing to join with him in a bond for the execution of the work. Forms of tender may be obtained on application at the Boardroom, Cork Workhouse. Tenders will be received up to the hour of 12 o'clock noon on Dec. 17.

Dec. 19. HALIFAX.—Construction of about 150 yds. of 5ft. by 3ft. 4in. brick sewer. Plans, etc., may be seen, and forms of tender obtained, on application to J. Lord, M.I.C.E., borough engineer, Town Hall, Halifax, upon deposit of £10. Tenders are to be delivered by Dec. 19.

Dec. 19. KING'S LANGLEY.—Constructing new Precipitating Tanks in connection with the sewage system at Leavesden Asylum, King's Langley, near Watford, Herts, in accordance with drawing, conditions of contract, and specification prepared by W. T. Hatch, engineer-in-chief. The drawing, conditions of contract, specification, and form of tender may be inspected at the office of the Board, Embankment, E.C., and can be obtained upon payment of a deposit of £1. Tenders addressed as noted on the form must be delivered at the office of the Board not later than ten a.m. on Dec. 19th.

Dec. 19. ORRELL.—Construction of surface and foul water pipe sewers for the drainage of the Estate; comprising about 2,300 yds. of pipes from 5 in. to 24 in. diameter, passing under railways and under the St. Helens Canal, and works in connection therewith, for the owners. Plans and specifications may be seen and form of tender and bill of quantities obtained at the office of Chase and Broom, 67, Dale Street, Liverpool, on payment of £1. Tenders must be sent to L. H. Chase, M.I.C.E., at the above address, and delivered not later than 12 o'clock on Dec. 19.

Dec. 28. TIPTON.—New sewage disposal works in the district of Tipton, for the U.D.C. The works will comprise the construction of screening and detritus chamber, tanks, sewage filter beds, storm-water filter, effluent drain, and sludge area, together with other works. Drawings and specifications may be seen, and quantities, form of tender, and all other particulars obtained on application at the offices of Dodd and Dodd, civil engineers, 37, Waterloo Street, Birmingham, on payment of a sum of £5 5s. Tenders, endorsed "Tender for Bacterial Filters," to be delivered, or sent, so as to be in the hands of J. H. Stockdale, clerk, Public Offices, Owen Street, Tipton, not later than 12 o'clock noon on Dec. 28.

Dec. 28. BURSLEM, STAFFS.—Construction of about 800 lin. yrds. of storm water pipe sewer, varying from 15 in. to 30 in. in diameter, together with the manholes and other work in connection therewith from Nile Street and the junction of Park Road with Moorland Road, within the borough, for the Corporation. Plan and specification can be seen, and quantities obtained, at the offices of F. Bettany, borough engineer and surveyor, Queen Street, Burslem, on payment of £2 2s. Fair wages clause. Sealed tenders endorsed "Storm Water Sewer, Moorland Road," to be sent to A. Ellis, town clerk, Town Hall, Burslem, by 5 p.m. on Dec. 28th.

Dec. 30. TROON.—Providing a supply of water from Loch Bradan, for the Troon Town Council:—Contract No. 3.—For excavating for and building a dam of concrete and masonry across the outlet of Loch Bradan, a valve tower of concrete and masonry in Loch Bradan, a waste water channel, gauge and screening wells, a gauge well, and pipeage for compensation water and other relative works. Contract No. 4.—For cutting and filling trenches, carting, laying and jointing 18in. diameter concrete, and 16, 14, 12, and 10in. diameter cast-iron pipes for leading water through Ayrshire from Loch Bradan, in Straiton Parish, to Collenan Reservoir, in Dundonald Parish, and other relative works. The Town Council reserve the power to make one or more contracts of the four following sections of this work:—(No. 1) From the gauge well at Loch Bradan to the public road near Grimmet Farm Steading, a distance of about 7 miles 459 yds., through hill country. (No. 2.) From Grimmet to the junction of roads near Kerse Bridge, a distance of about 7 miles 850 yds., partly through moorland and fields, and partly along roads. (No. 3.) From the junction of roads near Kerse Bridge to Annbank Station, a distance of about 7 miles 980 yds., chiefly along the public roads. (No. 4.) From Annbank Station to Collenan Reservoir, a distance of about 6 miles 1,564 yds., chiefly through fields. Copies of the specification, schedule of quantities, and form of tender for each contract, may be obtained from J. and H. V. Eaglesham, engineers, 24, Wellington Square, Ayr, on payment of £2 2s. Tenders endorsed, "Tender for Contract No. 3, Loch Bradan," or No. 4, as the case may be, to be delivered at the office of R. Young, town clerk, Town Clerk's Office, Troon, by 4 o'clock p.m. on Dec. 30.

January 8. NORTH TAWTON.—Construction of a concrete service reservoir, aand extension of water mains at North Tawton, Devon, for the Okehampton R.D.C., according to plans prepared by H. Geen, A.M.I.C.E. Plans, specifications, and bill of quantities may be inspected at the Parish Council Office, North Tawton, between the hours of 10 a.m. and 4 p.m. Sealed and endorsed tenders, on forms to be obtained at the R.D.C. Office, Okehampton, must be delivered to S. Hawken, clerk of the council, Okehampton, by Jan. 8.

ROADS AND CARTAGE.

Dec. 19. LEVENSHULME.—Sewering, draining, paving, flagging, curbing, channelling, and completing the following streets and passages, for the U.D.C. in their district:—Dixon Street Extension, Parker Street, passage rear of 180 to 202, Stockport Road and 2 to 22, Parker Street, Molyneux Road, Cecil Street, Bute Street, Victoria and Alexandra Avenues, passages rear of Barlow Road, Emley Street, and King Edward Street, and passage Marshall Road. Specifications, bills of quantities, and further particulars may be obtained on application to J. Jepson, Mosley Chambers, 35, Great Underbank, Stockport, surveyor to the Council, on payment of £3 3s. Tenders, endorsed "Tender for Private Street Works," to be sent to J. O. Hardicker, clerk to the Council, Northern Assurance Buildings, Albert Square, Manchester, not later than Dec. 19th.

Dec. 22. GATESHEAD.—Paving, etc., the following streets:—Primrose Hill, Back Grasmere Street West (paving), Keswick Street and Back Hawthorn Gardens (tar macadam). Plans and specifications may be seen and quantities obtained at the office of N. P. Pattinson, borough engineer, Town Hall, Gateshead. Tenders are to be sent in sealed and endorsed "Tenders for Street Paving" on or before 2 p.m. on Dec. 22.

Dec. 22. FARNHAM, Surrey.—Supply of Clee Hill basalt, Penmaenmaur, Guernsey, and quenast granite, for the Farnham U.D.C. The granite to be well and roundly broken, free from chips and small pieces. Forms of tender may be had from R. W. Cass, council's surveyor, Council Offices, South Street, Farnham, Surrey. Tenders to be sent on the prescribed forms only, with samples as to quality, size, and breaking, in each case. Tenders to be endorsed "Granite," on the outside cover, and to be delivered to R. Mason, solicitor, clerk to the Council, 93, West Street, Farnham, on or before 4 o'clock p.m., on Dec. 22.

Dec. 30. ERDINGTON.—Supply of broken stone during the year 1909, for the Highways and Buildings Committee. Specification, form of tender, and all information may be obtained upon application at the offices of H. H. Humphries, surveyor to the Council, Council House, Erdington, to whom tenders must be delivered not later than 12 o'clock at noon on Dec. 30. Fair wages clause.

Dec. 30. OLD HILL. — Forming, metalling, paving, and making the new extension of Plant Street, Old Hill. Plan, specification, and conditions may be seen at the Council Offices, Old Hill, between the hours of 10 a.m. and 4 p.m. (Saturdays from 10 a.m. to 1 p.m.). Tenders, duly endorsed, must be in the hands of D. Wright, clerk, Council Offices, Old Hill, Staffordshire, not later than 12 o'clock noon on Dec. 30.

Dec. 31. HORSHAM.—Supply of:—1, picked surface flints, delivered on the main road; 2, broken quartzite, granite, or other stone, to Shoreham Harbours, and to railway stations; 3, cartage from railway stations, wharves, and stone pits to main roads, and team labour per day; 4, tar, for the year ending March 31, 1910, for the Roads and Bridges Committee. Forms of tender may be obtained on application to H. W. Bowen, county surveyor, County Surveyor's Office, 22, Worthing Road, Horsham, and applicants are requested to state which form of tender (1, 2, 3, or 4) they require. Sealed tenders, endorsed "Tenders for Materials," or "Tenders for Cartage," to be delivered to the county surveyor, on or before Dec. 31.

MISCELLANEOUS.

Dec. 21. ERDINGTON.—Supply of the following materials in connection with the construction of the enlargement of Short Heath Intercepting Sewer, for the Highways and Buildings Committee. Contract No 1. Bricks and invert blocks; 2, iron pipes and special castings; 3, cement; 4, timber. Specifications, forms of tender, and all information may be obtained upon application to H. H. Humphries, engineer to the Council, Council House, Erdington, to whom tenders must be delivered not later than 12 o'clock noon, Dec. 21. Fair wages clause.

Dec. 21. FULBOURN, Cambs.—Supply of oils, oil colours, window glass, etc., for six calendar months, from Jan. 1, for the committee of Visitors for the Cambridge County Lunatic Asylum. Tenders (and samples where practicable) to be delivered to H. Archer, steward, at the asylum before 12 o'clock at noon on Dec. 21, for examination by a sub-committee. All articles are to be delivered free of expense by the respective contractors. Forms of tender may be had at the office of T. M. Francis, clerk to the Visitors, 18, Emmanuel Street, Cambridge, or of Mr. Archer, the steward, at the Asylum.

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CLERK of Works, just finishing large schools, wants situation, 15 years' experience; expert timber, good all trades; plans, surveying, levelling, etc., etc. Country estate preferred.—Caswell, New Council Schools, Biddulph, Staffs. 4720

CARPENTER and Joiner (age 32) wants job. Bench, fixing, alterations, or jobbing. Could take charge if required. Good references. Life abstainer.—Pearson, 53, Hartham Road, Isleworth, W. 4681

DOMESTIC Engineer, young, energetic, thoroughly practical, seeks sit as estimating or working foreman, used to taking charge; large heating and sanitary, installation; good refs.—Box 4707, BUILDERS' JOURNAL Office.

ESTATE, Buildings Manager (33), desires re-engagement; ten years' experience in mills, farms, cottages, etc., including the preparation of plans, quantities, estimates and accounts; good knowledge of timber trade; salary 3 guineas; country preferred; abstainer.—Box 4632, BUILDERS' JOURNAL Office.

ENGINEER, general, wants permanent appointment, official or private staff; thorough all-round experience; electrical, plumbing, smith, married, 34; good testimonials.—86, Bathurst Gardens, Willesden. 4704

FIREPROOF Engineers and Concrete Specialists. Advertiser, connected with above trades for 10 years, and whose name is well known in connection with same, desires position as manager, traveller, or head clerk; first-class book-keeper; aged 33; very moderate salary.—P. W. Potter, 73, Penshurst Road, Thornton Heath. 4719

GENERAL Foreman, 30 years' experience; man of ability; good references.—Foreman, 200, Francis Road, Leyton, N.E. 4685

GENERAL foreman, shortly disengaged, just completing large schools in North Stafford; abstainer; age 34; 12 years management of men.—Burchall, Crow Lane, Earlestown, Lancs. 4666

GENERAL foreman, disengaged, thoroughly practical and reliable; 20 years' experience; new or alterations; first-class reference.—F. C., 3, Crewdson Road, Brixton, S.W. 4668

GENERAL Foreman (or foreman of carpenters and joiners, either inside or out), seeks situation. Country or colonies preferred. Good references. Age 30. Life abstainer.—A. White, 51, Alexandra Avenue, Southall, W. 4730

IMPROVER, brass-finisher, etc., requires situation, 3 years' varied experience with well-known London firm; energetic, steady, and reliable; first-class testimonials. Abstainer. — Apply Box 4550, BUILDERS' JOURNAL Office.

JUNIOR Assistant desires situation, home or abroad; good practical knowledge of construction and details; competent draughtsman and colourist, working drawings, measuring and supervising, surveying and levelling; moderate salary.—Box 4613, BUILDERS' JOURNAL Office.

PLUMBER (26), abstainer, well up in all sanitary or lead-laying; will do piecework; town or country. Can do zinc and hot water.—W. E. B., School House, Muriel Street, Barnsbury, N. 4614

PLUMBER (Reg. by Exam.), well up in hot water and heating systems, capable of taking entire charge; 6 years' ref.; age 38.—H. P., 11, New Buildings, Hampstead, London. 4670

PLUMBING, etc., Sanitary or Lead-laying, job wanted, day or piecework; anywhere; lowest prices; best work; excellent references; used to speculating or jobbing.—Squirrell, 47a, Woodland Street, Dalston, N.E. 4749

QUANTITY Surveyor's Assistant (21), 4 years' experience, desires engagement, certificates and good references. — Apply Box 4745, BUILDERS' JOURNAL Office.

QUANTITY Surveyors.—A builder wishes to place his son (18) in above office; has had some experience. No premium, but can introduce business.—Apply H., Ashford House, Wimbledon Common. 4686

REINFORCED concrete foreman, disengaged, long and varied experience, especially in Kahn bars and expanded metal, timbering a speciality; carpenter by trade; good refs.—G. C., 59, University Road, Tooting, London. 4728

SLATE MERCHANTS AND BUILDERS' MERchants.—Experienced traveller (with 14 years' connection Midlands), desires re-engagement; at liberty middle of December; or could arrange earlier.—Address, Slate, c/o Secretary, Builders' Exchange, Sheffield. 4624

SLATING and tiling wanted (labour only) day or piece; any quantity, large or small; distance no object.—Mack, Slater and Tiler, 3, Granville Cottages Tower Hamlets Street, Dover. 4619

SHOP or General Foreman, long West-end experience, used to alterations and repairs; understands stairs; used to good jobbing work. Address A., c/o Mr. Seymour, 14, Allsop Place, Regent's Park, N.W. 4581

TO Builders.—Situation as improver wanted by young man just out of his time; technical student; neat draughtsman; assist with quantities, supervision, etc.; abstainer. — Box 4662, BUILDERS' JOURNAL Office.

TO Estate Owners.—Builder (38), varied experience, desires position as agent or clerk of works, surveys, plans, quantities, setting out, accounts and supervision; country preferred.—Box 4594, BUILDERS' JOURNAL Office.

TRAVELLER.—Architect desires post as representative to good firm. — Address Box 4497, BUILDERS' JOURNAL Office.

Appointments Vacant.

AGENT, with slight knowledge structural engineering, wanted by well known firm to introduce sale of speciality on commission, in Southampton and district, gentleman having connection among architects, surveyors, and engineers preferred.—Write Reinforced Concrete, c/o Brown's Advertising Office, 17, Tothill Street, Westminster. 4732

CLERK required by architect, typewriting and shorthand; state experience and salary.—Box 4754, BUILDERS' JOURNAL Office.

LONDON Quantity Surveyor wants experienced Assistant, thoroughly practical; must be able to take off and measure up well; state age, references and salary to Box 4757 BUILDERS' JOURNAL Office.

WANTED, immediately, a first-class active all-round architect's assistant, with considerable experience in public, elementary, and secondary school planning. He must also be an expeditious draughtsman, capable of writing specifications and checking accounts. Preference given to one capable of preparing a complete bill of quantities (London system), up to at least £10,000. Salary not to exceed three guineas per week, payable monthly. Apply stating full particulars and testimonials (copies) to D. Pugh - Jones, County (School) Architect, 62, Charles Street, Cardiff. 4731

December 23, 1908. Volume 28. No 724.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

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Building Accidents Bill Withdrawn.

The Building Operations and Engineering Works Bill, at the introduction of which Mr. Gladstone said that the main hope of its becoming law this year was that it should be considered non-contentious, has been dropped. The inference is that contention has arisen. In our review of the Bill in August last, various suggestions were made as to the advisability and otherwise of certain of its provisions. We particularly pointed out that while the handing over to the local authorities of powers now exercised by the Factory Inspectorate had some advantages, yet the devolution of these powers from a central authority to many minor bodies tended on the whole to divergent practices in administration. It is true powers were retained for the factory inspectors to act where the local authorities were found negligent, but this did not help matters, but only served to render confusion worse confounded. It is probable that upon these two points—the administration by the District Councils and the dual control mentioned—the contention has arisen. We believe representations have been made to the Home Office giving effect to these objections; but as the second reading of the Bill in the House of Commons did not occur, it is impossible to say whether any of the members who are connected with or interested in the building trade were prepared to give voice to them there. However, the Bill is withdrawn, ostensibly because of the extremely short time left after the major Bills have been considered, which it has been thought claimed greater attention. Mr. Gladstone is credited with the intention of reintroducing the measure early next year. The delay will give him an opportunity of considering the points raised. It is somewhat difficult to know upon whose advice he relies in drafting such measures. The matter of administration was considered by the Home Office Committee, which sat last year to draw up the regulations for safety, although it was not strictly within their duties. The evidence on the whole was in favour of the factory inspectors retaining their existing powers, and with this we believe the whole of the trade would agree. The master builders principally object to the dual control, and the trades unions concerned demand the central authority. Surely, when all are so much in agreement, the Home Secretary can find means to give effect to their desires. There should be no reason for delay in doing this. A certain amount of public interest exists apart from that felt in the trade itself. The number of fatal accidents on buildings that occur each year would, if occurring on a battlefield, send a shock throughout the country. The desire to remedy this state of affairs as far as possible is of old standing, and it is to be hoped that no unnecessary delay will arise in giving effect to it.

"Mind the Paint."

Practical joking is justly reprehended. It is always mischievous, frequently dangerous, and sometimes fatal. It seems that there are those who regard a joke on practical matters as being almost equally despicable. Mr. E. R. E. Sutton's jocular request, in an after-dinner speech, for information as to how he could tell when painters had put on four coats or only three, has given rise to an almost acrimonious correspondence in the "Nottingham Guardian." A gentleman signing himself "Painter" thinks that "it may be open to question whether it is good taste, or a keen sense of humour, on the part of an architect to ask such a question from a body of men whose guest the questioner was for the time being." He adds, however, that the answer to the question is very simple:—"1. Only employ tradesmen of established reputation. 2. Never accept prices which he knows from experience cannot cover the cost of the work demanded." Excellent advice, no doubt, although No. 2 seems to have the effect of "thinners" on No. 1. In reply to this letter, Mr. G. T. Shearman, hon. secretary of the National Association of House Painters, solemnly declares that he has been requested by the association to reply to the letter. The writer of that letter, he says, "evidently was not at the dinner, or he would, without he is extremely dull of comprehension, have apreciated Mr. E. R. E. Sutton's humorous remarks, which were in reply to the previous speech, and were taken as such by those present at the meeting, and also by your reporter." "Another Painter," replying to "Painter," starts another hare. "Does 'Painter'" he asks, with what seems to us to be a tone of withering scorn, "think that the above association, or even the Executive Committee, represent firms which guarantee a proper number of coats of paint or standard class of work? One would imagine by his letter that the Master Painters' Association was composed of all the integrity and talent of the city." Clearly Mr. Sutton has upset the painters, if not the paint. Truly the fortune of a jest rests with the hearer! Mr. Sutton has our sympathy, and we wish him better luck with his next joke.

Sculpture and Building.

The adornment (or otherwise) of the Thames-side by means of statuary is to be assisted by no less eminent an artist than Auguste Rodin. Since the death of James McNeil Whistler, in 1903, the International Society of Painters, Sculptors, and Engravers, of which that wayward and whimsical and sufficiently international artist was president, have been collecting funds with the object of raising a memorial to him, and their quiet and more or less private appeal has resulted in the not unhandsome sum of £4,000. M. Rodin, who is now president of the Society, was induced to undertake the execution of the memorial, and has already made good progress with the work. It shows the figure of Fame, holding a medallion portrait of Whistler, and the shade of that cynical master of epigram may without irreverence be imagined as commenting, "Yes, Fame holds Whistler; but does Whistler hold Fame?" The man in the street, on whose habitat the statue is to intrude, will probably find in it a fresh cause of puzzle-headed perplexity. He will probably disapprove of it on the erroneous supposition that since it is to be put up in the little park on the Chelsea Embankment, where there is already a statue of Carlyle, the London County Council is again growing regardless of the ratepayers' pocket, which supposition is absurd, but natural and characteristic: as will be also, it is to be feared, his critical (?) estimate of the peculiarities of Rodin. Replicas of the statue will, it is understood, be erected in Paris and in the United States. The fact somehow reminds us of one of Whistler's stinging retorts on the subject of repetition. Whistler, in company, said something particularly brilliant. "Oh," exclaimed a literary friend, who was notorious in many ways, and particularly for his habit of plagiarism, "how I wish I had said that!" "Never mind!" snapped Whistler, "you certainly will!" The Embankments, failing the spacious squares and avenues in which London is rather conspicuously lacking, afford perhaps the most appropriate sites for statuary; but the examples already in existence hardly stimulate the desire that they should be increased and multiplied in the same kind. Those on the Victoria Embankment, for instance, are by no means worthy of the very respectable architecture by which the heterogeneous collec-

tion of graven images is dwarfed into insignificance. In London generally, the increasing use of sculpture as an integral part of buildings, for the adornment of doorway and pediment and frieze, almost forbids the setting up within sight of them of small statues. Detached sculpture—the memorials of really great personages, or of really great events—should be on the grand scale, and their position and treatment should conform to a well-ordered system of town planning. It would be too much to hope that Mr. Burns's postponed Bill will give us a system deserving this description, so long as he maintains his present attitude towards the R.I.B.A., for in snubbing that body he has temporarily deprived himself of exactly the advice and assistance of which he is most conspicuously in need. A committee of taste would perhaps have prevented the juxtaposition of Whistler and Carlyle, who obviously have nothing in common except their bitter cynicism; but it was not likely that the L.C.C. would look a gift-horse in the mouth.

Technical Training.

Commenting upon a more or less inept proposal to teach handicrafts to schoolboys, Mr. H. Phillips Fletcher, F.R.I.B.A., commends the more admirable method that has been for fifteen years pursued in the Trades Training Schools of the Worshipful Companies of Carpenters, Joiners, Painter-Stainers, Plaisterers, Tylers, and Bricklayers, etc., who encourage men working in the different building trades to perfect themselves in their various crafts. "It appears to me," writes Mr. Fletcher, "that it is infinitely more desirable to improve the technique in the various trades, so that the skilled craftsman may be enabled to compete with the keen foreign competitor, than to flood the labour market with half-trained juvenile labour." He considers that the nation as a whole would benefit more by the improvement of the craftsmen already engaged in the various trades than by an increase of the large number of unemployed already depending on such trades. Although the prevailing idea that the increase of skill would decrease the number of the unemployed has always appeared to us to involve a certain degree of fallacy, there can be no question as to the need for greater skill among our craftsmen; and we think that Mr. Fletcher's praise of such institutions as are working on these lines is no more than just. What is wanted in education of all kinds, and especially, perhaps, in professional and technical education, is not extension, but intensification. The London County Council and the City and Guilds Institute seem to realise this in their exclusion from trade classes of those who are not regularly employed in the trades taught. Their practice in this respect may be the recognition of the principle, or it may be merely a concession to the trades unions.

Architect, Builder, and Contractor.

The architect, it would seem, is really going to be relieved of one of his most invidious duties. The organised builders are determined that he shall be helped out of the embarrassing situation that was thus described by Mr. Stephen Easten when presiding the other evening at the annual dinner of the Tyne and Blyth District Building Trades Federation: "At the present time they had conditions of contract that architects, solicitors, and town clerks considered only fools would sign. In his opinion, there was no more ridiculous position than that of employer or municipal body employing an architect who was their servant, and employing that architect to be the sole arbitrator in the event not only of disputes between the employer and the contractor, but in case of dispute between the architect and contractor." That, in substance, is what the learned judge observes when the case happens to come into court, only he usually expresses himself rather less rhetorically than could be either expected or desired in an after-dinner speech by an interested party. For the anomaly or iniquity, the contractor has only himself to blame. It is essentially his affair; and the reason why he has not until recently insisted on his rights is plain to see. If one contractor objected, it was a simple matter to find another who would consent. Now, however, the contractors are organised, and by working together instead of pulling against each other, are doing much to falsify the proverb that a man's worst foes are those of his own household. We are sure that in most cases the architect will be glad to get rid of so disagreeable a duty as that of which the National form of contract seeks to relieve him. His responsibilities are burdensome enough without it.

Kaiser as Architect.

There was a time when the study of architecture was as much a feature of polite education as was the study of "the uses of the globes." Whether or not the cult still lingers in the highest circles, it is a matter of course that the Emperor of Germany is keenly interested in the subject. Is he not omniscient? He has just shown that in architecture, as in most other matters, he holds strong opinions, and is not backward in asserting them. A new post office for Darmstadt has been designed by the architect of the Postal Department, and his plans, having been approved by the Grand Duke of Hesse, were laid before the Kaiser. The approval by the Grand Duke may have been purely perfunctory—as superficial and careless, perhaps, as Baron Bon Bülow's handling of a certain notorious document. But the Kaiser knows how to read a plan, and thinks he knows how to revise one. He revised this one. For some unexplained reason, the roof did not please him. He insisted on its being entirely changed. One might have supposed that the change would have been made without demur, and that any objections to it would have amounted to *lèse majesté*. But the Municipality of Darmstadt, backed by the Grand Duke of Hesse, has dared to assert that "the Kaiser's roof is impossible on aesthetic grounds," and "the central postal department has rejected it on technical grounds." The central postal department chose the better path. To impugn an emperor's technics may be tantamount to flattering him; to say that his roof is impossible on aesthetic grounds is to incur more risk than a prudent man will willingly run in an autocratic country. We cannot help feeling a certain degree of mild curiosity as to what is the matter with the emperor's roof. Can it be suspected that there is somewhere a tile loose?

Khartoum Cathedral.

That Khartoum, which but a few years ago was the haunt of bloodthirsty dervishes, who then and there did Gordon to death, should now be the site of a cathedral, is an astonishing token of the rapid and resistless march of civilisation. The cathedral, of which the chancel and transepts are now 20ft. above ground-level, has been designed by Mr. R. Weir Schultz, of London, who probably has not thought it necessary to follow the practice of the builders of old, who had to bear in mind that the church must be strong enough to withstand a siege. He is building it, however, of solid stone, doubtless imported, and we are wondering whether the purists who during the past summer raised such an outcry against the incongruous appearance of buildings that were not derived from the soil on which they were reared, will insist that Mr. Schultz ought to have used adobe bricks or homespun canvas! But it is perhaps unfair to push the theory to a logical conclusion, or, rather, to reduce it to absurdity. Within due limits, the contention is undoubtedly sound, and nobody will dispute such a self-evident proposition as that a building should never seem so foreign to its environment as was Sam Weller's "trout in a lime basket." But, no matter how cunningly Mr. Schultz may have adapted his design to the extraordinary circumstances, an Anglican cathedral in the midst of the Soudan is bound to look like an aggressive intrusion from the West. But it is a noteworthy adventure, and the appeal for funds made at a very influential meeting at the Mansion House the other day should ensure the scheme against the pinching privation which has been the ruin of so many ecclesiastical designs. Khartoum cathedral should symbolise power rather than poverty.

IMPORTANT NOTICE.

Next week's number of THE BUILDERS' JOURNAL, dated December 30th, will be a special issue, comprising a copiously illustrated account of English Architecture, a record of the year's doings, including the proceedings of the architectural and other institutions concerned with building, a large number of portraits, some of which are mounted on art paper, of men of note in the profession or the business of building, and other interesting features, besides the usual contents of the journal. The price of the special issue, which comprises about 300 pages, will be one shilling.

Curiosities of Tendering.—Some remarkable contrasts were shown in the tenders for the Lincoln water supply contracts. There were two sets of tenders the first, described as No. 1, being for the sinking of four bore holes at the source of supply at Elkesley, Nottinghamshire and eleven contractors offered to do this work at prices ranging from £22,900 down to £6,700. The tender selected was one from a London firm at £7,768. Contract No. 2 was for two trial bores near Dunham Bridge, on the Trent, for which fifteen tenders were sent in, and the highest was £388 2s., and the lowest £41 10s., while that accepted quoted £42 16s. In the first case the highest tender was three times the figure quoted by the lowest tenderer, and in the second case the highest tender was nine times the price quoted on the lowest tender.

GLAMORGAN COUNTY HALL COMPETITION.

The result of the assessor's award in this competition has been awaited with much interest; seeing that this is the most important public competition that has been held since the early spring. About 200 designs were received in response to the Council's invitation. This large number of competitors was doubtless principally due to the quiet state of the building trade, and the fact that no deposit was required for the particulars was possibly not without effect.

Considering the size of the proposed building, and the cost—about £45,000—the conditions were remarkably brief, not to say inadequate. Only one per cent. will be paid for quantity fees; and there are in the conditions a few clauses that tend to show that the Council or its officials will act as dictators, to the architects' disadvantage. This contingency may be averted in the written contract which the Council will prepare for the successful firm, provided the latter are legally guided and assert their professional rights.

In the conditions of competition, the following accommodation was required: Council hall (88 members and eight officers), two committee rooms, chairman's private retiring room, cloak rooms and conveniences for the use of the Council. The officers' departments included a series of rooms for the clerk of the County Council, accountant, education, surveyor, school architect, and medical officer of health. A proposed future chief constable's department had to be indicated in outline on the plans.

The site is almost ideal, being level and nearly square. It faces the Central Avenue and adjoins the new town hall and law courts. An oak tree on a portion of the site was the chief source of trouble to many competitors, as it had to be left untouched. When the superficial area required for the offices had been worked out, there arose a further problem for the architects. This is noticeable on all the premiated schemes—especially by the small areas and general compactness of the plans.

Taken as a whole, the competition cannot be reckoned an architectural success. We had hoped for a fresher and more original design for the first place—particularly from some of the rising young architects. As to the selection of the second premiated and of many of the honourably mentioned sets, one is at a loss to know the reasons for the assessor's choice. Many leading architects—including the designers of the monumental Town Hall adjoining the site at Cardiff—are known to have submitted carefully thought-out plans, and they are not even mentioned in the short leet. The Glamorgan County Council, however, have confirmed the report of the assessor, Mr. W. D. Caröe, of London. Only ten sets were on view. They include the three premiated designs, and the seven specially mentioned by the assessor.

The First Premiated Design.

The first position, with premium of £105, has been won by the plans of Messrs. E. Vincent Harris and Thos. A. Moodie, 8, New Square, Lincoln's Inn, London. The scheme shows a simple and well-arranged set of plans, suitable for the requirements of a County Council. It is clearly seen, on reference to the illustrations, that the position of the Council Chamber has naturally ruled the planning. There is also a considerable length of corridor, which does not show at first sight, owing to the private corridors being left white and the public ones coloured grey. In a few instances the corridors are indirectly and badly lighted. The isolation of the council suite from the offices of the clerk to the Council is cleverly worked out for such a limited site.

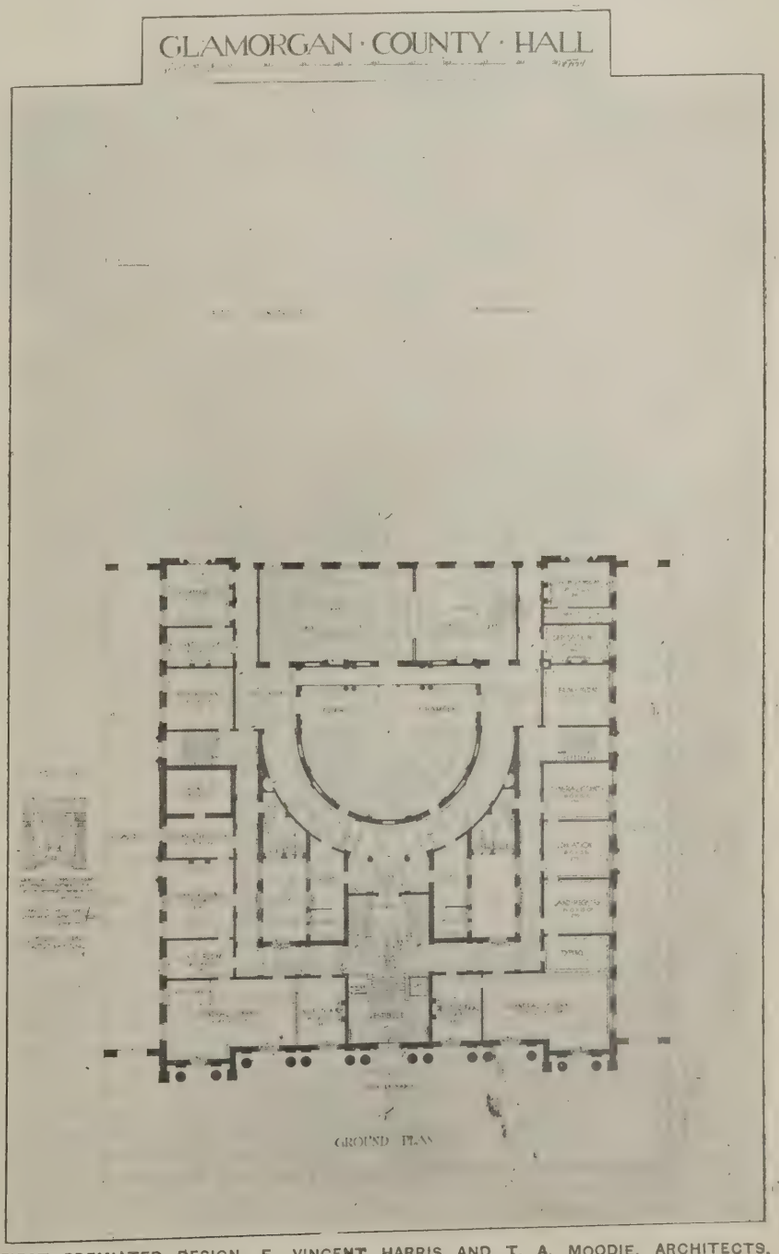
In the basement floor is the service kitchen, with clerk's dining-room, etc. This is not a satisfactory position for these rooms, especially when the council windows are directly over, on the next floor, and will be sure to receive any odour of cooking which escapes from the kitchen. A feature of the ground floor plan, which is open to improvement, is the arrangement of the vestibule and hall. The former requires a screen to intercept draughts, as the site is an open one, and much exposed.

The want of a lift enclosure in the hall will upset the architectural appearance. A few columns and pilasters, which should form part of the construction, will break up the monotonous look of the plan and sections, and at the same time permit of a dividing draught screen, swing doors, and clothing of lift between vestibule and hall.

On the first and second floors the simplicity of the plans is marred by the front rooms being cut into by the projecting features, and by the flues and lifts.

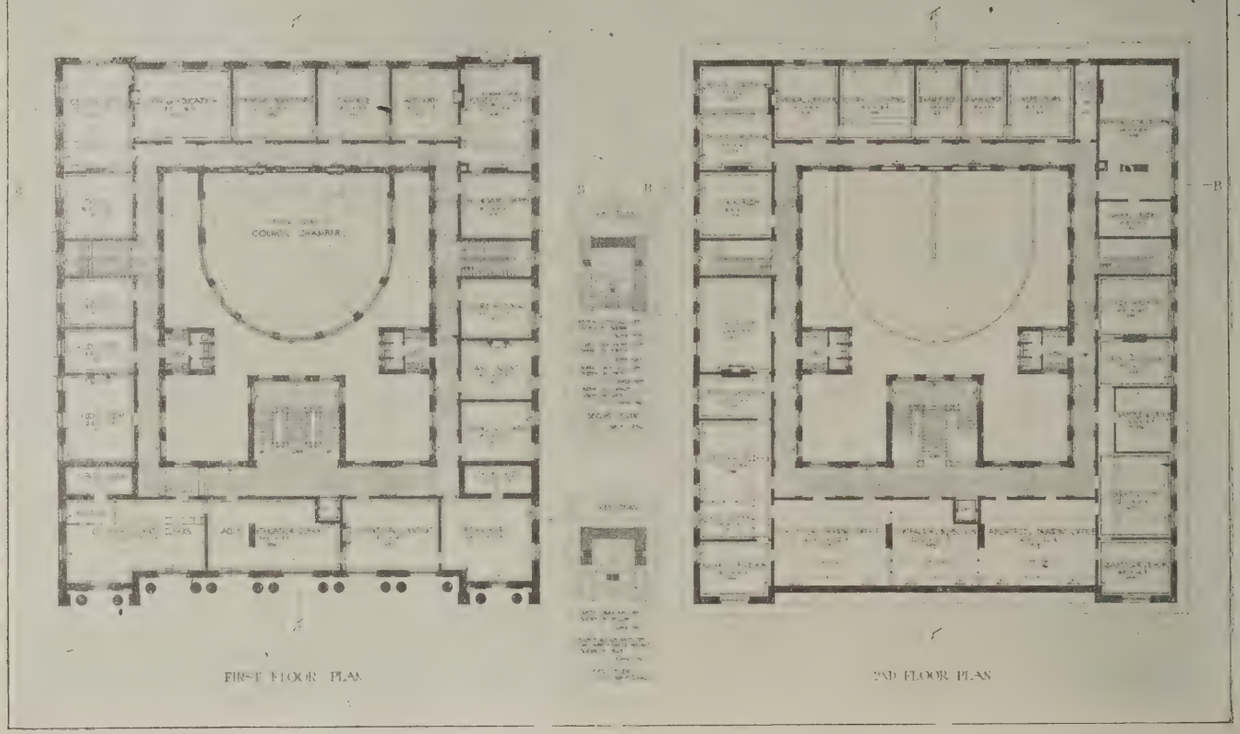
The architectural treatment of the elevations is rather severe for the size and purpose of the building. A richly detailed Corinthian colonnade faces the main avenue, with side elevations void of interest, and unbroken by any suitable feature. It is all very strictly pure and correct from a Classic point of view, but will look decidedly tame and uninspired when erected and compared with the adjoining buildings.

The half-inch drawing shows that the authors do not intend to be strikingly original in their detail. A comparison of the half-inch and the eighth scale front



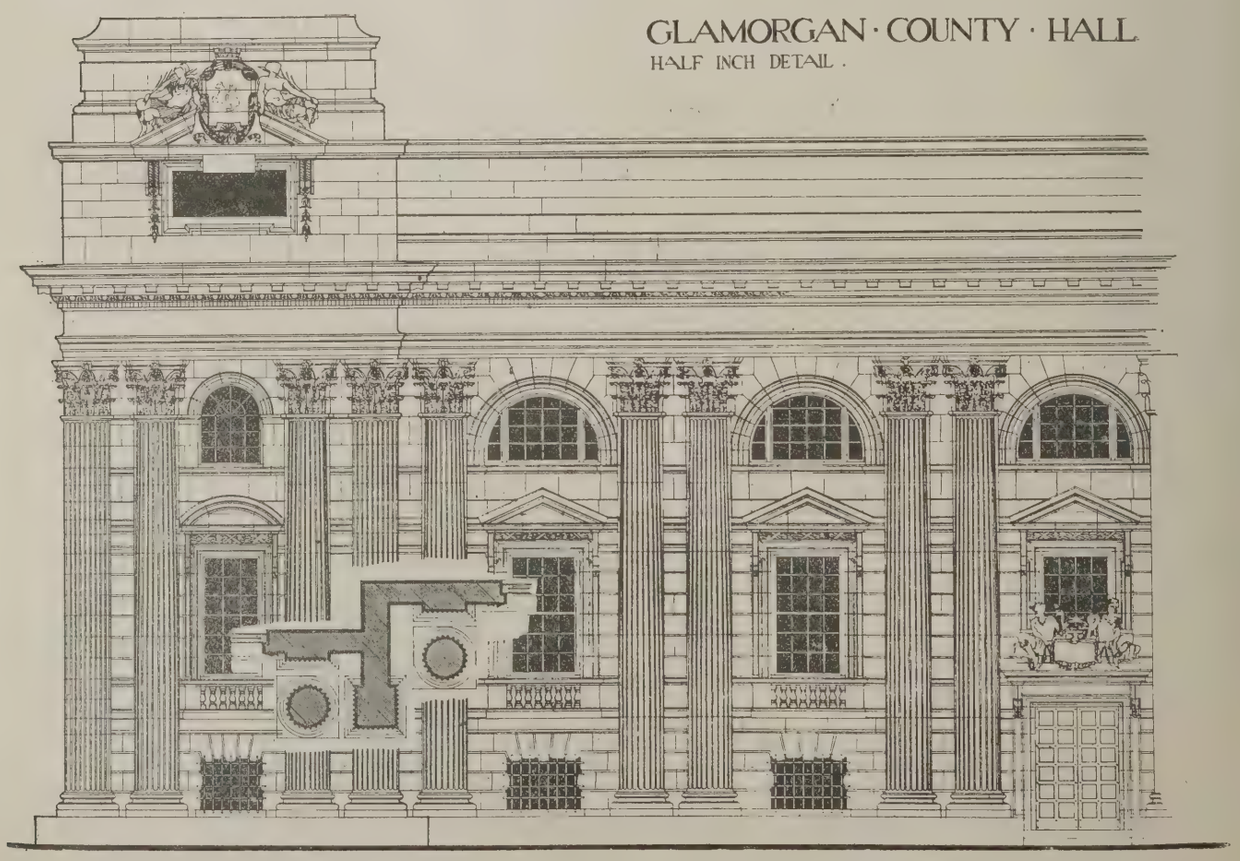
FIRST PREMIATED DESIGN. E. VINCENT HARRIS AND T. A. MOODIE, ARCHITECTS.

GLAMORGAN · COUNTY · HALL



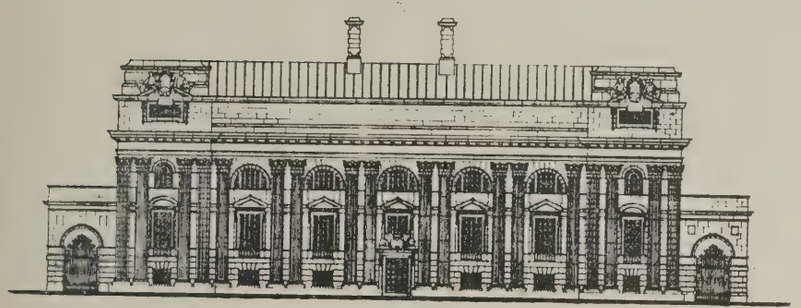
GLAMORGAN · COUNTY · HALL

HALF INCH DETAIL.



FIRST PREMIATED DESIGN. E. VINCENT HARRIS AND T. A MOODIE, ARCHITECTS.

GLAMORGAN · COUNTY · HALL



CENTRAL AVENUE ELEVATION.



SIDE ELEVATION



FIRST PREMIATED DESIGN. E. VINCENT HARRIS & T. A. MOODIE, ARCHITECTS.

DRILL YARD ELEVATION

elevation, shows that the building lacks a good heavy base. The columns in particular require more substantial plinth, or to be approached by a wide flight of steps.

The Second Premiated Design.

The plans of Messrs. Pearson and Milburn, 27, Chancery Lane, London, receive the second premium of £52 10s. A glance at the ground plan of this scheme reveals a simple solution of the problem by one central corridor, showing an I-shape of plan. This has been done to get over the question of light to the side windows, in case of buildings being erected at a later date, and interfering with the lighting of the offices.

Many competitors seriously hampered themselves in the planning by not treating this question broadly, as the site contained no right of light at the sides (general conditions); but answers to queries stated clearly that "it is not expected that very high buildings will be erected thereon."

The upper and lower floor plans of the second premiated design do not work out at all happily. The ground floor in this case is the principal plan, though there is no proper division between the Council and the ordinary offices. The single lift and small badly lighted service stairs will be well crowded when the 88 councillors are retiring. The idea of this main corridor has been most successful in the plans for Harrogate Municipal Buildings, and at Woolwich Town Hall, but did not suit this particular site.

Only two small stairs—apart from one passenger lift—connect the various floors. They are not placed in good positions, are inconvenient for access, and have borrowed lights, which in a public stair constitute an objection that should have condemned this plan.

The upper floor contains one long narrow area, and a few smaller ones, with a wasteful length of corridor. Many of the general offices are badly lighted—mostly through borrowed screen lights.

A tower is shown on the front elevation—which is not required, as the adjoining building has three—and the ornamental details are out of harmony with the best modern work. There is nothing remarkable about this set of drawings to warrant the placing of this design second, and a comparison with the third premiated set will prove our statement to be correct.

The Third Premiated Design.

This is the work of Mr. Henry T. Hare, 13, Hart Street, Bloomsbury Square, London, and receives a premium of £31 10s. This scheme is particularly well arranged—though the plan is not quite as clear and open as the first-placed. This inferiority is caused by the central corridor on the ground floor cutting up the plan too much. Seeing that the site is so narrow, and that it had already two side corridors, we fail to appreciate the use of this central corridor, as its width is not sufficient to give it the grandiose appearance necessary for a central and dignified approach to the council hall. The lavatory accommodation for the councillors could have been placed nearer the ante-room. On the upper floor the committee suite and corridor is broken up with the medical officer's department. We do not care for the circular staff stairs—the shape is bad enough without having them in one flight from floor to floor, with no half-landing.

Rather a large area of each floor plan is utilised by the main stairs and hall. Apart from these small drawbacks, the scheme shows no serious mistake, and, in our opinion runs the accepted design a close second, and should have occupied that position.

The elevations were undoubtedly the finest and most suitable on exhibition. This was one of the few designs where the side elevations were in harmony, and formed a connecting link with the main front, and remained interesting. A delicately rendered half-inch drawing completed an exceptionally fine scheme, which had no equal as far as external appearance was concerned.

Honourably Mentioned Designs.

The most successful among the remaining sets was Messrs. Russell and Cooper's. Unfortunately, the lighting of the ground floor corridors had been sacrificed to secure a cleverly arranged and well-lighted first floor plan. This was one of the few schemes with the council chamber to the front. All the drawings were well prepared, and the elevations were of markedly French feeling.

The finest set of drawings, from the point of view of draughtsmanship, were submitted by Mr. Robert Atkinson, Carshalton. Both the design and plan were cleverly composed, and were drawn in a striking manner.

Messrs. Warwick and Hall's scheme covered too much area, and the exterior was hardly suitable for the situation and surroundings.

A scheme which appeared to have erred in length of corridor, coupled with rather a high building, was that of Messrs. Crouch, Butler and Savage, of Birmingham. The only local set worth considering in the final selection was the work of Mr. Reginald S. Kirkby, of Cardiff, who

has been recently appointed architect to the Bradford corporation.

The design shown by A. Gilbert Scott was semi-domestic in treatment and very ecclesiastical in the proportions of the design, and quite incongruous for such a site. The position allotted to this scheme was fruitful of more adverse criticism than any other set, particularly by architects and competitors who had a special interest in visting the exhibition of drawings.

Notes on Competitions.

Poster for the Building Exhibition, 1909.

The premium of 100 guineas offered by Mr. H. Greville Montgomery M.P., for the best design for a poster in connection with next year's Building Trades Exhibition at Olympia, has been awarded to Mr. George Denham, Kensington, W., an architectural student at the Royal College of Art. The adjudicators, Mr. Ernest George, P.R.I.B.A., Sir Aston Webb, R.A., and Sir George Frampton, R.A., were unanimous in their award. Some 200 designs were sent in, and they will be exhibited at the Building Trades Exhibition, which is open from April 17th to May 1st. The successful design is illustrated on page 502.

South Bank-in-Normanby New Council Offices, etc.

The Council of the Royal Institute of British Architects has issued a notice to the members requesting them to refrain from competing in this competition. We drew attention to the offending clause in the conditions in our issue of December 2nd.

The Glamorgan County Hall.

This competition is dealt with on another page.

Brighouse Secondary School.

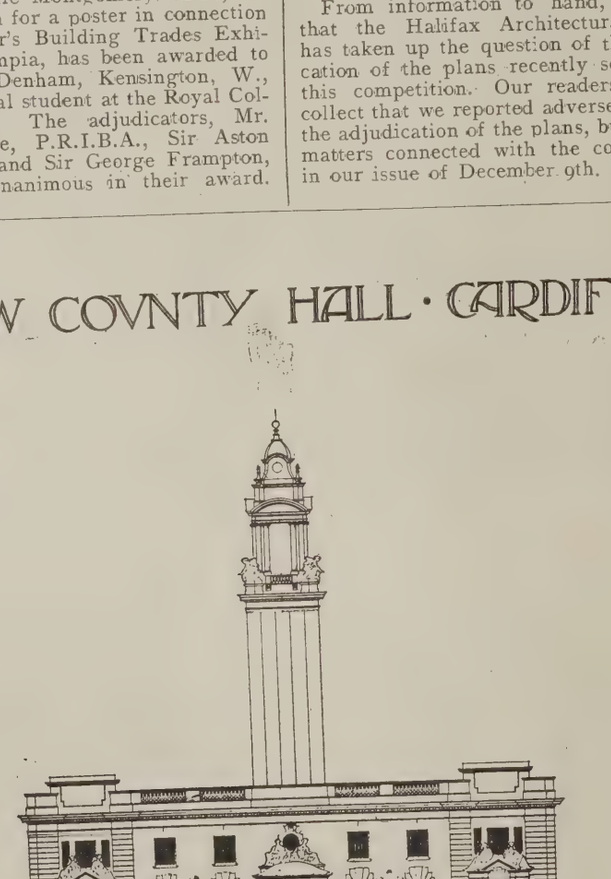
From information to hand, we learn that the Halifax Architectural Society has taken up the question of the adjudication of the plans recently sent in for this competition. Our readers will recollect that we reported adversely, not on the adjudication of the plans, but on other matters connected with the competition, in our issue of December 9th. Mr. C. E. Fox, the hon. secretary of the Halifax Society, has written a letter to the Governors in which he states: "We feel it necessary to lodge a protest on the ground that the selected design does not comply with the conditions, more particularly as to the accommodation provided for in class rooms. This was stated to be 150, whereas 125 is the number provided for in the successful design. There are other irregularities, but this appears to be the chief. The Governors evidently fail to realise that the fifteen sets of drawings submitted represent weeks of careful thought and work, and an actual cost of from £15 to £20 each set, or we think they would not have arrived at such a hasty conclusion, and thus what the competitors regard as a grave injustice would have been avoided." To this letter Mr. John Reeve, clerk to the Governors, has replied pointing out that the Governors regret that there seems to have been some misapprehension with reference to the accommodation to be provided for the class rooms. The assessor was supplied with the block plan and particulars and conditions supplied to all the competing architects for his inspection prior to the examination of the plans, and the Governors were informed by him that the architects who had submitted designs had complied with all the conditions and regulations sent to the competing architects. Meanwhile, our report is with the Competitions Committee of the Royal Institute.

Middlesbrough Branch Library.

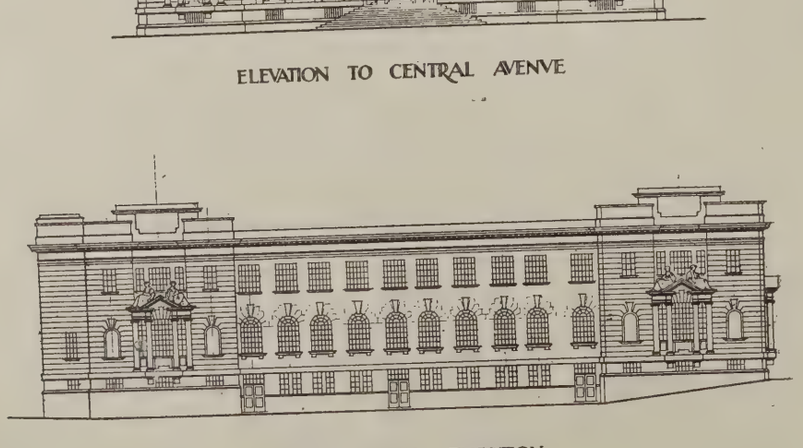
We draw attention to this new competition, and to the satisfactory provision for returning the deposit to architects who decide, after inspecting the conditions not to compete.

6

NEW COUNTY HALL · CARDIFF



ELEVATION TO CENTRAL AVENUE



SOUTH EAST ELEVATION

SECOND PREMIATED DESIGN. PEARSON & MILBURN, ARCHITECTS.

LIST OF COMPETITIONS OPEN.

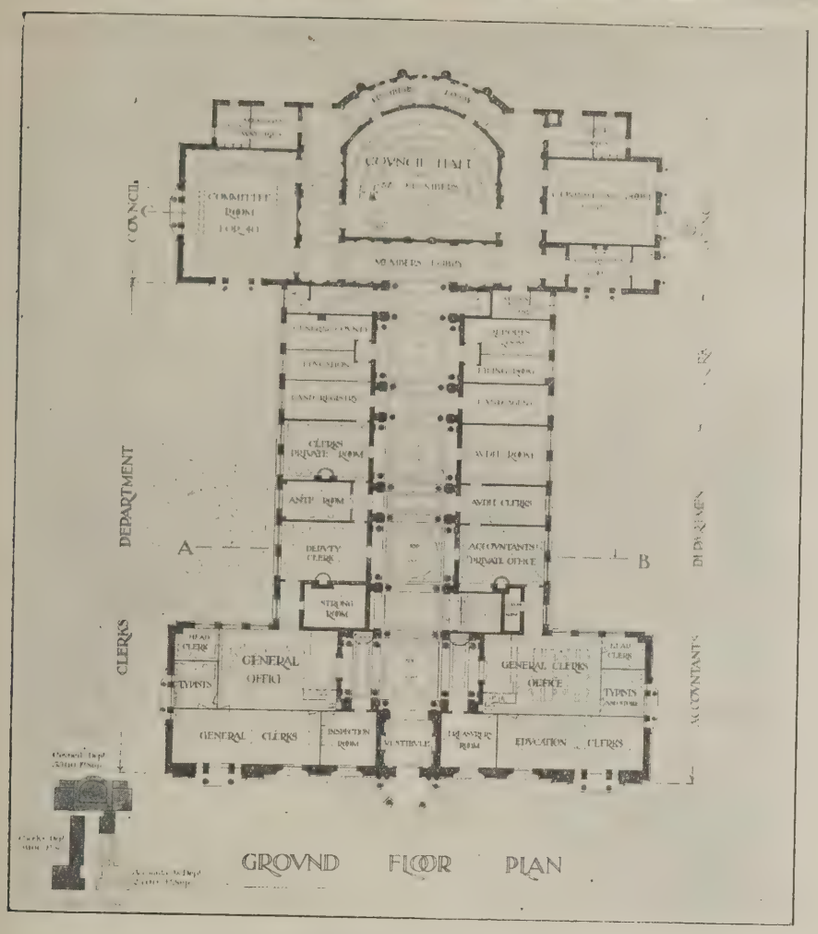
Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 31	*CORNWALL COUNTY OFFICES. Designs and *Estimates* invited Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from L. Cowlard, Clerk to County Council Bodmin. Deposit. £1 1s.
1909 Mar. 17	NEW OFFICES FOR THE STANLEY U.D.C., DURHAM. Cost £3,5 Premiums £30, £20 and £10. Conditions, etc., to be obtained from G. Ridley, Clerk to the Council Stanley S.O., Co. Durham.
No date.	†SOUTH BANK-IN-NORMANBY Town Hall, Council Offices, etc., for the Urban District Council.
No date.	SWINTON. New Schools in Crow well Road for the Swinton and Pe dlebury U.D.C. Limited to Architects having offices within ten mi of Manchester. Premiums of £50, £ and £10. Instructions may be tained by letter on or before Nove ber 5th, to W.T. Postlethwaite, Coun Offices, Swinton, Manchester.
No date.	MIDDLESBROUGH. New Libra in Dunning Road and Grange Ro East Middlesborough. Premiu £50, £30 and £20. Particulars conditions on application to Alf Sockett, Town Clerk, Municip Buildings, Middlesbrough. Depo £2 2s., which will be refunded if conditions are returned within days.

** This competition has been unfavourably reported upon by Correspondents.*

†The R.I.B.A. Council has requested Members to refrain from competing.

Signs of a revival of the slate industry are reported from Carnarvonshire. Additional men are being taken on at the Penrhyn Quarries, where work is stated to be much brisker than for a long time past.



GLAMORGAN COUNTY HALL.
[THIRD PREMIATED DESIGN. HENRY T. HARE, ARCHITECT.

Correspondence.

The Proposed Guild of Architects' Assistants.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—With reference to Mr. Dixon's salient article on the above subject, allow me to endorse warmly his remarks. The condition of the architectural assistant of to-day constitutes a real danger to the profession, and the subject cannot receive too much attention. Assistants as a class are, I am afraid, steadily going down, and that means that the whole profession is in danger of also sinking. The assistant of to-day may be the practitioner of to-morrow, and if he is not up to the standard, he will certainly be a source of weakness to the profession. Again, an assistant is not a servant, and principals prefer to have a staff of men with whom out of office hours they could meet on equal terms, and, indeed, in the office also, bar the fact that one is doing work for the other. I mean there should be no other difference, and as the work is paid for, I do not see that this difference amounts to much.

With regard to experience, as far as chief assistants are concerned, they often know as much as their principals. Now this ideal state of fraternity between principals and assistants, both working to one end—viz., the furtherance of art, cannot possibly be maintained on the present salaries and under the conditions which commonly prevail. To work with an architect who is wedded to his profession is by no means servile, any more than it is for art students to study under a master. Unfortunately, to preserve such a high standard amongst assistants is at present impossible, but by the formation of a guild such as has been suggested, a great deal might be done with this object.

Mr. Dixon does not tell us how the Guild would be formed, but I think the time is ripe for going into this question. No doubt there are different ways in which the Guild could be formed, but I am inclined to think that perhaps the simplest way would be to do it through insurance. Signatures of assistants willing to take policies would first have to be obtained to form the Guld. Then the Guild and an insurance society (to be chosen) would enter into a partnership of not less than five years. The insurance society would undertake to issue policies to assistants only through the Guild, and at reduced rates, and the Guild would undertake only to do insurance business through that society. Thus, assistants would receive their policies, and pay their premiums through the Guild in the same way as ordinary policy holders do through insurance agents, and in a similar manner the Guild would receive the commission which would be its source of income. Both assistants and insurance company would reap the benefit of the Guild, and the Guild would be so much stronger for the double support. With regard to insurance, this would include unemployed insurance, life, accident, sickness, and, in fact, every class which assistants would require. Returns would have to be filled in, stating age, experience, testimonials, salary, private means, married or single, etc. Pupils, of course, would not be included. The premiums would be based on the above particulars. With regard to the work of the Guild; this would be directed towards the uplifting and protection of assistants, and would deal with all matters connected with their welfare—salaries, overtime, holidays, employment register, lending library, exchange and mart, home employment, sketching club, etc., etc. Arrangements might even be made, at any rate, in town, for assistants' dining places at special rates. This might be developed into a boarding place as well, and finally into a properly equipped club, and form a rendezvous for provincial assistants when in town.

The Guild then would look after assistants in every way, and those needing help would be kept from going down. The standard of the whole class would be raised, commercialism would gradually have to give way, and architecture take the leading place in the profession.

A REGULAR READER.

Bedfordshire.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I would be willing to join the above if a large number of other assistants do likewise. I am a pupil, and expect this Guild will include such. The Guild would have much to do to see that the pupil who pays a premium gets his proper experience, and is treated as a pupil, not as a clerk or office boy. Pupils could agree amongst themselves as to rates for overtime, according to the status of the student.

I don't like the idea of relief to unemployed. No trade union does, and I for one certainly would not join under these conditions. It is generally the fellow's own fault; but assistants leaving their masters on advice of Guild, for incomplete salaries, and other reasons for which the Guild is formed, would be entitled to receive strike pay until he has procured another job. I hope this Guild of Assistants will, when the present generation of assistants set up as architects, form an Architects' Union. This Guild of Architects' Assistants will, of course, as it gets stronger, be stringent in its rules. I mean not like the R.I.B.A., making a scale of fees and not keeping to them, but members breaking rules to be properly boycotted, and union men to refuse to work with non-union men, and also architects who do not comply with the rules of the R.I.B.A. and officials. The Guild could insure members' instruments, etc., from loss by fire and theft. I think that the first 800 members who subscribe should, if the union goes ahead, be exempt from the next year's subscription if possible, as such an inducement will draw I think, a lot of members when a London committee, etc., is called. Branch committees will, of course, be held at Manchester, etc.

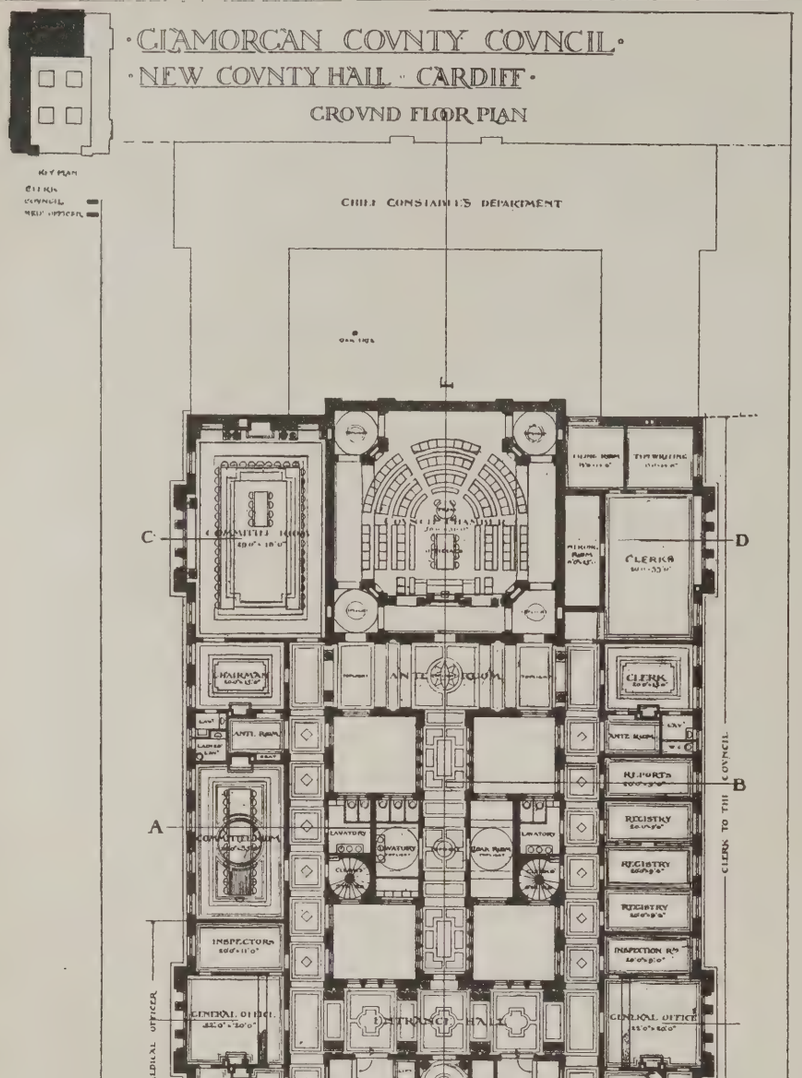
I suppose that testimonials, etc., will be forthcoming as to the bona-fides of the Secretary, etc., and I think as architects will try to crush this union, that its resolutions shall be kept secret, and only issued to members.

RICHARD ROSTRON.

Southport.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—We, the undersigned, are desirous of expressing our keen appreciation of the suggested Guild for Architectural Assistants, and we respectfully tender our



THIRD PREMIATED DESIGN. HENRY T. HARE, ARCHITECT.

most sincere thanks to Mr. Dixon for the great interest he has taken in this matter. If architectural assistants, as a body, would only take the same interest as your correspondent, the suggested Guild would shortly become an accomplished fact. If architecture is to be a livin reality and not a ghost of by-gone ages, surely this is one of the best means of raising the standard of architectural work. It is only by the production of work that is sound, thoughtful, and artistic, that architecture can ever gain the attention of the public, and claim the same interest and admiration as music, the drama, and literature.
—ALAN KETTLE, C. TERRY PLEDGE, A. S. BAGSHAW, A. J. JOHNSON, W. FRASER GRANGER.
London, S.E.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In reply to the request by "Assistant" (in the issue of THE BUILDERS' JOURNAL for December 9th), with respect to the formation of an "Architects' Assistants' Guild," I shall be very willing to unite in forming such.

W. C. AUTCLIFF.
5, Clonmel Road, Fulham, S.W.

The presentation of prizes to students of the Trades Training School, Great Titchfield Street, which is supported by the City Guilds of Carpenters, Joiners, Painters, Plaisterers, Tylers, and Bricklayers, etc., was made by Sir Guilford Molesworth at Carpenters' Hall, E.C. For the Banister-Fletcher medal for the best craftsmen in the school the competition resulted in a tie between the joiners and the smiths, who each received a medal. This year, for the first time, the Carpenters' Company had held an examination in Manchester.

We regret to notice the death of Mr. Robert Hobart for many years editor of our esteemed comtemporary "The Architect." Mr. Hobart was born in Dublin in 1831.

THE TOWN PLANNING OF THE ROMANS: CONSTANTINOPLE

The Augustæum or forum was the centre of civic life, a huge open space about a thousand feet long by three hundred, broad-paved with marble, adorned with statues, and surrounded by stately buildings. On the eastern side of the Augustæum, adjoining the wall of the emperor's palace, were three large public buildings connected by double colonnades, comprising (1) the magnificent Baths of Zeuxippus, which were constructed after the old Roman manner; (2) the Senate House, said to have been modelled upon that of Rome; and (3) the Bishop's palace, which was known as the *Trioline* on account of its three flights of entrance steps. The great Hippodrome, about 900 ft. long and 450 ft. in breadth, contained thousands of marble seats copied from those of the Temple of Bacchus at Athens, and occupied almost the whole of the western side of the Augustæum. In it was the usual "spina" (or central divisional wall), about 4 ft. in height, round which the chariots ran, extending the entire length of the building and ornamented with three monuments. Although the walls of the Hippodrome have long since disappeared these three memorials of the foundation of the city are still to be seen in the open space (known as the Atmeidan or place of horses), in the Turkish city of to-day. The oldest of the monuments which thus formerly adorned the Hippodrome was an Egyptian obelisk, covered with the usual hieroglyphics. Another, the famous column of the three-headed brazen serpent, was also of considerable antiquity, as it was dedicated at Delphi to Apollo by Pausanius and the victorious Greeks in 479 B.C. after the battle of Platæa. The third monument, a square bronze column, served to mark the goal of the chariot races. Ranged along the eastern wall of the Hippodrome, and thus visible from the Forum, were various temples and groups of statuary, amongst which was a lofty column of porphyry brought from Hierapolis and originally surmounted by a bronze figure of Apollo, which was afterwards transformed into a representation of Constantine. Northward of the Hippodrome, towards the Marmora—situated on rising ground, was a church planned in the form of a Basilica, and dedicated, by the founder of the city, to the Divine Wisdom (Hagia Sophia)—an earlier and much less imposing building than the famous domed structure by which it was eventually replaced. Partly destroyed by fire in the fifth century, and restored and again burnt in the following century, nothing, save the name, now remains of Constantine's building. Other churches, founded by the emperor, and known later as those of the Divine Peace, *Hagia Irene*, and the Holy Resurrection, were, probably, originally copies of well-known temples in Rome, because at the time of their erection it is possible that the vacillating Constantine had not yet finally decided to throw in his lot with his Christian subjects, although two years later, when his new capital was inaugurated, it would appear, from the fact that the ceremonial was performed exclusively by Christian ecclesiastics, that he had then definitely done so. The stately buildings thus briefly described were situated in the heart of the city, the outskirts of which, extending for miles north and west of the Augustæum, were covered with many



The Large Hall on the Second Floor.



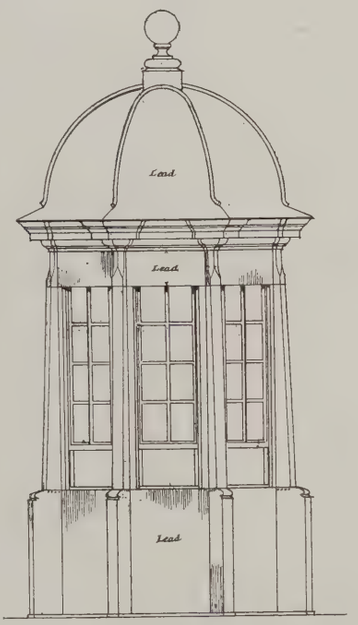
The Entrance Hall.

THE INSTITUTE OF ENGINEERS AND SHIPBUILDERS, GLASGOW. JOHN B. WILSON & SON, ARCHITECTS.

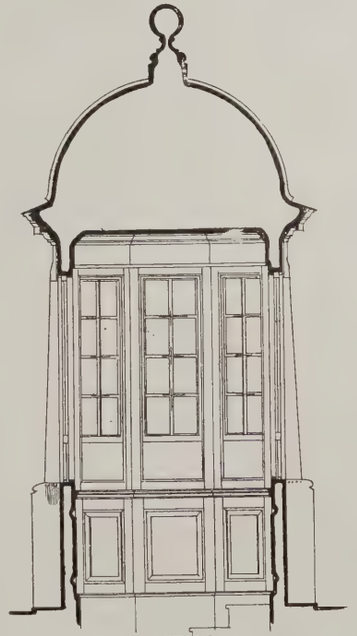
EAGLE HOVSE MITCHAM

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Scale of Feet.

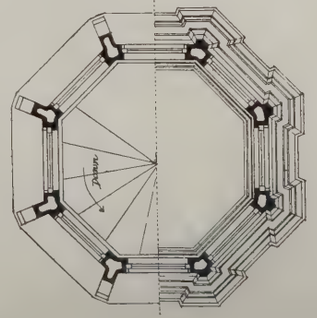


ELEVATION

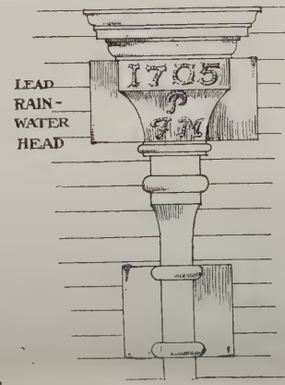


SECTION

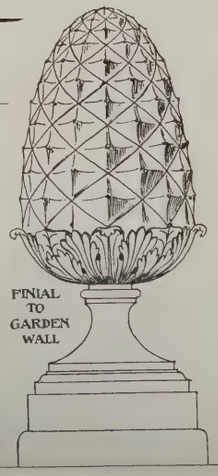
DETAIL OF LANTERN



HALF PLAN HALF PLAN LOOKING VP

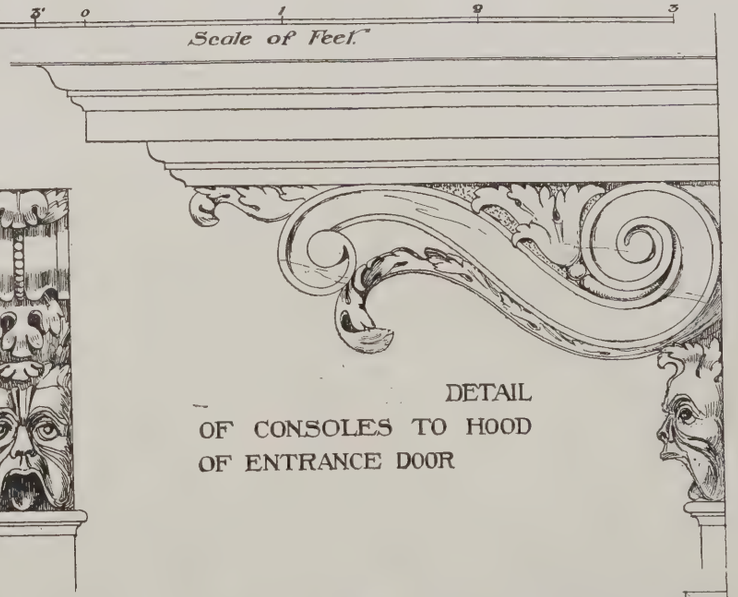


LEAD RAIN-WATER HEAD

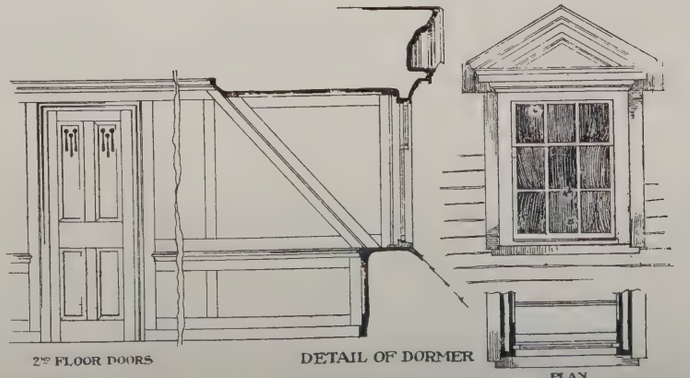


FINIAL TO GARDEN WALL





DETAIL OF CONSOLES TO HOOD OF ENTRANCE DOOR



2ND FLOOR DOORS DETAIL OF DORMER PLAN

123630 1 2 3 4 5 6 7 8 9 10

Measured and Drawn





Photos : Darwin Photo Co.

MEASURED DRAWINGS. No. 3. EAGLE HOUSE, LONDON ROAD, MITCHAM, SURREY (CONTINUED). CUPOLA AND CONSOLES TO ENTRANCE DOORWAY. MEASURED BY JOSEPH SEDDON AND L. F. JONES. DRAWN BY JOSEPH SEDDON.

posing character. Public granaries lined the quays, and the Golden Gate, near which was placed an equestrian statue of Constantine, marked the termination of the main road from the west; and this and other chief streets of the Stamboul of to-day follow the lines of Constantine's ancient city. Most of the buildings of Constantinople were of white stone, but everywhere a very general use of marble was noticeable. Contributions, from the whole empire, were levied for the adornment of the capital, and the cities of Greece and Asia Minor, and those of the Islands of the Archipelago, were ransacked to provide statues and other works of art. Encircled by walls of great solidity and strength, and otherwise fortified from attacks either by land or sea, the city might well be deemed almost impregnable, but, to enable it to stand a lengthy siege, underground and other tanks for the storage of immense volumes of water were provided.

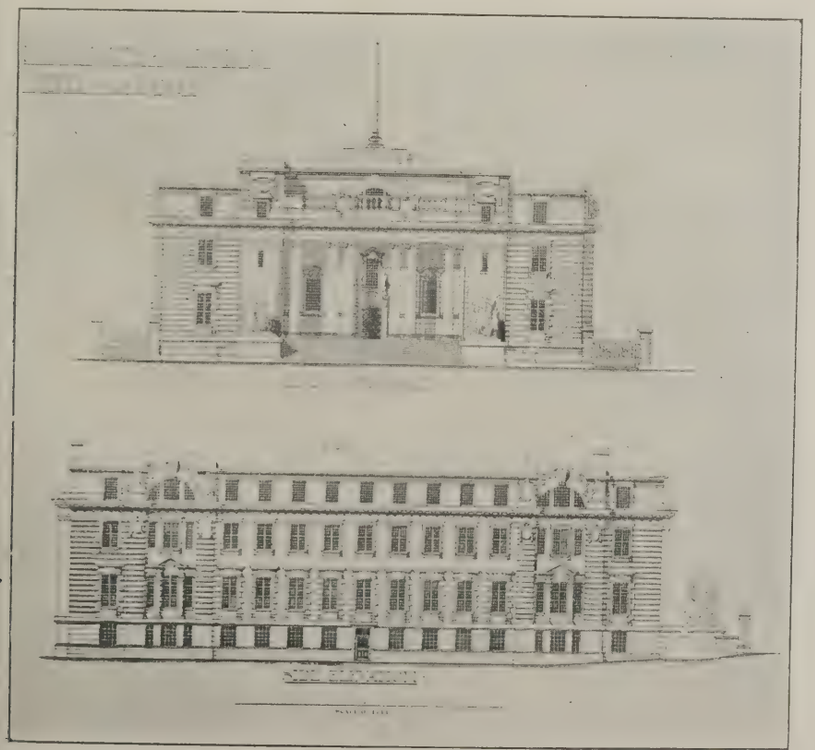
Our Plate.

Premises for the Scottish Institution of Engineers and Shipbuilders, Glasgow.

This new building, designed by Messrs. John B. Wilson and Son, of Glasgow, has now been completed. The design was selected in competition, the engineering work, such as the lighting, fitting, heating, and ventilation, being carried out under the direction of special committees of the Institution. On the first floor are a large smoking-room, two meeting rooms, small meeting hall, small Council room, and coffee room with servery. And on the second floor are the large meeting hall illustrated on our centre plate, another meeting room, ante-room, large Council room and cloak room.

Measured Drawings, No. 3, Eagle House, Mitcham, Surrey, continued.

We give a third plate of details of this house, showing the cupola and the console brackets of the hood over the doorway.



GLAMORGAN COUNTY HALL THIRD PREMIATED DESIGN. HENRY T. HARE, ARCHITECT.

THE CONCRETE INSTITUTE.

About a hundred gentlemen attended the second general meeting of the Concrete Institute, held last Thursday at half-past four p.m., in the Theatre of the Royal United Service Institute, Whitehall, London. The chair was taken by Mr. Edwin O. Sachs, F.R.S.Ed., who was supported on the rostrum by Mr. Wm. Dunn, F.R.I.B.A., Mr. Wells, the hon. treasurer, and Mr. H. Kempton Dyson, secretary. Among those present in the body of the theatre were the following:—Professor Beresford Pite, Messrs. R. W. Vawdrey, G. C. Workman, H. K. Bamber, W. G. Perkins, J. Munro, H. B. Gates, Chas. F. Marsh, M.I.C.E., J. Ambrose.

The Hon. Treasurer having read the notice convening the meeting,

The Chairman said he would like to make a pleasant communication. At the last meeting he informed them that the Concrete Institute had just touched 300 members, and they had just touched 400 members that day, an increase of 100 between the two meetings. Continuing, he said: In introducing to you Mr. William Dunn as the reader of to-day's paper on "The Examination of Designs for Reinforced Concrete Work," I would like to say that I consider that the Institute is to be congratulated upon having this particular question dealt with by the chairman of the Institute's Science Standing Committee, who not only ranks as a leading exponent on all questions relating to reinforced concrete, but who has had considerable personal experience in the examination of designs on behalf of a certain Government department. It has been an open secret that Mr. Dunn was one of the primary movers some years back in obtaining for us the Special Committee on Reinforced Concrete, which was formed by the Royal Institute of British Architects, and was so ably presided over by Sir Henry Tanner. Whenever there has been good work to be done, either in the advancement of reinforced concrete or its reasonable control, Mr. Dunn has been to the fore, and only in the past weeks several of us have seen him actively engaged on the question of the regulation of the loan periods as granted by the Local Government Board on reinforced concrete structures, and also on the proposed new enactments for the regulation of buildings in the Metropolis under the London Building Act. There can be no doubt that Mr. Dunn's paper is most apropos at the present juncture, for public authorities of all kinds and descriptions are considering the principles upon which designs for reinforced concrete work are to be examined and controlled. We have such a public authority as H.M. Office of Works, where the Architect-in-Chief naturally desires that the designs of buildings erected under his supervision shall have the extra check of special examination. We have an authority like the Local Government Board, which will, in the future, have to examine designs on reinforced concrete in a systematic manner and on some recognised principle, and will eventually have to lay down a procedure for such examination. We have the London County Council that proposes to have new regulations for reinforced concrete structures, and will have to formulate some rapid and practical system by which, both at its central office and in the offices of the district surveyors, the reinforced concrete schemes can be examined on standard lines. What holds good for London will shortly be applicable to cities like Liverpool and Manchester, and everywhere some effort must be made to systematise the examination of designs for reinforced concrete work. If there is one point I would like to bring out in introducing Mr. Dunn it is that the title of his paper is a precise one. He is not speaking to any considerable extent of the supervision of the work in course of erection, its testing after completion, or the pros. and cons. of individual materials, or systems of design. It is thus also to be hoped that the meeting will, in its discussion, limit its commentaries precisely to those points with which Mr. Dunn is dealing, and not on this occasion deal with the more general aspects of reinforced concrete. This question of the examination of designs is a very important one in itself, and affords ample scope for discussion. I will now call upon Mr. Dunn to read his paper.

The Examination of Designs for Reinforced Concrete Work.

After a few introductory remarks, Mr. Dunn called attention to the fact that for very many years back engineers and architects had been accustomed to use concrete strengthened with steel or iron, but in an elementary way. Thanks to the labours of certain enthusiasts who, foreseeing the great future before reinforced concrete, bit by bit advanced the theory and practice of it to the present scientific adaptations of means to the end which was now common property, we had passed that elementary stage. These enthusiasts, generally speaking, were both designers and executants; were not professional men, but men with fine constructive instincts, whose faith in their own power was attested by their carrying out their own works. As the importance of their undertakings increased, the reinforced concrete firms called in to their aid professional engineers to prepare de-



THIRD PREMIATED DESIGN. HENRY T. HARE ARCHITECT.

signs for the works tendered for, submitting design and tender together in a manner more usual in American than English practice.

Specialists and Systems.

As a result, almost all the work of design as well as construction fell largely into the hands of specialist firms, claiming more or less patent rights either for the whole system of construction or for some special details of it. These claims, while no doubt enlarging the practice of the individual firms, naturally operated in restraining ordinary designers from attempting work in reinforced concrete with a possible legal dispute in the background, and though it is now generally admitted that there are no exclusive rights in the ordinary combinations of steel and concrete, but only in some particular details which Mr. Dunn would not attempt to define, the lecturer stated it was still the rule rather than the exception for those desirous of using reinforced concrete to invite designs and tenders from the specialist firms—the designs, of course, based on general lines—instead of, as usual in other branches of work, employing an engineer or architect to prepare the designs and conditions, and soliciting tenders thereon. There was a great deal to be said in favour of this arrangement. It was reasonable to suppose that those who spent their whole lives in one class of work understood it better than those whose energies were distributed over several classes, and that efficiency and economy were both served.

Competitive Designs.

If the work in question was tendered for by one firm only, the owners were largely in the hands of that firm as to price, and, though the lecturer disclaimed the slightest reflection on the contractor, it was but natural that he should prefer there should be no other tenderer for the same reason that the owner objects to it, namely, that the one was likely to pay and the other to receive a much better price. If, however, several firms were invited to tender, the designs submitted varied in regard to the method of construction, the reserve of strength, etc., and a fair competition and just choice between them became difficult. How were they, he asked, to decide if these designs were properly conceived, might safely be erected, and complied with the requirements laid down? Whatever the structure might be, the general lines of it were no doubt determined by those inviting tenders, and the questions to be considered were primarily questions of strength and durability.

Rules and Methods of Calculation.

Fortunately, we had now an authoritative pronouncement on the general methods of calculation to be adopted. Empirical and semi-empirical rules were no longer recognised, since we had for our guidance rules based on scientific reasoning, and giving results closely confirmed by experiment.

Mr. Dunn thought the rules laid down by the Royal Institute of British Architects' Committee on Reinforced Concrete undoubtedly formed a standard from which we ought not to depart without good reason.

Debatable Points.

In going through a set of drawings there were always debatable points calling for the exercise of judgment, cases in which we could not say definitely how the loads were borne. In these, Mr. Dunn stated, he would always discuss the matter with the designer, and give his views full weight before forming his own opinion. We could not, of course, agree that any patent system abrogated the ordinary laws of mechanics, and must take care that when they had to make assumptions as to the lines of action of loads or stresses, those assumptions were on the side of safety and logically followed out. There were always differences in design for which we might have a legitimate preference; one design differing from another in being much more scientific in conception or neater in detail according to the skill of its author. But we must be careful to keep our preferences from becoming prejudices. The position of the consulting engineer who had to examine and report or decide on competitive designs and estimates was one demanding considerable tact and commonsense as well as professional qualifications. It should be considered how those designs had been prepared; made not for actual work in hand, but only for possible work, with insufficient data and necessarily very brief study of the project, it was often a matter of wonder to the lecturer how such good designs were produced under the conditions.

Drawings Submitted with Tenders.

The drawings submitted with tenders were generally meagre, and the serious difficulties of the undertaking commonly left for future consideration. Out of these projects, that of the lowest tenderer was selected for consideration, and the architect or engineer must satisfy himself as to the practicability of the design and as to its compliance with the conditions laid

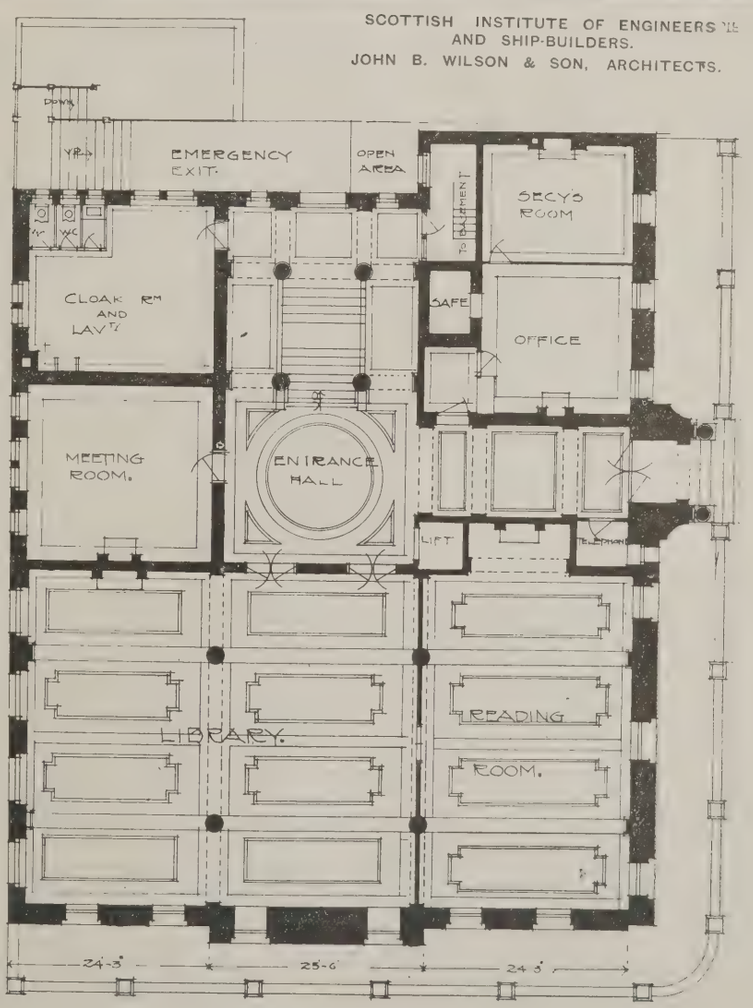
down before recommending it for acceptance. If he had not sufficient experience of this class of work, he might call in a consulting engineer who had made it a special study. Was the engineer to require all the drawings, details, and calculations necessary for him to form an opinion on every point on recommending a tender for acceptance? Mr. Dunn asked. That would entail a very large amount of labour on the part of the contractor, which might be all thrown away. But unless the engineer had had these full details before him, unless he had carefully recalculated nearly every structural part to justify a particular instead of a general approval, there was room for serious dispute. Though the responsibility for the strength of the work was in every contract expressly put on the contractor, the engineer had a large moral responsibility that his opinion should be so carefully based on actual investigation as to be of genuine value. He had heard many complaints from reinforced concrete firms of the unnecessary loss entailed on them by calling for detailed drawings to accompany tenders when the latter were asked for any particular piece of work. Of course, the contractor must usually prepare some rough drawings before tendering, but the expense of making fair copies was very considerable, and it might be possible to reduce this by asking only outline drawings, reserving the right to require details before acceptance of tender. The cost of the drawings was a large part of the expense in reinforced concrete, and when contractors have to charge the cost of the preparation of many unsuccessful schemes on a few which are successful, the work is seriously handicapped. The reinforced firms could do something to economise labour if they required the necessary outlines to be supplied and did not supply details until after the receipt of the tenders, when the lowest tenderers, or the favoured tenderers, could submit the full scheme for consideration of the consulting engineer. If in the specification upon which tenders were invited the contractors were distinctly informed that the work was to be in accordance with the recommendation of the British Committee's Report, the stresses to be restricted to those given therein, and the drawings and calculations to be submitted to an expert for verification, the contractors would have no reason to complain if a design were found not to comply with the conditions. What they did complain of was that the competition system virtually tempts them to cut down the works to the lowest limit, and unless some proper examinaion was made the man who had honestly complied with the requirements might be at a serious disadvantage. If all the requirements were clear at the start they all worked on a fair basis.

Points to be Observed in Checking Calculations.

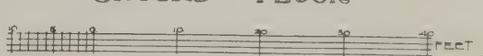
In checking calculations the dead weight of the structure was a more important element than in other constructions, and should be carefully computed, not guessed at, and allowed for as part of the loading. The lecturer had sometimes found serious deficiencies in strength due to this want of precaution. The amount allowed as a negative moment for fixing at the end of beams should be carefully considered. Mr. Dunn said he had had end fixing claimed for beams freely supported, but all such errors were so capable of demonstration that disputes could be avoided. We should remember always that all our results depend on our as-



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sumptions, as a syllogism depends on the premises. If these were wrong, correct reaoning on defective premises was a positive danger.

Superintendence.

Suppose, however, that the design had been carefully checked, initial difficulties got over, and the work begun, the superintendence of the work was merely the transference of their anxieties into another field. He was very strongly of the opinion that no work of importance should be entrusted to men without experience; our best safeguard against defective work was undoubtedly the skill, experience, and honesty of the contractor. No engineer or architect, unless he spends all his time during the execution of the work in actual and constant supervision, can secure his employer against dangerous errors on the part of the workman. In steel construction we can examine and measure every part after it is up; not so in reinforced concrete work. Once the concrete is laid we cannot tell but by cutting into it whether there are six 1in. rods or two 3in. rods inside a beam or pillar, or whether these are 2in. or 4 from the surface. To see that the drawings are actually carried out requires a conscientious scrutiny and attention every minute of the time the work is being done.

Failures.

Notwithstanding all our care and forethought, we had sometimes trouble arising from obscure causes. All work in reinforced concrete was looked on with jealous eyes by those who were not in favour of it. Every failure was magnified, every little accident was blazoned forth in the most vivid colours, not given to such great disasters in other systems of construction as the Quebec Bridge. We should be doubly careful, in that these troubles involved the whole industry as well as ourselves, and though we might chafe at the injustice of our critics we might profit by the severity with which our mistakes were visited. When failures did occur let us do our best to discover the true cause, sparing no effort to do so.

(To be concluded.)

Law Cases.

Architects Recover Fees.

At Walsall County Court, before Judge Smith and a special jury, an action was brought in which Messrs. Heckton and Farmer, architects, of Walsall, sought to recover £83 5s. from Mary Ann Fox, of the Gridge Inn, Park Brook, Walsall, for preparing plans for the erection of eleven cottages and a shop.—It was stated that a brother of the defendant approached the plaintiffs with respect to preparing these plans for the defendant. Various plans and specifications were got out, and tenders invited, but it was stated that the tenders were rejected and the plaintiffs were told to send in their bill. A dispute arose as to the amount which was charged, and plaintiffs allege that afterwards they found that the building was being put up practically according to the plans they had prepared.—The defence was that the plaintiffs agreed to do the work for one and a quarter per cent., and the defendant offered the amount represented by this, namely, £32 10s., in settlement of the claim.—The jury gave the plaintiffs a verdict for £50 and costs for the work they had done.

Between Two Plans.

A charge of building without proper authority was preferred at Doncaster Borough Court, when John Henry Scales was summoned for breach of the by-laws relating to new streets and buildings.—It appeared that defendant submitted a plan which was not approved, and then he handed in a plan which was passed, but he began to build contrary to both plans. The alterations were in connection with a cottage adjoining defendant's own dwelling, and he had raised the roof higher than shown in the plan, and converted an open shed into a portion of a dwelling-house. Defendant had written to the Sanitary Committee admitting his offence, but sincerely hoping that he might not be regarded as a wilful law breaker.—He was fined 20s. and costs.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters.

The querist's name and address must always be given, not necessarily for publication.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Correction.

Our attention has been drawn to some literal errors in the reply to Retlaw, published in our issue of November 25th. On p. 416, col. 1, line 14 should read "a vector line," etc.; the equation below (line 24, col. 1) should be $2P_1 = \frac{2P \times DE}{CE}$; and (line 34, col. 1) should read "value of the B.M. is $Q \times X$."

Hard Water.

YORKS.—KEIGHLEY writes: "A client of mine has been troubled with the galvanized iron hot-water cistern of his house rusting. To prevent the rust getting worse, he emptied the cistern and covered the inside of it with a wash of Portland cement and water. This seems to be having the desired effect, but unfortunately it is making the water so hard as to be almost impossible to get a lather when washing with it. Can you explain the cause of this hardiness, as our water supply is particularly soft, coming off peat, and can you also suggest a remedy?"

The cause of the hardness is the cement (which is limestone ground to a powder ere being slaked), and the unsually soft peat water. The cause of the rusting is the cracking and chipping off of the galvanising during the fixing of the cistern and connecting of the pipes. It is practically impossible to prevent the cracking and chipping. You do not say whether the boiler is iron or copper; if the latter, an electrical action has been going on, no doubt, due to the peat water and the zinc of the galvanizing and the copper of the boiler, depositing the zinc on the copper. The remedy is a copper cistern of the usual cylindrical form; or, if this be not suitable to the space, a sheet iron cistern, of twelve or fourteen gauge, copper-plated. Care must be taken to not crack the copper plating when the pipes are being coupled up. INGENIOR.

Water Pipes.

WILTS.—R. AND S. write: "We are anxious to obtain some cast-iron water pipes, 1½ins. or 2ins., that will not be affected by mineral acids, etc., in clay, through which they are laid. Dr. Angus Smith's coated pipes are not proof against this action of the soil. Are there any other methods of coating iron pipes for underground supplies, that will efficiently protect them against such action in the soil?"

The only method which can be adopted is either to have glass-coated pipes, or to paint the pipes with a non-corrosive paint, of which there are several known on the market, but a well-known paint is made by Messrs. D. Anderson and Son, Roach End Works, Old Ford, E., and is called "Siderosten." ASSOC. M.I.C.E.

Payment of Fees.

WESTCLIFF-ON-SEA.—C. writes: "A (the architect) has experienced difficulty in

obtaining payment from B (the employer), for whom he has superintended the erection of houses under contract. The contractor's final certificate is due at Christmas, which is six months after completion and occupation of the houses. Can A, in issuing the final certificate to contractor, include in same his fees, if so stated? and must B pay same to the contractor who will remit to A?"

No; the architect cannot include his fees in the amount payable by the building owner to the contractor, and obtain same from the contractor afterwards. His account must be rendered to the owner, and if the latter will not pay up, the architect must take the usual legal proceedings. Until the architect has issued the final certificate, however, he has not completed the work, and it may be for this reason that the client is withholding his fees.

MONMOUTH.—A. B. writes: "We have commenced building operations as shown in sketch herewith [not reproduced], and the owner of property "B" writes as follows:—'I herewith inform you that your building in front of my property will seriously diminish its value and block up my right of light. You are probably not aware that my property having been erected in 1881, a right of light has been acquired, and unless you at once stop your building operations and pull down the work I shall commence proceedings against you for an injunction and damages without further notice.' As the sketch shows, we have observed the rule as far as we understand it, and any line drawn at an angle of 45 deg. from "B's" light is not obstructed by our building. Please advise us if this is in accordance with the by-law."

The question of damages for interference with right of light rests solely, since the decision given in the case of Colls v. Home and Colonial Stores, Ltd., on the amount of the diminution in the light preventing the proper use of the buildings. At one time all these actions were decided by the question of angles by which the light entered the particular building, and which had been altered by the erection of the building complained of, but since the decision referred to, the whole matter turns on the question of fact, whether the plaintiffs have lost proper enjoyment of light in their building. We need hardly say that the establishment of this fact is productive of very costly and wearisome litigation. We can only suggest that you consult your solicitors in the matter, and they will be able to inform you of the possible chances of your convincing a jury that your building had not injured the light in the plaintiff's premises at all, or sufficiently seriously to prevent their proper use and enjoyment of those premises.

Water Consumers' Rights.

WINGATE.—DUBITO writes: "A private water company has in its rules the following clause:—'The Company will lay and keep in repair such portions of all service pipes as may be necessary upon any highway or public thoroughfare outside only of the boundary of the property to be supplied, providing the distance does not exceed 25ft.; all other piping and interior fittings to be at the consumer's expense.' To supply a new street in the expanding township, a 2in. supply pipe or by-main is laid by the Company up the back street for about 500 yards from the large main in the high road. The house supplies are taken from this by-main. (1) Can the Company demand payment for this 2in by-main from the householders to whom the cost is being assessed? (2) In the event of the householders paying for it, does it remain the property of, and is it repairable by the Company? (3) In the event of refusal of payment can the Company (which has powers in the district) cut off the supply?"

A private water company, possessing no Parliamentary powers, must make its contracts and carry out its obligations in exactly the same way as does an ordinary individual; and the answer to all these questions then depends entirely on the single point—"Is there any contract expressed or implied between the water Company and the person proposed to be charged?" I should suppose there must be a contract with someone with regard to the insertion of the 2in. main in the back street—the company would be hardly likely to trespass on a private owner's property, or to lay a main without being previously asked to do so! I am of opinion, therefore, that (1) the water company can only demand payment for the main from the person or persons who arranged for its construction. (2) The main would still continue to be the property of the company and form part of their system—it would be repairable by them. (3) I believe the company could cut off the supply unless indeed they had made a bargain with the householders that they would supply water, and yet had omitted to include the payment for the main in that bargain!

F.S.I.

Boundary Wall Problem.

KIRKCALDY.—D. F. S. writes: "A and B have a boundary wall of various heights between their respective gardens, the centre line of which is the boundary between the two properties. A built the wall at his own expense, and his conveyance, like that of B, states that A is to recover half the cost or expense of erecting the said wall to a height of 7ft. from B. The conveyance does not state whether the 7ft. is from the surface of the ground or from the bottom of the foundation, and B refuses to pay for more than 7ft. in height of wall in whatever way it is measured, while A expects to be paid for 7ft. above the ground, and the foundation and digging in addition. What would be considered a reasonable view to take of this case? And what is usually meant by the height of a wall when no further definition is given?'

The height of such a wall is naturally reckoned from the ground line, and the respective purchasers must carry out their covenant with the original freeholder by building a wall measuring 7ft. from the natural ground line to the top of the coping. To build such a wall in a workmanlike and proper way, good footings are necessary, and the work would not be properly carried out if they were omitted. It therefore follows that each owner must pay for half the wall and footings and coping complete.

F.S.I.

SOCIETIES' REPORTS.

R.I.B.A.

At the meeting at 9, Conduit Street, Hanover Square, W., on December 14th, Mr. Alexander Graham, hon. sec., announced with regret the decease of Mr. John Peter, who was elected an Associate in 1888.

Mr. R. Anning Bell, in proposing a vote of thanks to Mr. Spence for his paper on "Interior Decoration," of which an abstract appeared in our issue for December 16th, commented upon the difference of opinion among architects as to what constituted "scale." He thought that personal predilection should be eliminated, and the question fought out, in order to establish a recognised basis upon which to work.

Mr. Reginald Blomfield, A.R.A., in seconding the vote of thanks, recorded his confidence in white paint as an admirable background for the accentuation of practically anything that could be put upon it. Referring to Homer's description of the Palace of Alcinoüs in the Odyssey (to which Mr. Spence had alluded), Mr. Blomfield expressed great doubt as to the advisability of placing reliance in poetical or literary descriptions of sculpture, painting, or architecture. With regard to the question of scale raised by Mr. Bell, he had arrived at the conclusion that there was no ideal scale from which to design.

In the ensuing discussion, Mr. George Herbert, Prof. Gerald Moira, and Mr. John D. Grace, were the speakers. The last-named gentleman entirely disagreed with the general adulation of white paint, and attributed its popularity to the fact of its being the last refuge of the destitute. Mr. Spence briefly replied.

Birmingham Clerks of Works Association

The members of the Birmingham Clerks of Works Association have visited the large warehouse and retail shops of Messrs. Lewis, in Corporation Street, to inspect the alterations there in progress. These alterations, which are unusually interesting from the risks and difficulties that have had to be overcome, have been carried out by Messrs. Tomkinson and Son, of Liverpool, under the instructions and from plans prepared by Messrs. Wood and Kendrick, of Birmingham and West Bromwich, with the assistance of Mr. Farrer, of Liverpool, as expert in steel construction.

When it is recalled that this building, which is about 90ft. high, and has a frontage of about 300ft., occupies the site of the burial-ground of the ancient Priory of Birmingham, and that the foundations were laid in what is practically running sand, an idea will be formed of the risks run, and the care required in overcoming them during the decidedly delicate operation of taking away all the brick pillars—eleven in number, each carrying an average weight of 240 tons—and substituting rolled steel columns. The object was to obtain more window space and floor area; and as the brick pillars, which were 4ft. square, have been superseded by steel columns 9ins. in diameter, the result is a gain of 200 superficial feet of additional window area for the display of goods. The old window frontage was about 210ft. in length, whilst the new front gives 250ft., together with an additional entrance. This is the largest shop-front alteration ever attempted in the Midlands. The work, which has been carried on continuously day and night for several months without interference with Messrs. Lewis' business, was done so accurately that when the last supports were removed, and the new columns received the weight of the building, not the slightest crack could anywhere be perceived, nor did any mishap occur. The party were conducted over the works by Mr. W. H. Kendrick, the architect in charge, who was accompanied by his chief draughtsman, by the contractor and his foremen, and by Mr. Jas. Patchett, the

inspector for the city authorities. At the conclusion of the inspection, hearty votes of thanks were offered to these gentlemen.

Leeds and Yorkshire Architectural Society

At the rooms of the Leeds and Yorkshire Society, Mr. S. D. Adshead, in the course of a paper on "Style in Architecture," adopted the definition of the word "style" in architecture as implying a particular type of character which by repeated usage has developed into set form. Character is closely allied to style, but denotes something more personal and fleeting. Style is an advanced state of character; it is character systematised by consistent and persistent effort. In fact, it is crystallised character. Every style of architecture, when analytically examined, is found either to have developed out of other styles by the adaptation and infusion of certain of their characteristics, or it is found to be a direct transcription of some one other style. In the former case it tends to be original, and in the latter case it is affected. English architecture must depend for its success in the future upon a more scientific application of knowledge. What we must seek to cultivate is a universal original style, and it is towards the establishment of this that our first interest should be directed. It will be a style founded on system, scholarly intuition, and classic inspiration, and will be easily recognised as *a priori* the style of the nation. At the present day in England we have co-existing many original styles in architecture. Mr. Adshead, while describing them as styles, thought it doubtful whether they are sufficiently systematised to be regarded as anything more than phases of character. In his enumeration of the styles of England existing at the present day, he wished it to be understood that his remarks referred in particular to style as seen in works of a monumental order, and did not refer so strictly to our domestic work of the simpler class. When evolving serious design we should draw our inspirations from a pure classical source, and from that source alone. Working thus, we are working in the grand manner. In England we have what is popularly known as twentieth century Renaissance or Free Classic. When analysed, this so-called style is really found to consist of nothing more substantial than a confusion of forms. Another conspicuous style is twentieth century Gothic. The Gothic churches of Sir Charles Nicholson, Messrs. Bodley, Stokes, Tapper, and Scott, are on the whole amongst the most satisfactory pieces of modern architecture which we possess. Then there is that very conspicuous style which, if not exactly the same as *l'art nouveau*, closely approaches it, and is, in fact, *l'art nouveau* of Otto Wagner, of Vienna. It is to be regretted that this caprice should have captivated the attention of more than one distinguished architect. If modern architecture is to develop a style, it must be the outcome of a sound æsthetic sense, wide research, and scholarly attainment. It must be scientific, and the work of the philosopher as well as the artist.

The work submitted by the students of the Leeds and Yorkshire Architectural Society under the prize scheme of the Society has been placed on view in the Central Court of the Leeds City Art Gallery. The exhibition was arranged on the suggestion of the president (Mr. Percy Robinson), who considered that in view of the excellence of the work it ought to be exhibited to the public. The successful competitors were Messrs. J. H. Farrer and G. H. Foggitt in the class for designs, and Mr. P. de Jong in the section for construction. Mr. Whitehead ("Roamer") won the prize offered by the sketching club of the Society, Mr. Foggitt obtaining second place. The prize for measured drawings was carried off by Mr. W. F. Dawson.

Bristol Society of Architects.

At a sessional meeting of the Bristol Society of Architects held at the Fine Arts Academy, a paper was read by Dr. A. H. Harvey on "The Mediæval Architecture of Northern Spain."

Mr. Mowbray A. Green, the president, said that the subject had for them a very great interest, because of the extraordinary influences which came to Spain from many quarters through many centuries, and it certainly was a peculiarity that so many types of architecture were seen in Spain at different periods.

Dr. Harvey, at the outset, stated his paper was the outcome of two holiday journeys to Northern Spain, one last year and the other some twenty years before. They covered the same ground as that treated in Mr. Street's great work, but he had been enabled to visit places omitted by Mr. Street, all of which were of first-rate importance in the history of architecture in Spain. Another thing was that photography as a means of representation was unknown in Mr. Street's day, so that he was enabled to illustrate many fine buildings that Mr. Street had to omit. What he said he wished to be regarded as supplemental to Mr. Street's work, which had now become so rare that he had not been able to find a copy in Bristol. He was sorry that he had nothing to say upon the earlier architecture or upon the very charming and beautiful renaissance in Spain. One thing that struck him in going through Spain was that the genius of the Spanish people seemed so much akin to that of England. The resemblance was far more so than between other Western races, and this was reflected in their buildings. In church architecture there seemed to be the same exclusive feeling in their worship, and England and Spain were apparently the only two countries where they got the fine enclosed choirs and noble canopy. Spanish cathedrals were, without exception, secular, with nothing analogous to their own monastic arrangements. In the parish churches there were no seats, worshipers either having to stand or kneel. The lecture was illustrated with a number of beautiful lantern slides.



WINNING DESIGN FOR THE BUILDING EXHIBITION POSTER. BY GEO. P. DENHAM.]

ADVICE TO PATENTEES.

The recent letter (see issue of December 9th) of advice to patentees deals with incidents which are unfortunately only too common. Reputable firms of patent agents do not generally negotiate the sale of patents, but at intervals there appears in either the technical or general Press a letter of bitter complaint from a victim of the practice referred to. In every instance the same bait has been used—the client abroad who will acquire the rights at a high figure if the inventor will take out patents in certain foreign countries. The communication closes sometimes with a bald offer to undertake the work, or there may be a professed indifference to the matter. A letter of this type is before the writer now, and it seems a little strange that anyone should treat it seriously, as it is obviously a stock letter written by an office clerk. However, there is no doubt that the method meets with success, and the offer is often accepted. Patents abroad are taken out and expenditure is incurred, but when the limits of the inventor's patience or purse are reached it is generally found impossible to conclude the negotiations with the foreigner. It is much to be regretted that the proper authorities have not yet been willing, or are not in a position to entirely stop, these operations, which must operate to the detriment of a leading profession, for the mass of the general public can hardly be expected to distinguish between a chartered patent agent and any individual who pleases to advertise himself as a patent expert.

The specifications published by the Patent Office are evidence that the practice is not confined to this country. Every week may be found applications from persons abroad for patents concerning devices which are commercially impossible. The failings of the applicants are often proof that they know very little about the practical use of the device they are patenting.

Although only a few patents possess any real commercial value compared with the vast number granted, the possession of a new idea seems to excite intense suspicion in most inventors, and as commercial ability is not generally fully developed with inventive genius, they often fall into the clutches of the unscrupulous. As soon as the provisional application is accepted by the Patent Office, no time should be lost in submitting the idea to reliable firms who may be interested in the matter. Of course, their judgments may be biased for many reasons, but they are not at all likely to pass by a good thing, and the inventor will be well advised, in the majority of cases, if he relies on their verdict, and spends no more money in fees if it is pointed out to him that there can be no commercial success for that particular invention.

The courteous and obliging officials of the Patent Office lead one to overlook the fact that it is merely a part of the huge news-gathering machine controlled from Somerset House, and although a large flow of applications may be regarded favourably as a means of revenue, those who have occasion to search the records and specifications may, with very little imagination, read hundreds of fallen hopes between the lines. Much of this disappointment and expense, incurred by persons who can ill afford it, might be avoided if the applicants had conferred with suitable persons in the early stages before proceeding to pay further fees and instruct expensive models.

THE ARCHITECTS' TECHNICAL BUREAU.

The following should be added to the subjects passed by the Architects' Technical Bureau, as mentioned in our issue for December 9th, on p. 458.

"Durabar" Combined Draught Excluder and Weather Bar.

Makers: Messrs. The Draught, Dust, and Weather Excluder Co., 10, Palace Chambers, Hereford. This is a self-acting appliance for stopping the clearance space which must always be allowed for beneath doors and casement windows. The mere act of shutting the door brings the Durabar into action, and completely closes the space beneath. Immediately the door is unlatched, the "Durabar" automatically and silently flies up clear of the floor or carpet, until the door is shut again. It is a high-class artistic fitting, practically invisible when fitted, and there are no springs, hinges, or wearing parts whatever to get out of order. It can be supplied in any wood desired.

Trade and Craft.

"Inside Facts about Saxon Portland Cement" are detailed in a most neat booklet that has just been issued by the Saxon Portland Cement Company, Ltd., of Cambridge. The quarries whence the raw material is obtained are described, and the processes of manufacture are detailed step by step. The up-to-date works at which the cement is manufactured are illustrated in a series of photo-process views, and several important contracts in which the firm's cement is being used are shown, such as Chippenham Sewage Disposal Works, Northfield Reservoirs, Birmingham and Scunthorpe Waterworks. Analyses, various systems of testing, experts' reports on the product, and a useful series of "Dont's" for cement users, are included in this bright and interesting booklet.

* * *

We understand Eubeolith patent flooring has recently been laid to the extent of about 1,000 yards on old wooden floors at the Geological Museum, Jermyn Street, for H.M. Office of Works. The same company have done practically the whole of the flooring at the new St. Mary's Hospital, Manchester, and also that which has been adopted in the extension to the Salford Royal Hospital, Manchester, and in other important contracts. The whole of this work has been carried out by Mr. J. Percy Day, of 3, Victoria Street, Westminster.

Federation News.

HALIFAX ASSOCIATION.

Secretary: A. E. Dalzell.

At the meeting of the Halifax Association on December 3rd, at the Builders' Exchange, Mr. Lewis Firth in the chair, the secretary read a letter dated Dec. 2, 1908, from the Halifax Architectural Society in reply to the Association's invitation for them to adopt either the Federation or some other agreed form of contract. In the reply it was stated that (a) If contractors when sending in tenders could enclose stamped postcard, the architects would see that the desired information was filled in and posted, that (b) The National form of contract, as drawn up by the R.I.B.A., was not suitable for Halifax, and was too cumbersome for ordinary use, and for such small contracts as are usual in Halifax. "It was devised for one contract, whereas in Halifax all trades are separate. The Halifax Society recognise that some regular standard form of contract for the district is advisable, and they are proceeding to draw up a form of contract and conditions which shall serve as a standard, and when completed will submit same to the association for approval. (c) As to final certificates; the letter continued, generally speaking it was not to the architect's interest to keep them back, particularly final ones, as the architects are usually as anxious to be paid as is the contractor. Mr. Naylor proposed and Mr. G. Raynor seconded that the Association tender their thanks to the Halifax Architectural Society for their proposition, which should be approved and copies of their letter and this association's reply should be forwarded to the Federation. This was carried unanimously.

The delegates appointed to attend the Federation meeting at Barnsley on November 19th presented their report, and drew attention to several matters of detail.

Messrs. Lewis Firth and J. H. Ackroyd were appointed to audit the accounts and report at the next meeting, on the proposal of Mr. Naylor, seconded by Mr. H. Greenwood.

The secretary was requested to invite members of other Federations to consider the advisability of securing the full benefits of the Yorkshire, and thus the National Federation, by contributing the levy of 1s. per £100 of wages paid by them.

Mr. Lewis Firth was re-elected president for the ensuing year, Mr. Joshua Robinson senior vice-president; Mr. Isaac Firth was re-appointed treasurer, Mr. Dalzell secretary.

Mr. Lewis Firth moved, and Mr. H. Naylor seconded, that the association meet monthly, except in May, June, August and September (except in case of emergency), on the first Thursday in the month, at the Halifax Building Trades Exchange, at 8 p.m., and that the secretary give four clear days' notice of such meetings to each member. This was carried.

The following new members were elected:—Messrs. Joseph Bancroft and Sons, slaters and plasterers, Winding Road, Halifax, and Mr. John Herbert. Seven new associated members were also elected.

TEESSIDE AND DISTRICT ASSOCIATION.

Secretary: W. B. Creasor.

The annual meeting of the Teesside and District Association was held on December 9th, at the Grand Hotel, Middlesbrough, Mr. P. Bray, president, in the chair. In order that the proceedings may be the better understood, a brief summary of former meetings is necessary.

At a meeting of the executive committee held at Stockton-on-Tees on November 12th, Mr. P. Bray presiding, the secretary reported that, at the request of the sub-contractor, the local association had been discussing the question of payments on contracts to sub-contractors, and that the question had been referred to Teesside Association by the Stockton and Middlesbrough Associations. After a long discussion, it was resolved that a sub-committee be formed to draw up a scheme dealing with this question, and that the sub-committee consist of one sub-contractor and one general contractor from each local association, with the president as chairman, and that Mr. W. H. Hope, of Sunderland, be requested to attend to give legal assistance to the committee.

At a meeting of the sub-committee held on November 17th at Stockton, the president (Mr. P. Bray) stated that the object of the meeting was to endeavour to formulate a scheme regulating payments to sub-contractors. It was agreed, at the outset, that this meeting fully sympathised with the sub-contractors in their desire to receive better treatment than had been given them by some contractors in the past, and it was fully agreed that some re-arrangement was necessary to enable sub-contractors to receive their just demands. A long and animated discussion took place, Mr. Hope showing that several schemes mentioned could not legally be enforced. The following resolutions were then unanimously carried for submission to the executive committee:—"That the architects be asked to issue a statement with their certificate showing the amount certified under the various trade headings, for the information of the sub-contractor, so far only as his own particular trade is concerned; and that the architects be asked to reply to any enquiry of the sub-contractors on such a matter.

"That an appropriate form of sub-contract be adopted for the use of members, and that the same be submitted in due course for approval, and that the Northern Counties Federation be requested to take this resolution into their immediate consideration."

At a meeting of the executive committee held on November 20th, Mr. P. Bray presiding, the secretary read the minutes of the previous executive committee and the report of the sub-committee, and, after a keen discussion, it was resolved:—"That the resolutions contained in report be sent to each local association for consideration and report to the annual meeting, and that the secretary bring the subject to the notice of the Federation executive committee at their (next) meeting and forward No. 2 resolution for their consideration."

At the annual meeting, which, as stated above, was held on December 9th at the Grand Hotel, Middlesbrough, Mr. P. Bray, president, occupied the chair, and there was a large attendance of members. The secretary, in presenting his twelfth annual report, stated that, in view of the special business on the agenda, he had cut down the report as much as possible. The report deplored the present condition of trade, and stated that as in this district hundreds of houses are empty, there is no inducement to build. It was stated that attendance at committee meetings had been very good, and that close attention had been given to such matters as the Miners' Eight Hours Bill, in which objection was made on the ground that legislative interference with adult labour is undesirable; to the draft report on building accidents,

in which, the committee felt, some of the proposed regulations were too drastic, or were impracticable, and they therefore urged the Home Secretary to give special consideration to the very practical report of Mr. Macfarlane; to the question of a reduction of wages, which, but of consideration for the operatives, was allowed to drop; to the adoption of the BUILDERS' JOURNAL as the official organ of the National Federation; to the negotiations with the Durham County Council Education Committee respecting the building agreement; and the regulation of payments to sub-contractors. The secretary also presented the balance sheet, which showed a good balance in hand, and was accepted as being very satisfactory.

The election of officers resulted as follows:—President, Mr. J. Proud, West Hartlepool; senior vice-president, Councillor Alcock, Thornaby; junior vice-president, Mr. H. McNaughton, Middlesbrough; auditors, Mr. R. Johnson, Stockton, Mr. P. Bray, Middlesbrough; secretary and treasurer, Mr. W. C. Creasor, Stockton-on-Tees. The officers of the past year were thanked for their services, and Mr. Bray suitably replied.

It was decided that the levy should be 1s. per cent. on wages paid, plus the amount required by the Northern Counties Federation; that the executive committee meetings should be held at Stockton, and the next annual meeting and dinner at West Hartlepool.

It was resolved, on the proposition of Middlesbrough Association, that the constitution of the executive committee should be altered, and that each association be entitled to one representative for every ten members or part of ten over five.

The meeting then proceeded to discuss the report of the sub-committee and executive committee on the question of payments to sub-contractors. The discussion was long and very animated, the ultimate result being that No. 1 resolution passed by the executive committee was accepted with the addition of words to the effect that architects be asked to notify also each sub-contractor direct when a certificate is issued to the general contractor and the amount included for his particular trade.

On the consideration of resolution No. 2, the secretary submitted two agreements, one drawn up by Mr. Hope, of Sunderland, the other being in use locally. Both were freely criticised, and ultimately the whole matter was referred back to a sub-committee for further consideration, Mr. Hope to be asked to attend again to give legal assistance.

After the meeting, the twelfth annual dinner was held, 77 members and friends being present. In accordance with custom, the newly elected president commenced his duties by presiding over this gathering.

Sheffield.—It has been already recorded, in the Federation reports, that considerable correspondence has taken place between the Sheffield Town Clerk and the secretary of the Amalgamated Society of Carpenters and Joiners, the Sheffield Master Builders' Association, and Messrs. H. Boot and Son, the contractors for the extensions at the Lodge Moor Hospital, concerning an alleged breach by the latter of the fair wages and conditions of labour clause in their contract with the Corporation for such extensions. In a letter to the Town Clerk, the secretary of the Sheffield Master Builders' Association states: "Mr. Boot will probably be prepared to admit that, according to the interpretations put upon the spirit of the reading of the fair contracts clause, he has transgressed the rules in not paying walking time, though he has always understood, and it is not denied, that it has been and is the custom of the trade that walking time is not paid when men are engaged and paid on a job outside the area. When the breach of the rules is admitted, there is then left the question of the penalty imposed, and with respect to this I may be permitted to point out that when the quantities for this job were sent out a penalty for a breach of contract in regard to hours of labour, etc., was fixed at three times the amount of wages in dispute, and as in this case the wages in dispute were under 30s., it will be seen that the fine of £24 imposed is altogether out of proportion, especially when the foregoing facts are taken into consideration." The City Hospitals Committee have now passed a resolution for consideration by the City Council that the proposed deduction of £24 be reduced to £12.

Proposed New Works.

Arbroath.—Plans for the new railway station, which is to cost between £30,000 and £40,000, have been finally approved, and constructional work is expected to commence in March, 1909.

Cork.—The Corporation have decided to adopt the Corn Market site for the erection of the proposed technical institute.

Cowes.—A new church is to be built at Cowes. Princess Henry of Battenberg has consented to lay the foundation stone.

Craghead. — Towards the erection of a new church, £1,500 is promised by the Ecclesiastical Commissioners, and a donation by the owners of Craghead Collieries.

Dundee.—A garden city is to be created here, consisting of working men's dwellings, costing between £250 and £350.

Howden.—For proposed works at the parish church of St. Peter, which include the hanging of the church bells, renovation of the organ, and restoration of the south transept, the sum of £1,000 is required.

Kingston Hill.—Towards the completion of St. Paul's Church, and purchase of a house for a vicarage, the estimated cost of which is £6,675, £1,500 has already been promised.

Manchester.—The libraries committee have announced that a gift of £5,000 by the late Mr. Thomas Greenwood, is to be invested, and the proceeds applied to the extension of the library now in King Street.

Musselburgh.—It is proposed to erect a free library and recreation rooms here.

Nottingham.—Plans by Mr. A. E. Lambert, for a new Wesleyan mission institute, which is to comprise four floors and a mezzanine floor, have been approved by the Corporation. The estimated expenditure for erection is £32,000.

North Shields.—It is proposed to erect a new Y.M.C.A. building for the Borough of Tynemouth, the estimated cost of which, including site, is £4,500.

Peckham, S.E.—The London County Council, after considering a report of the Education Committee dealing with the proposed enlargement of the Oliver Goldsmith Schools, Peckham Road, agreed that, subject to the Board of Education approving the plans, the tender of Messrs. J. and C. Bowyer, Ltd., of Upper Norwood, for £5,763 for enlarging the school by 368 places be accepted. In connection with the matter, the Finance Committee pointed out that the cost of the proposed enlargement was equivalent to £17 8s. 11d. a place, which was rather a high figure. The amount which the late authority would have been allowed by the Board of Education was less than the expenditure now proposed, but the committee were advised that the enlargement involved the provision of certain accessories which necessarily enhanced the cost of a small enlargement.

Plymouth.—The plans of Mr. Coath Adams, for the proposed swimming bath and Turkish baths, estimated to cost £5,000, are under the consideration of the Corporation.

Rugby.—Major J. Stewart, R.E., has held a Local Government Board enquiry with respect to an application by the council to borrow £4,200, for the erection of public baths.

Shrewsbury.—It has been recommended that the sum of £4,000 be expended for the purchase of property at Roushill, for the erection of new stables, and as a yard for the Corporation horses and carts.

Westminster.—Dean's Yard is to be repaired, and the footway repaired at a cost of £276, a sum which the City Council will refund to the Dean and Chapter.

Works in Progress and Completed.

Annfield Plain.—The new free public library opened on Dec. 16th, is of stone, with a frontage of 60 ft., and a depth of 70 ft. Mr. Andrew Carnegie contributed £3,000 towards its erection.

Chiswick.—Foundation stones of the new Wesleyan church, which is to cost £5,781, have recently been laid.

Doncaster.—The Market Committee of Doncaster have accepted the tender of Messrs. Gill and Son, builders, for the work in connection with the extension and improvement of the cattle market. The tender amounts to £3,997, and is subject to the approval of the Council.

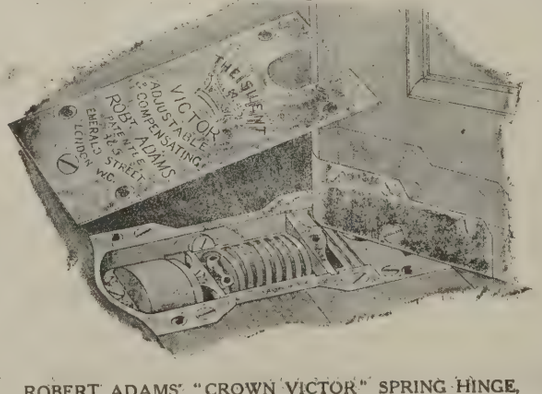
Dover.—Messrs. Pearson and Son's tender has been accepted for widening the Admiralty Pier to the Dover Marine Station. The widening will cost about £400,000.

London, E.C.—The Blackfriars subway scheme which was formally inaugurated on Friday, December 17th, provides for a subway of about 400ft. long, starting just past the cabmen's rest on the Embankment, to a point adjacent to the Hand-in-Hand Assurance offices in Queen Victoria Street, and a cross subway of about 120ft. long from Blackfriars Station to the opposite corner of New Bridge Street and the Embankment. These subways will be 10ft. 3in. wide and 8ft. high. They will be constituted of walls 3ft. thick, and roofing of steel, the exterior being composed of white tiling. In all there will be four entrances or exits, and some twenty steps will have to be descended or climbed in each case. The work, being divided into three sections, and, given no unusual impediments in the way of unsuspected pipes, culverts, and so on, it may be completed in the period mentioned, estimated by the contractors, Messrs. Perry and Co. (Bow), Ltd. The first section to be taken in hand is on the Blackfriars and Embankment side, and this necessitates the diversion of a tube carrying gas and other mains. This will be carried under the subway, which in its turn will be just above the Underground Railway. These are the only difficulties as yet known—excepting, of course, the old Fleet sewer—others may have to be encountered.

London, W.C.—No fewer than eight large blocks have been completed, or are nearing completion on the London County Council's Kingsway during 1908, giving it something like the appearance of a continuous street. Building began at the northern end, and is gradually extending towards the Strand. On the widened part of Southampton Row, from Theobalds Road to Holborn (which is the northern extension of Kingsway) every site is built on, on both sides of the street; the last block, a large one, chiefly of stone with central and corner turrets, having just been completed. In Kingsway itself, from Holborn to Great Queen Street, the west side was completed last year; while this year a handsome block of offices has been built over the Tube Station, and blocks below it have been opened, and another one is building, leaving only room for one more block on the east side. Between Great Queen Street and Aldwych, large mission buildings, with a dome, are nearly finished on the west side, and opposite it a large block of offices are ready for roofing. Lower down, the site is being cleared for the erection of the Veterans' Club, and adjacent to this is the large bank (the second on Kingsway), which has just been opened. All these buildings are of stone. On the eastern side of Aldwych, adjacent to Carr's Restaurant, a site has been secured for an insurance office. On the island site in the Strand, the offices of the Government of Victoria, surmounted by a dome with winged female figure, are nearly completed; and many people will regret that the Council are unable to come to terms with the Australian Government for building the rest of their new offices there.

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Offices: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—Caxton House, Westminster. PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

Telephones: ADVERTISEMENT, EDITORIAL AND COUNTING HOUSE—817 Gerrard. PUBLISHING—2200 Holborn (six lines).

Date of Publication:—The BUILDERS' JOURNAL AND ARCHITECTURAL ENGINEER is published every Wednesday, price 2d.

A Special Section is regularly presented free with the ordinary issue, three weeks out of every four. These three regular monthly supplements are entitled "Contractors' and Federation Section," "Concrete and Steel Section," and "Fire-resisting Construction Section" respectively.

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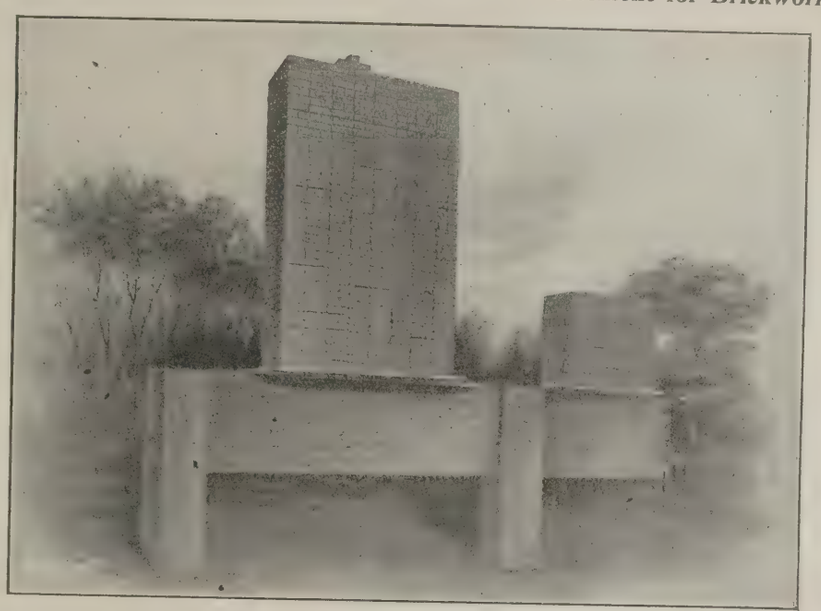
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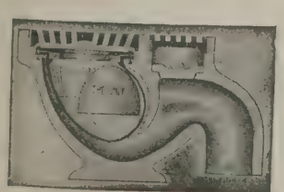
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W. Robinson, (Nottingham) Ltd., Churchgate, LEICESTER

(*Tenders continued from page vi.*)

Essex.—For the erection of parish hall and boundary wall, All Saints', Goodmayes. Percy K. Allen, architect, Tunbridge Wells. S. Cecil Addison, surveyor, 30, Honor Oak Park, S.E.:—

J. Grover and Son	£2,734
G. J. Hosking	2,631
J. T. Luton	2,629
E. Lawrance and Sons	2,557
A. E. Symes	2,550
F. W. Jarvis	2,525
C. Miskin and Sons	2,525
J. Jarvis and Son	2,468
J. S. Hammond and Son	2,430
J. W. Jerram	2,399
Dowsing and Davis	2,274
F. and A. Willmott*	2,162

*Accepted.

Hull.—For the necessary work in the alteration and additions to Craven Street school, for the Education Committee. Mr. J. H. Hirst, city architect:—

G. H. Panton, Anlaby Road	£1,800 0 0
H. T. Arnott, Walker Street	1,735 7 0
J. T. Levitt, Holderness Road	1,678 0 0
M. Harper, Brunswick Avenue	1,567 0 0
G. Jackson and Sons, Witham	1,552 14 9
Hull Gen. Builders, Ltd., Lockwood Street	1,548 9 0
P. T. Kettlewell,* Trinity Street	1,497 0 0

*Accepted.

Kingswood (Bristol).—For erection of a house. Messrs. La Trobe and Weston, F.R.I.B.A., architects, 44, Corn Street, Bristol:—

Perrott	£1,373
Foster	1,285
Beach	1,277
Downs and Son	1,240
Chorley and Son	1,202
C. Taylor	1,169
Walters and Son	1,165
E. Clark and Sons	1,111
Hodges	1,096
Marsh and Stone	1,075
Adams and Jefferies	1,060
S. Milsom	1,050
O. Lovell	1,049
Marsh	1,035

*Accepted.

Llwynpia (Wales).—For erecting a house for Messrs. the Glamorgan Coal Co., Ltd. Mr. Edgar G. C. Down, A.R.I.B.A., 31, High Street, Cardiff. Quantities by architect:—

Evans Bros.	5,453 0 0
S. Shepton and Son	5,391 15 0
W. Thomas and Co.	5,183 0 0
E. Turner and Sons	5,037 0 0
A. Richards	5,010 0 0
Stephens, Bastow and Co.	4,978 0 0
Blacker Bros.	4,800 0 0
Gough Bros.	4,716 0 0
E. R. Evans and Bros.	4,595 0 0
G. Hallett,* Cardiff	4,500 0 0

*Accepted.

London.—For structural work, etc., required at the Victoria Embankment generating station, for the London County Council:—

E. Lawrence and Sons	£1,331
Holloway Bros. (London), Ltd.	1,210
J. and C. Bowyer, Ltd.	1,193
Higgs and Hill, Ltd	1,154
Spencer, Santo and Co., Ltd.	1,122
G. Munday and Sons	1,080
F. and H. F. Higgs*	1,080

*Recommended for acceptance.

London.—For enlargement of Vauxhall Fire Station for the London County Council:—

F. and H. F. Higgs	£1,846
F. and T. Thorne	1,800
G. Munday and Sons	1,760
H. L. Holloway	1,740
W. Smith and Sons	1,739
J. Carmichael	1,729
A. Roberts and Co., Ltd.	1,702
J. Barker and Co., Ltd.	1,687
J. and C. Bowyer, Ltd.	1,627
Spencer, Santo and Co., Ltd.,* Earl Street, Westminster, S.W. Architect's revised estimate, £1,680.	1,597

*Recommended for acceptance.

London, W.C.—For alterations to laboratories at 17, Bloomsbury Square, for the Pharmaceutical Society of Great Britain. Mr. Geo. A. Lansdown, F.R.I.B.A., architect, 9, Regent Street:—

Brown and Sons	£840 0 0
Baird and Tatlock	720 0 0
H. and E. Lea	699 0 0
Parkinson and Sons*	647 0 0
Alterations to Heating Apparatus.	
W. Stainton	135 10 0
Moorwood, Sons and Co.*	106 10 0

*Accepted.

Lymington (Hants.).—For alterations and additions at Efford Park, Lymington, for Mr. J. B. Whitehead. Mr. Geo. A. Lansdown, F.R.I.B.A., architect, 9, Regent Street, London:—

H. and E. Lea	£3,790
H. Preston	3,650
Collins and Godfrey	2,975
Rashley and Co.	2,887
Kirk and Kirk,* Westminster	2,783

*Accepted.

Lymington (Hants.).—For three farm labourers' cottages at Lymington, for Mr. J. B. Whitehead. Mr. Geo. A. Lansdown, F.R.I.B.A., architect, 9, Regent Street, London:—

Rashley and Co.	£795 0 0
W. Hackwell	792 0 0
H. Preston,* Lymington	765 10 0

*Accepted.

Maesteg (Wales).—For erection of two semi-detached villas, Neath Road, Maesteg. Mr. Frank B. Smith, M.S.A., architect, Port Talbot:—

E. King, Cymmer	£745
Messrs. T. Thomas and Son,* Neath Road, Maesteg	715

*Accepted.

Merthyr Tydfil.—Accepted for an additional pavilion, etc., at Mardy Isolation Hospital, Merthyr Tydfil, for the Corporation. Mr. T. F. Harvey, borough engineer. Quantities by engineer.

D. Davies and Sons, Trade Street, Cardiff, £3,370.

Sandhurst.—For the erection of Sandhurst Council School, for Kent Education Committee, in accordance with the plans and specification prepared by Mr. W. H. Robinson, the Committee's architect:—

J. Gregory	£2,370 0 0
Strange and Sons, Ltd.	2,360 0 0
T. and J. Tickner	2,290 0 0
Barden and Head	2,281 0 0
Hayward and Paramor	2,198 0 0
J. Lonsdale	2,198 0 0
R. A. Lowe and Co.	2,190 0 0
G. Frost and Son	2,181 0 0
Kirk and Randall	2,167 0 0
G. Potter	2,148 0 0
J. A. Davison	2,097 0 0
G. and F. Penn	2,048 0 0
H. Dixon	2,045 15 0
W. Shippam	2,035 0 0
J. Podger and Sons	1,993 0 0
C. E. Skinner	1,988 0 0
L. Edwards	1,950 0 0
S. Wise,* Seabrook Road, Hythe	1,926 0 0

Stanton-under-Bardon (Leics.).—For erection of a new elementary school, for Leicestershire County Council Education Committee. Messrs. Harding and Topatt, architects, Hotel Street, Leicester:—

B. Shipman	£3,150 0 0
A. J. Wilemen	2,998 15 0
W. M. Sharp	2,995 0 0
J. Chapman	2,945 0 0
E. Orton	2,907 0 0
A. E. Faulks	2,885 0 0
Toone and Warrington	2,849 10 0
E. Fox	2,849 0 0
A. B. Moss	2,790 7 0
J. Marston and Son	2,744 0 0
W. Haddon	2,680 0 0
W. F. Harding	2,650 0 0
C. A. Dobson	2,645 0 0
J. T. Ball	2,633 0 0
F. Sleath,* Rothley	2,575 0 0

*Accepted.

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With a few exceptions, items of Contracts Open are not repeated after they have been published once in these columns, so that readers will find particulars in our previous issues of other contracts that still remain open.

Unless expressly stated to the contrary, all deposits required for bills of quantities, &c., are returned on receipt of *bona-fide* tenders.

The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district.

BUILDING.

Dec. 24. ALVES (Scotland).—Mason, carpenter, slater, plumber, plaster, painter, and glazier works of restorations, after fire, at Cloves Farm, Steading, Alves. Plans and specifications may be seen with C. Doig, architect, Elgin, and tenders lodged with him by Dec. 24.

Dec. 24. ABERDARE.—Erection of a receiving home for children at Aberdare, for the Merthyr Tydfil Board of Guardians. Plans and specification may be seen at the Training School, Trecynon, Aberdare, or at the office of T. Roderick, architect, Clifton Street, Aberdare, from whom bills of quantities may be obtained. Fair wages clause. Sealed tenders, endorsed "Tender for Receiving Home," must reach F. T. James, clerk, 134, High Street, Merthyr Tydfil, by 6 p.m. on Dec. 24.

Dec. 25. PAISLEY.—Several works proposed to be executed in connection with erection of Workmen's House, at Stanely High Level Filters for the Town Council: Digger, mason and brickwork; joiner and painter work; plumber work; plaster work; slater work. Schedules of quantities may be obtained at the office of the Master of Works, 13, Gilmour Street. Sealed tenders, marked "Workmen's House at Stanely High Level Filters," to be lodged with F. Martin, town clerk, Municipal Buildings, Paisley, not later than Dec. 25, 10 a.m.

Dec. 26. WICK.—Mason, carpenter, slater, plasterer, plumber, glazier, and painter work, also the iron and heating engineer work of the new Higher Grade School proposed to be erected by the Board. The plans and specifications may be examined at the office of D. W. Georgeson, clerk, Wick, or at the office of D. and J. R. Macmillan, Board's architects, 105, Crown Street, Aberdeen, from whom schedules of quantities may be obtained on application. Offers, marked "Tender for New School," must be lodged with the clerk on or before Dec. 26.

Dec. 29. LIVERPOOL.—Taking off and removing roofs over swimming baths, and for the construction of new roofs thereon, at Margaret Street Public Baths, for the Liverpool Corporation. Plans and specifications may be inspected, and quantities obtained, on application to W. R. Court, engineer and chief superintendent, Municipal Offices, Liverpool, on payment of £1 1s. Tenders, endorsed "Tender for Roofs, Margaret Street," must be delivered by letter post not later than 10 o'clock a.m. on Dec. 29.

Dec. 30. ARMLEY.—Erection of 8 houses for Mr. Abbott. Tenders are wanted for slaters' plumbers', and painters' works. Plans and specifications may be seen at the office of J. A. Webster, architect, 2, Basinghall Square, Basinghall Street, Leeds, up to Dec. 30, when sealed and endorsed tenders are to be sent in.

Dec. 30. LONDON, S.E.—Execution of certain work in connection with the provision of additional lavatory accommodation for the Guardians of the Poor of the Parish of Lambeth, at their workhouse in Prince's Road, Kennington Road, S.E. Tender forms and specifications of works, with conditions annexed, will be supplied on application to the office of J. L. Goldspink, Clerk to the Guardians, Guardians' Board Room and Offices, Brook Street, Kennington Road, S.E. The tenders, which must be sealed and superscribed "Tender for Lavatory Accommodation," must be sent to the clerk, or placed in the box provided for their reception in the office of the Clerk to the Guardians by the contractors or their representatives, if they so desire, on or before ten o'clock on Dec. 30, and will be opened in the Board Room at noon on that day.

Dec. 31. BILBROUGH.—Altering the premises and school yard, at the Bilbrough Provided School, near York. Specifications may be obtained from F. Parker, divisional clerk, Education Offices, Selby, and tenders must be forwarded not later than Dec. 31.

Dec. 31. PENZANCE.—Erection of two dwelling-houses and shops in Market Jew Street, Penzance, for J. Matthews. The drawings, etc., may be seen, and all further particulars had, on application to N. C. Whear, jun., architect, Penzance. Tenders must be delivered by Dec. 31.

Dec. 31. PENZANCE.—Alterations and additions to the premises of R. V. and H. Davy, 112, Market Jew Street, Penzance. The drawings, etc., may be seen on application to O. Caldwell, F.R.I.B.A., architect, Penzance. Tenders must be delivered by Dec. 31.

Dec. 31. WHITBY.—Alterations and additions to the end block of tenements in the middle yard of the Seamen's Hospital, Church Street, Whitby, and for other small works at the Hospital for the Trustees, according to plans and specifications which may be seen at the architect's office, 5, Flowergate, Whitby. Bills of quantities for the work may be obtained on application; and tenders are to be sent in not later than noon on Dec. 31.

Dec. 31. FOGGATHORPE, etc. (Yorks.). — (1) Erection of a Council school and teacher's house at Foggathorpe; (2) additions and alterations to the Council school at Thwing; (3) additions and alterations to the Council school, Walkington; (4) additions to the Council school, Withernsea (infants' department), for the East Riding of Yorkshire C.C. Education Committee. Plans and specifications may be seen and forms of tender obtained in respect of Thwing, Walkington, and Withernsea at the schools, and in respect of Foggathorpe at the police station, Market Weighton, or particulars of each of above works can be obtained on application to the building surveyor, County Hall, Beverley. Tenders, endorsed "New Works," to be forwarded by Dec. 31, to J. Bickersteth, clerk to the East Riding Education Authority, County Hall, Beverley.

Jan. 2. PETERSFIELD.—Erection of new classroom for 60 children at the Council School, Petersfield. Builders desirous of tendering may see plans, specification, and conditions of contract, and obtain bills of quantities and other information, at the office of W. J. Taylor, county surveyor, The Castle, Winchester, between the hours of 9 a.m. and 5 p.m. (Saturdays, 9 a.m. and 1 p.m.). A deposit of £2 2s. will be required for a copy of the bills of quantities and form of tender. Deposits must be made by cheque, payable to the Hants County Council and crossed "Bank of England," or particulars will not be sent. Tenders, endorsed "Proposed Classroom, Petersfield," are to be delivered to H. Barber, clerk of the County Council, The Castle, Winchester, not later than 10 a.m. on Jan 2.

Jan. 4. WYESIDE.—Alterations and additions to the Club premises at Wyeside, for the Hereford Rowing Club. Plans and specifications can be seen, and form of tender obtained, at the office of E. G. Davies, M.S.A., architect, 132, Widemarsh Street, Hereford, and tenders endorsed "Alterations to Boathouse" are to be sent in to A. G. Phillips, hon. sec., United Counties Bank, Broad Street, Hereford, on or before Jan. 4.

Jan. 5. STAINLAND.—Erection of nine houses at Stainland. Plans, etc., will lay for inspection, and quantities may be obtained at offices of C. F. L. Horsfall and Son, architects, Lord Street Chambers, Halifax. Tenders must be delivered by Jan. 5.

Jan. 5. LITTLE HULTON.—Erection and completion of central premises at the junction of Clegg's Lane, and Manchester Road, Little Hulton, near Bolton, for the committee of the Little Hulton Industrial Co-operative Society, Ltd. Quantities and forms of tender may be had from J. T. Proffitt, architect and surveyor, 9, Longley Road, Walkden, after Dec. 24. A deposit of £1 will be required for same. Sealed tenders, endorsed "Tender for Central Premises," to be addressed to the chairman of the Society and delivered to E. Gorton, secretary, 470, Manchester Road East, Little Hulton, near Bolton, not later than 5 p.m. on Jan. 5.

Jan. 6. LONDON, N.E.—Provision of a subway between the new administrative block and pavilion "D" of the Infirmary, High Street, Homerton, N.E., for the Guardians of the Hackney Union. The specification, conditions of contract, and plans may be seen at the office of F. R. Coles, clerk to the Guardians, Hackney Union, Sidney Road, Homerton, N.E., by persons desirous of tendering, and bills of quantities and form of tender will be furnished upon deposit with him of the sum of £1 1s. Securities required. Sealed tenders, endorsed "Provision of Subway at Infirmary," must be delivered at the clerk's office not later than 2 p.m. on Jan. 6.

Jan. 7. BRACEBRIDGE HEATH.—Contract No. 4.—Construction of an absolutely watertight covered concrete service reservoir of 6,000,000 gallons capacity, and subsidiary works at Bracebridge Heath, near Lincoln, for the Lincoln Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained at the office of N. McK. Barron, Waterworks Engineer, Lincoln, upon payment of the sum of £5 5s. Sealed tenders, endorsed "Tender for Reservoir," and addressed to the Chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, deputy town clerk, Bank Street, Lincoln, on or before Jan. 7.

Jan. 7. WESTGATE, Lincoln.—Contract No. 5. Construction of a brick tower 106 ft. high to T. W. L. to support a spherical bottomed steel tank, containing 300,000 gallons of water, and subsidiary works, at Westgate, Lincoln, for the Corporation. Drawings may be seen, and specification, bill of quantities, and form of tender obtained, at the office of the engineer, Mr. N. McK. Barron, Waterworks Engineer, Lincoln, upon payment of the sum of £5 5s. Sealed tenders, endorsed "Tender for Water Tower, Section No. 1," and addressed to the chairman of the Waterworks Committee, to be delivered at the office of W. T. Page, deputy town clerk, Bank Street, Lincoln, on or before Jan. 7.

Jan. 7. WATFORD.—Erection and completion of a new manual instruction centre at the Victoria Senior Boys' County Council School at Watford, for the Education Committee. Persons desirous of tendering for the work may see the drawings, specification, agreement, etc., at the County Surveyor's Office, Hatfield, on or after Dec. 18, between the hours of 10 a.m. and 4 p.m. (except on Saturday, when they may be seen from 10 a.m. till 12 noon). A copy of the schedule of works (quantities) and a form of tender can be obtained at the County Surveyor's Office on or after the above-mentioned date upon payment of £2 2s. Sealed tenders, endorsed "Tender for Manual Instruction Centre, Watford," must be delivered to U. A. Smith, county surveyor, County Surveyor's Office, Hatfield, not later than 5 p.m. on Jan. 7.

Jan. 7. ABERYSTWYTH.—Erection of additional class rooms, manual training room, cookery centre, and other work at the Alexandra Road Council School, Aberystwyth, for the Cardiganshire County Education Committee. Persons desiring to tender are requested to send their names to G. Dickens-Lewis, county architect, North Parade, Aberystwyth, together with a cheque for £2, when they will be supplied with full particulars and form of tender. The drawings, specifications, and conditions of contract can be inspected at the architect's office any time during business hours. Securities required. Tenders, which are to be sent in on forms supplied, sealed and endorsed "Estimate for School Extension," must be delivered addressed to R. J. Roberts, District Education Office, Aberystwyth, by 12 o'clock midday on Jan. 7.

Jan. 8. SHINFIELD.—Erection of a new school for 250 scholars at Hyde End, Shinfield, Berks., for the Education Committee. Builders desirous of tendering are required to send in their names to The Secretary to the Education Committee, The Forbury, Reading, by the first post on Dec. 24, together with a deposit of £3 3s., for bills of quantities, which will be supplied by post. Plans, specification, and form of contract will be open for inspection at the Education Secretary's office on and after Dec. 29, between the hours of 10 and 5. Tenders must be delivered at the office of the Education Secretary, on the form and in the envelope provided, not later than the first post on Jan. 8.

Jan. 8. SALISBURY.—Construction of a brick built water tower and tank and works incidental thereto on the Bishops Down Estate, for the Ecclesiastical Commissioners for England, and their surveyors, Messrs. Cluttons, 5, Great College Street, Westminster Abbey, S.W. Plans and specifications prepared by Lemon and Bliard, engineers for the works, acting on behalf of Messrs. Cluttons, may be inspected at their Salisbury office, and copies of bill and quantities obtained on depositing the sum of £2 2s. Sealed tenders on the forms provided, endorsed "Tender for Water Tower, Salisbury," to be sent to the engineers, 29, Market Place, Salisbury, Wilts, before 4 p.m. on Jan. 8.

Jan. 13. SUTTON, near Southend.—Erection of a new school at Sutton (near Southend-on-Sea), to accommodate 160 children), for the Rochford Hundred district committee. Builders desirous of tendering are required to communicate with F. Whitmore, architect, 73, Duke Street, Chelmsford, not later than Dec. 24, and to enclose cheque for £2 2s., when bills of quantities will be sent as soon as ready. Plans, specification and form of contract can be seen, either at the offices of the architect or H. Bell, district secretary, County Chambers, Weston Road, Southend-on-Sea, between the hours of 10 a.m. and 5 p.m., on any working day except Saturday. Securities required. Ten-

ders sealed and endorsed "Sutton New School," should be forwarded to the offices of the District Committee at County Chambers, Southend-on-Sea, by 12 noon on Jan. 13.

Jan. 14. LITTLE COATES, LINCOLN.—Building an Elementary School at Little Coates, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31st, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S. M. Grant, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14th.

Jan. 14. HEALING, LINCOLN.—Building an Elementary School and Teacher's House at Healing, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S M. Grant, secretary, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14.

Jan 14. INGOLDMELLS, LINCOLN.—Building an Elementary School and Teacher's House at Ingoldmells, in the county of Lincoln, for the Lindsey C.C. Education Committee. Bills of quantities and form of tender may be had on application to Scorer and Gamble, architects, Bank Street Chambers, Lincoln, on or before Dec. 31st, and on payment to them of £2 2s. The drawings and conditions of contract may be inspected at the offices of the architects. Tenders must be delivered to S. M. Grant, Secretary, 286, High Street, Lincoln, in the envelope provided for that purpose, before 10 a.m. on Jan. 14th.

Jan. 16. ILFORD.—Erection of a caretaker's house at South Park School, Water Lane, Ilford, for the Education Committee. Plans and specifications may be seen and forms of tender obtained at the office of C. J. Dawson, architect, 11, Cranbrook Road, Ilford, between the hours of 10 a.m. and 5 p.m., upon depositing the sum of £2 2s. Fair wages clause. Tenders, in sealed envelopes, endorsed on outside "Tender for Caretaker's House," are to be addressed and delivered to W. S. Torbitt, secretary, Education Offices, Cleveland Road, Ilford, not later than 12 noon on Jan. 16.

No date. SALISBURY.—Alterations and additions to 52, Fisherton Street. For further particulars apply to F. E. Hale, Building Material Co., Salisbury.

No date. TERRINGTON ST. CLEMENT.—Erection of cottage in Hillgate Lane, Terrington St. Clement, for W. Tuck. Plan and specification may be seen at the offices of Walker and Walker, architects and surveyors, 2, Lower Hill Street, Wisbech.

ENGINEERING.

Dec. 28. KIEFF (Russia).—Canalisation works to be carried out in Kieff, for the municipal authorities. The upset price is 503,788 roubles (nearly £53,200). Tenders, which will be opened on Dec. 28, must be addressed to "L'Administration Municipale, Kieff, Russia."

Dec. 29. HULL.—Work in connection with the Tramway Power Station, as follows:—Contract No. 1.—Laying 36 in. pipe from Prince's Dock to Power Station, for condensing water, surrounding such pipe with concrete, and constructing ferro-concrete tank, etc. Contract No. 2.—Pipes, fittings, etc., in connection with new engine and condensing plant. Contract No. 3.—Concrete foundation for 1,300 h.p. engine and dynamo, foundations for condensing plant, construction of new pump room, and reconstruction of floors. Forms of tender and other particulars for contracts may be obtained at the city engineer's office, Town Hall, Hull. A limited number of blue prints, showing the pipes, etc., of contract No. 2, will be supplied upon payment of 2s. 6d., not returnable. Remittances to be made payable to T. G. Milner, city treasurer. Tenders, endorsed as directed on the forms of tender, are to be addressed to the chairman of the Tramways Committee, and delivered at the town clerk's office before noon of Dec. 29.

Jan. 4. BECKENHAM.—Supply of electricity meters, for the U.D.C. Specifications, general conditions and forms of tender may be obtained on payment to the council's collector at the Council Offices, Bromley Road, the sum of £2 2s. For any further information with regard to the proposed contract application should be made to J. E. Tapper, resident engineer, Electricity Works, Church Fields Road, Beckenham. Tenders, endorsed "Meters," must be addressed to F. Stevens, clerk of the Council, and delivered at the Urban District Council Offices, Beckenham, not later than 4 p.m. on Jan. 4.

Jan. 6. SCUNTHORPE.—Erection of a gasholder on the Gadd and Mason principal, for the Scunthorpe U.D.C. Particulars may be obtained from J. W. Turner, the gas manager, and specifications seen at the Gasworks, Scunthorpe. Sealed tenders, endorsed "Gasholder," must be sent to F. C. Hett, clerk, by 12 noon on Jan. 6

Jan. 12. GLOUCESTER.—Construction, erection, and removal of a temporary foot-bridge over the River Severn at the City Quay, Gloucester, for the Royal Agricultural Society's Show, June, 1909, 60 ft. span, 36 ft. total width over outer girders, the underside of the girders to be 7 ft. 6 in. above the coping of the quay wall, or 18 ft. above lowest summer level. Alternative tenders are invited:—(1) To provide all materials and construct and erect the bridge with the girders loaned by the Great Western Railway Co. complete, and to remove the same after the show, the whole of the timber and other materials to be the property of the contractor. (2) To erect and remove the bridge as above, but to stack the timber and other materials (except the girders) in sizes upon the City Quay ready for sale by auction as the property of the Local Show Committee. Tenders, endorsed "Tender for Bridge," to be sent to the Hon. Local Secretary, Guildhall, Gloucester, on or before Jan. 12 on forms to be obtained from the City Surveyor, Guildhall, Gloucester.

Feb. 1. RICHMOND (New South Wales).—Supply and erection of pumping machinery for the water supply of the Hawkesbury Agricultural College at Richmond. Sealed tenders, addressed to the President of the Tender Board, Department of Public Works, Sydney, New South Wales, and marked "Tender for Pumping Machinery for Hawkesbury Agricultural College," will be received at the Tender Board up to 2 p.m. on Feb. 1. Plans, specifications and forms of tender may be seen at the Contractors' Room of the Department of Public Works, Sydney.

IRON AND STEEL.

Jan. 4. BURY.—Supply of iron castings required during the year ending Dec. 31, for the District Joint Water Board. Particulars and form of tender may be obtained on application to R. B. Rigby, waterworks manager, Parson's Lane, Bury. Tenders, endorsed "Tender for Iron Castings," to be sent to J. Haslam, clerk, Bank Street, Bury, not later than Jan. 4.

Jan. 5. LONDON, S.E.—Supplying and erecting the necessary iron and steel work, and galvanized iron roofing, to cart sheds, for the Lewisham B.C., at the Council's depot at Old Road, Lee. The drawings, specification, and forms of contract can be seen, and forms of tender obtained, at the Town Hall, Catford (Surveyor's Department). The tenders must be on forms issued by the Council, enclosed in an envelope sealed and endorsed "Tender for Cart Sheds," and must be delivered by 4 o'clock on Jan. 5 at the Town Hall, Catford, and placed in the box there provided for the purpose. Fair wages clause.

Jan. 7. LONDON.—Supply and delivery of 290 tons bridge work, for the Mexican Railway Co., Ltd. Prompt delivery required. Specifications (including drawings), with conditions and forms of tender, can be obtained at the company's offices, 6, Broad Street Place, E.C., on payment of 10s. each, between the hours of 10 a.m. and 3 p.m. (Saturdays excepted). Tenders must be delivered not later than noon on Jan. 7.

Jan. 19. DARLEY DALE.—Manufacture and delivery at Darley Dale Station (Midland Railway) of about 160 tons of 5 in., 4 in. and 3 in. cast-iron spigot and socket pipes, together with all bends, junctions, tapers, and other specials (vertically cast pipes of British manufacture only), for the U.D.C. Also for cutting trenches and hauling, laying and jointing about 8,000 lin. yds. of 5 in., 4 in., and 3 in. cast-iron pipes; the provision and fixing of valves, etc.; the construction of intake works at Stanton Lees, and the construction of a ferro-concrete reservoir at Wensley Hill (capacity, 97,500 gallons), and other works incidental to the contract. The whole of the works will be let in one contract, and will not be divided. Plans may be seen at Market Hall Chambers, Matlock. Specification, bill of quantities and form of tender can be obtained on application to Taylor, Wallin and Taylor, engineers, Cathedral Buildings, Newcastle-upon-Tyne, on payment of £3 3s. deposit. Contractors wishing to be shown over the line of works are requested to meet the engineers at Darley Dale Station, on Jan. 5 at 11 a.m. Sealed tenders, on the prescribed form, with schedule of prices, etc., properly filled in, endorsed "South Darley Waterworks," must be delivered to R. Taylor, clerk to the Council, Market Hall Chambers, Matlock, Derbyshire, not later than Jan. 19.

PAINTING.

Dec. 29. BIRKENHEAD.—Internal painting of the Union Workhouse laundry, etc., at Tranmere, for the Guardians. Premises may be inspected between 9 a.m. and 12 noon. Forms of tender, with specification, may be obtained at the offices of J. Carter, clerk, Poor Law Offices, Birkenhead, and must be delivered to him by Dec. 29, at 12 noon, endorsed "Tender for Painting." Fair wages clause.

Jan. 7. LONDON, W.—External painting work at the workhouse, Marloes Road, Kensington, for the Guardians of the Poor. The specification and form of tender can be obtained at the office of the Guardians, Marloes Road, Kensington, between the hours of 10 and 4 (Saturdays, 10 and 1). Tenders are to be made only on the forms provided, and are to be delivered at the office of the guardians not later than 3 p.m. on Jan. 7.

No date. HANLEY.—Colouring and painting the inside of Shelton Church Schools during the Christmas holidays. Painters desirous of tendering are requested to send their names at once to A. Scrivener, architect to the Hanley Education Committee.

PLUMBING & SANITARY

Dec. 24. BORTHYGEST.—Construction of sewage disposal works and sewering for the Borthygest sewage disposal, for the Ynyscyhaiarn U.D.C. Drawings may be seen and copies of specification, quantities and general conditions of contract obtained at the office of F. J. Commin, engineer, 1, Victoria Street, Westminster, S.W., or at the office of J. Jones, clerk to the Council, Town Hall, Portmadoc, between the hours of 10 a.m. and 4 p.m. (Saturdays excepted), on payment of £1 1s. Tenders, endorsed "Borthygest Sewage Disposal," must reach the clerk not later than 12 o'clock noon, Dec. 24.

Dec. 29. PORTSMOUTH.—Supply, erection, testing, and putting to work of two destructors, for the Portsmouth B.C. Contract No. 1.—A destructor capable of dealing with 100 tons of refuse in 24 hours, to be placed on a site at Baffins Marsh to the eastward of the borough area. Contract No. 2.—A destructor capable of dealing with 100 tons of refuse in 24 hours, to be placed on land adjoining the sewage pumping station at the end of Henderson Road, Eastney, to the south-east of the district. Printed specifications and forms of tender may be obtained from A. Hellard, town clerk, Town Hall, Portsmouth, on payment of a sum of £2 2s. for each contract. Any further information required will be supplied on application at the offices of Bramwell and Harris, 11, Great George Street, Westminster, S.W. Tenders, under seal, and endorsed "Tender for the Works for Destruction of Refuse at Baffins Marsh," or at "Eastney," as the case may be, must be delivered to A. Hellard, town clerk, Town Hall, Portsmouth, at or before 12 o'clock on Dec. 29.

Dec. 30. FERRYHILL.—Construction of about 1,234 yds. of earthenware or stoneware pipe surface water drains, with manholes and other work incidental thereto, at Merrington Lane, Dean Bank, Ferryhill, for the Sedgefield R.D.C. Drawings and specifications may be seen and quantities obtained on application to W. R. Plews, highway surveyor, Council Offices, Sedgefield. Tender to be sent to J. W. Lodge, clerk to the Council, Sedgefield, on or before Dec. 30.

Dec. 31. CHEPPING WYCOMBE.—Supply of stoneware pipes for year ending Dec. 31, 1909. Specification and forms of tender may be obtained from T. J. Rushbrooke, borough surveyor, 77, Easton Street, High Wycombe, to whom tenders, endorsed "Stoneware Pipes," must be delivered on or before Dec. 31.

Dec. 31. OYSTERMOUTH.—Construction of the following for the U.D.C.: Contract No. 3, tidal storage tank, about 193 yards of concrete and brickwork tidal tank, together with manholes, storm overflow chambers, and other works incidental thereto. Contract No. 4, outfall sewer; about 900 yds. of 18 in. cast-iron outfall sewer above and below water mark of O.S.T. and other attendant works. The plans and drawings of the works can be seen and forms of tender, with specification, quantities, and schedules, obtained at the offices of the Council, Park Street, Oystermouth, on deposit of a cheque for £1 1s. in respect of each contract set. Sealed tenders, marked "Sewer Contract No. 3," or "Sewer Contract No. 4," as the case may be, must reach J. H. Robinson, clerk to the Council, Council Offices, Oystermouth, not later than 3 o'clock of the afternoon of Dec. 31.

Jan. 1. HULL.—Paving and draining the backway on the south side of Beresford Avenue, for the Corporation. Forms of tender and other particulars may be obtained at the office of A. E. White, city engineer, Town Hall, Hull. Tenders, endorsed "Tender for Private Improvement Works," are to be addressed to the chairman of the Works Committee, and delivered at the town clerk's office before noon on Jan. 1.

Jan. 8. LUDWORTH.—Laying of a sewer of about 445 yds. in Cote Green Lane, Ludworth, for the Glossop Dale R.D.C. Plans and specifications may be seen at the house of J. Platt, C.C., Lower Fold, Ludworth, Marple Bridge, and all other information obtained from E. Garside, C.E., Town Hall Chambers, Ashton-under-Lyne. Sealed tenders must be sent to G. Rowbottom, J.P., chairman of the Council, Chew, Chisworth, near Broadbottom, endorsed "Tender for Sewer," not later than Jan. 8.

No date. READING.—Laying about 4,000 ft. of sewers and forming about 668 ft. of roadway on the Whitley Park Estate, Reading, contractors to employ Reading men only. Plans and sections can be seen and particulars obtained on application to Haslam and Son, estate agents and surveyors, Friar Street Chambers, Reading.

ROADS AND CARTAGE.

Dec. 24. SHOREHAM.—Supply of 450 cubic yds. quartzite, broken to pass through 1½ in. ring, for the U.D.C., to be delivered to the Royal George Wharf, Shoreham, into carts, or deposited on wharf, price to include all charges. Sample to be sent with tender to H. Brown, clerk to the Council, Council Offices, Shoreham, on or before Dec. 24.

Dec. 24. NEW MALDEN.—Supply and delivery of about 300 cubic yds. of good, clean, hard, well-broken brick or concrete hardcore and about 120 cubic yds. of good, clean, broken gravel to pass a 2in. ring, for the Maldens and Coombe U.D.C. Recreation Ground, Station Estate, New Malden. Form of tender can be obtained on application at the surveyor's department upon payment of £1 1s. Tenders to be delivered to J. W. Johnson, clerk to the Council, Council Offices, New Malden, accompanied by samples, not later than Dec. 24, sealed and endorsed "Tender for ——."

Dec. 28. PONTYPRIDD.—Carrying out contract No. 1, New Park Terrace, Treforest, contract No. 2, lane at rear of East street, for the Pontypridd U.D.C. Plans and specifications may be seen and forms of tender obtained on application at the Office of P. R. A. Willoughby, engineer and surveyor, upon receipt by J. C. Jones, clerk to the Council, Municipal Buildings, Pontypridd, of a deposit of £1 1s. in respect of each contract. Tenders, on the prescribed form, sealed and endorsed "Private Street Works, Contract No. ——," as the case may be, must be received by the clerk to the Council, on or before Dec. 28.

Dec. 29. PONTEFRACT.—Carrying out of certain private street work, in Colonel's Walk, Pontefract. Plans, sections, and specifications may be seen, and bills of quantities and forms of tender obtained. Sealed tenders, endorsed "Colonel's Walk," and marked "Tender for private street work," to be delivered at the office of J. E. Pickard, borough surveyor, Municipal Offices, Pontefract, before 12 o'clock noon on Dec. 29.

Dec. 30. BACUP.—Supply of about 8,000 tons of granite setts. Specifications and conditions may be had on application to W. H. Elce, borough engineer, Bacup. Tenders, endorsed "Setts," are to be delivered at the offic eof J. Entwistle, town clerk, not later than Dec. 30.

Dec. 30. ERDINGTON.—Supply of broken stone during the year 1909, for the Highways and Buildings Committee. Specification, form of tender, and all information may be obtained upon application at the offices of H. H. Humphries, surveyor to the Council, Council House, Erdington, to whom tenders must be delivered not later than 12 o'clock at noon on Dec. 30. Fair wages clause.

Dec. 30. OLD HILL. — Forming, metalling, laying, and making the new extension of Plant street, Old Hill. Plan, specification, and conditions may be seen at the Council Offices, Old Hill, between the hours of 10 a.m. and 4 p.m. Saturdays from 10 a.m. to 1 p.m.). Tenders, duly endorsed, must be in the hands of D. Wright, clerk, Council Offices, Old Hill, Staffordshire, not later than 12 o'clock noon on Dec. 30.

Dec. 30. HORSHAM.—Supply of:—1, picked surface flints, delivered on the main road; 2, broken quartzite, granite, or other stone, to Shoreham Harbours, and to railway stations; 3, cartage from railway stations, wharves, and stone yards to main roads, and team labour per day; 4, for the year ending March 31, 1910, for the Roads and Bridges Committee. Forms of tender may be obtained on application to H. W. Bowen, County surveyor, County Surveyor's Office, 22, Worthing Road, Horsham, and applicants are requested to state which form of tender (1, 2, 3, or 4) they require. Sealed tenders, endorsed "Tenders for Materials," or "Tenders for Cartage," to be delivered to the county surveyor, on or before Dec. 31.

Jan. 1. READING.—Supply of broken road materials for the twelve months ending March 31, 1910, delivered at railway stations and wharves in the County of Berkshire. On the receipt of a stamped addressed foolscap envelope, forms of tender, list of stations and wharves and full particulars will be forwarded by the county surveyor. Tenders, endorsed "Tender for Materials," to be sent to J. F. Hawkins, county surveyor, by Jan. 1. Securities if required. A specimen form of contract may be seen at the office of the Clerk of the County Council, 28, The Forbury, Reading.

Jan. 2. WALMER.—Supply of surface picked old flints, or clean, hard dug flints required for road repairs, to be delivered during the next three months, in any part of the district of Walmer, for the U.D.C. About 750 yds. will be required, and tenders may be for the whole or any part, not being less than 100 yds. The flints must be broken to pass through a two-inch ring. Tenders endorsed, "Tender for Flints," to be delivered to F. W. Hardman, clerk, before noon of Jan. 2nd.

Jan. 4. HAYWARD'S HEATH (Sussex).—Supply of about 6,000 tons of broken granite, quartzite, and flints, to be delivered in such quantities and at such times as the Council shall direct, for the Cuckfield R.D.C. Further particulars and forms of tender can be obtained on application to A. MacArthur, surveyor, Council Offices, Haywards Heath. Tenders, endorsed "Road Materials," to be lodged with C. H. Waugh, clerk, Council Offices, Boltro Road, Haywards Heath, by Jan. 4.

Jan. 4. CUCKFIELD.—Supply of about 6,000 tons of broken granite, quartzite, and flints, for the R.D.C., to be delivered in such quantities and at such times as the Council shall direct. Further particulars and forms of tender can be obtained on application to A. MacArthur, C.E., surveyor, Council Offices, Haywards Heath. Tenders, endorsed "Road Materials," to be lodged with C. H. Waugh, clerk to the Council, Council Offices, Boltro Road, Haywards Heath, not later than Jan. 4.

Jan. 4. LONDON, S.W.—Making up and paving that part of Fallsbrook Road, Streatham, which is not already a parish road, for the Wandsworth Metropolitan B.C. The specification and drawings may be seen, and forms of tender obtained at the borough engineer's office, New Streets Department, 56, East Hill, Wandsworth, S.W., between the hours of 10 and 4 (Saturdays 10 and 12). Tenders, enclosed in sealed envelopes, and endorsed "Tender for Paving Fallsbrook Road," must be delivered at the Council House, East Hill, Wandsworth, S.W., and may be placed by the person tendering in the box provided for the purpose not later than 4 o'clock on Jan. 4. Securities if required. Fair wages clause.

Jan. 5. EALING.—Making up Balfour Road (second portion), for the Town Council. The drawings and specifications may be seen, and form of tender, together with schedule of quantities and other particulars, obtained from C. Jones, borough engineer, Town Hall, Ealing, W., any day during office hours upon payment of a deposit of 10s. 6d. Sealed tenders, in the envelopes provided, endorsed "Tender for Making up Balfour Road (second portion)," must be delivered at the office of G. E. Brydges, town clerk, town clerk's office, Town Hall, Ealing, W., not later than 9.30 a.m. on Jan. 5.

Jan. 6. HOVE. — Supplying artificial stone paving slabs during a period of about two years to March 31, 1911. Further particulars may be obtained at the office of H. H. Scott, borough surveyor. Tenders, on forms supplied, addressed to H. Endacott, town clerk, Town Hall, Hove, and endorsed "Tender for Artificial Stone Paving Slabs," will be received up to 6 o'clock on Jan. 6.

Jan. 7. CLAYGATE.—Making up, etc., Station Parade, Claygate, about 400 ft. run, including works of metalling, channelling, draining, kerbing, paving and other work, for the Esher and The Dittons U.D.C., in accordance with a specification, which may be seen at the surveyor's office, Brabant Villa, Thames Ditton, on payment of a deposit of 10s. Tenders, endorsed "Tender for Roadmaking," must be delivered to the Clerk, Brabant Villa, Thames Ditton, by noon on Jan. 7.

Jan. 7. NORTHALLERTON.—Formation, levelling, draining and turfing of the playing fields at the new grammar school at Northallerton. Plans and specifications may be seen at the County Hall any time (within office hours) up to Dec. 31, except on Dec. 25, 26, and 28. Tenders, endorsed "Tender for Grammar School Playing Fields," to be delivered to W. Fowle, clerk to the Governors, Northallerton, on or before Jan. 7.

Jan. 23. TUNBRIDGE WELLS.—Paving, metalling, and making-up of Campbell Road and Cuiverden Avenue, for the B.C. Plans, sections, and specifications can be seen and copies of the bill of quantities can be obtained at the office of W. H. Maxwell, borough engineer and surveyor, Town Hall, Tunbridge Wells. Securities required. Tenders, endorsed "Private Street Works," to be sent to W. C. Cripps, town clerk, Town Hall, Tunbridge Wells, on or before 9 a.m. on Jan. 28.

No date. BISHOPSTOKE.—Making of a new road or roads on the Weavills Estate, Bishopstoke. Forms of tender, and details of work, can be obtained of F. Stubbs, auctioneer and estate agent, Bishop's Waltham.

MISCELLANEOUS.

Dec. 29. LONDON, E.C.—Supply of (1) helical and volute springs, (2) wood screws, nails, etc., for the directors of the Bombay, Baroda and Central India Ry. Tenders must be made on forms, copies of which, with specifications, can be obtained at the offices of W. V. Constable, secretary, Gloucester House, 2, 3, and 4, Bishopsgate Street Without, London, E.C., on payment of 21s. each which will not be returned. The directors are prepared to receive tenders up to noon on Dec. 29.

Dec. 30. DEVONPORT.—Supply of the following stores and materials, from Jan. 1 to Dec. 31, for the B.C. 1, masons', plasterers', and slaters' materials; 2, carpenters' materials, labour, etc.; 3, smiths' materials, labour, etc.; 4, painters' and glaziers' materials, labour, etc.; 5, plumbers' and gasfitters' materials, labour, etc.; 6, ironmongery; 7, sand. Forms of tender may be obtained at the borough surveyor's office, Devonport. Sealed tenders, endorsed "Tender for ....," must be delivered to R. J. Fittall, town clerk, Municipal Offices, Devonport, on or before 12 noon on Dec. 30.

Jan. 1. MERTHYR TYDFIL.—Supply and delivery of wood posts, wood rails, and corrugated iron sheets required for the fencing of the site of the Smallpox Hospital, Mountain Hare, Merthyr. Particulars can be obtained from the borough surveyor. Sealed tenders, endorsed "Smallpox Hospital," must reach T. A. Rees, town clerk, Town Hall, Merthyr, by noon on Jan. 1.

Jan. 4. PORTSMOUTH.—Supply of the following materials to be used in connection with the construction of the Goldsmith Avenue Tramways Route (about one mile):—Contract No. 16, ballast, sand, Portland cement, granite setts, pitch and creosotes oil, thermit joints, rails, B.S. section, No. 3, tiebars. Contract No. 17, one double junction (manganese), sixteen special crossings (ditto), manganese rail. The specifications and drawings, with general conditions and form of tender for any of the above contracts, can be obtained on application to A. Hellard, town clerk, Town Hall, Portsmouth, and a deposit of £2 2s. must accompany any such application. Any further particulars can be obtained, and drawings seen, on application to V. G. Lironi, tramways engineer, engineer's office, Vivash Road, Fratton, Portsmouth. Tenders must be delivered to the town clerk, Town Hall, Portsmouth, not later than 12 noon on Jan. 4. Fair wages clause.

Jan. 8. MANCHESTER.—Supply and delivery of the fire-clay goods required during next season, by the Gas Committee, at their several gasworks. Full particulars and forms of tender may be obtained from C. Nickson, superintendent, Gas Offices, Town Hall, Manchester, on payment of a deposit of £2 2s. Sealed tenders, endorsed "Tender for Fire-clay Goods," addressed to the chairman of the Gas Committee, must be delivered at the Gas Offices, Town Hall, Manchester, on or before Jan. 8.

Jan. 19. LONDON, S.W.—Execution of works and the supply of materials from March 31, for one, two or three years, as per forms of tender, for the Wandsworth Metropolitan B.C., at their option:—1, blue bricks; 2, castings, etc.; 3, cement; 8, granite (broken); 9, granite kerb and setts; 10, gravel and flints; 11, hire of steam road rollers and scarifiers; 12, lime, bricks, etc.; 13, slag or scoriae paving blocks; 16, tar spraying roads; 17, Thames ballast and sand; 18, timber, etc.; 21, wood paving blocks; 22, York or other similar paving. Samples (where required) are to be delivered at the office of H. G. Hills, town clerk, Council House, Wandsworth, S.W., not later than 3 o'clock on Jan. 19, at the cost of the persons tendering. Fair wages clause. Specifications and forms of tender may be obtained and form of contract seen at the town clerk's offices between the hours of 10 a.m. and 4 p.m. (Saturdays 10 till 1). Tenders, each enclosed in a separate envelope, sealed and endorsed "Tender for ——," are to be delivered at the Council House, and may be placed by the person tendering in the tender box provided for the purpose, not later than 3 o'clock on Jan. 19.

Jan. 25. LONDON, E.—Removal of road sweepings by barge or rail; and for the supply of iron castings for sewerage and drainage works; stoneware sewer and drain pipes, etc.; paints, varnishes, etc., for the Works Committee of the B.C. Fair wages clause. Forms of tender, specifications and all particulars may be obtained on application to H. Heckford, borough surveyor, at the Council offices, on payment of a deposit of £1 1s., in cash. Samples may be inspected at the Council's Depots. Sealed tenders, endorsed with the inscription of the work tendered for, to be delivered to L. Potts, town clerk, Council Offices, High Street, Poplar, on or before noon on Jan. 25.

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ARCHITECT and surveyor's assistant (25), design, working drawings, details, can take off quantities, survey and level; any district.—W. M., 11, Pyenot Hall Lane, Cleckheaton, Yorks. 4739

ARCHITECT'S Assistant (23), student R.I.B.A., 5½ years' experience, working drawings, details, levelling, surveying, drainage, specifications, knowledge of quantities; excellent references; salary moderate.—Bernard A. Dyer, St. Peter Street, Hereford. 4723

ARCHITECT'S Junior, 5 years' experience (23) desires immediate engagement; good references; neat draughtsman, colourist, etc.; assist quantities.—Apply Box 4727, BUILDERS' JOURNAL Office.

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CLERK of Works, just finishing large schools, wants situation, 15 years' experience; expert timber, good all trades; plans, surveying, levelling, etc., etc. Country estate preferred.—Caswell, New Council Schools, Biddulph, Staffs. 4720

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WANTED, immediately, a first-class activ round architect's assistant, with considerable rience in public, elementary, and secondary planning. He must also be an exped draughtsman, capable of writing specification checking accounts. Preference given to capable of preparing a complete bill of qua (London system), up to at least £10,000. not to exceed three guineas per week, p monthly. Apply stating full particulars an timonials (copies) to D. Pugh - Jones, C (School) Architect, 62, Charles Street, C

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Photo: Bolas & Co.

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December 30, 1908.

Volume 28. No. 725.

THE BUILDERS' JOURNAL
AND ARCHITECTURAL ENGINEER.

Caxton House, Westminster.

TO ALL OUR READERS AT HOME AND ABROAD: A HAPPY AND PROSPEROUS NEW YEAR.

Our Special Issue.

This special issue of THE BUILDERS' JOURNAL can need but a brief foreword. We prefer it to speak for itself. It represents a very earnest endeavour to gratify the diverse tastes, and meet the various interests, of all sections of our readers, professional, industrial, and commercial. The principal feature—an epitome of the history of English architecture—with its uncommonly fine series of illustrations of noble buildings, is, we would hold, not of merely sectional interest, but makes the widest possible appeal; and the same general interest can be claimed for the representative collection of men of mark that we are able to show. These, and the accompanying biographical notes, add to our special issue a spice of human and personal interest that, we feel sure, will be highly appreciated by all. We have made this collection of portraits as fully representative as circumstances would permit; and we think it will be acknowledged that neither in this respect nor in presenting brief summaries of the year's transactions of the various associations, and of the building operations of a perhaps rather uneventful twelvemonth, have we allowed the provinces to suffer unmerited neglect. We believe in fair play for the provinces, and for any neglect in this direction we are not consciously responsible. Our friends in the country can at all times count confidently on our most sympathetic attention, as we think they already know. The historical section is, we take leave to assume, no whit the worse for having been in part seen before. Some of it appeared in connection with the last London International Congress of Architects; but the articles have now been revised and, in some instances, considerably amplified by their respective authors; and the very fine illustrations have been carefully rearranged, with judicious suppressions and additions. The volume—for so we may venture to call it—that we now have much pleasure in submitting to the reader, represents, we need hardly say, a vast amount of hard work; in which, however, the Editor has been greatly cheered and encouraged by the ready and kindly courtesy of those from whom he sought authentic first-hand information and other valuable help and advice. To these he offers his warmest acknowledgments and most sincere thanks. We think that we are justified in claiming that our special issues are quite without parallel in the journalism of the professions and trades that they represent. At any rate, we are content to advance them in manifestation of the energy and enterprise with which THE BUILDERS' JOURNAL is, we trust, always conducted.

By-laws and the Big Stick.

Councillor Highton, in an address on the eternal housing question, delivered at Blackburn, seemed to think that the whole problem lies in a nutshell. Reform the by-laws, and control town development, and the problem is solved. Our present inelastic by-law system, he contended, harassed individuals unceasingly on all sorts of details without preventing land speculation and jerry building, and it did not attempt the one thing that might be useful—comprehensive control of town development. The present difficulties arise partly from the great increase during the past quarter of a century, in the cost of labour and materials, but perhaps more especially from the stringency, which is both expensive and harassing, of procrustean by-laws, and, most potent of all, the deterrent of private building enterprise is the competition, actual or potential, of municipal authorities, who build with unnecessary extravagance and throw their losses on the rates. This wastefulness sets up a vicious circle; for in sending up the rates it greatly discourages the erection not only of working-class dwellings, but of buildings of every description. A rate-burdened population loses heart and enterprise. With regard to municipal housing, Councillor Highton maintained that public bodies would render better service to the community if they refrained from building, and contented themselves with lending money under the Small Dwellings Acquisition Act. He thought, also, that by modifying their by-law so as to enable the building of houses at reasonable prices, corporations would go a long way towards solving the housing problem. There are doubtless many instances in which by-laws might be judiciously relaxed without the slightest risk to the health and comfort of the community; but, unfortunately, as Councillor Highton pointed out, there is a general and not wholly inexplicable disposition, on the part of local authorities, to accept from their officials any suggestion that tends towards stringency, and he might have added that there is an equally marked and equally comprehensible disposition on the part of officials to put forward such suggestions. But "officialdom" and overzeal in the exercise of "a little brief authority" are not, it may be supposed, entirely beyond restraint. The spirit in which by-laws are interpreted and administered may be made almost as effectual as the letter; and any tendency to extreme vigour may, we think, be corrected by such action as some of the master builders' associations have lately taken. Councillor Highton expressed the opinion that it was "the duty of a corporation to try to work with the private builders, and to fix upon a type of house which would not only be acceptable to the local authority, but would meet the needs of the general body of workers." The desirability for "consulting the men who know" is certainly not confined to this single phase of building operation; and therefore we think that the local associations of master-builders are acting well within their rights in pressing home their claims to consideration in matters in which their interests are affected or threatened, or in which their advice is otherwise beneficial. As our Federation reports have shown, such intervention has been in some instances signally effective; and this success in correcting the visual angle of local authorities should be strenuously followed up. That it has been achieved is a welcome proof that even local authorities are amenable to reason when they are properly approached; or, as a cynic might say, that they are not wholly indifferent to the "big stick" of organised opinion.

Priest as Architect.

For many weeks past the "Tablet," an influential organ of the Church of Rome, has been flooded with letters on building. It seems that the laymen of the faith have a grievance against their ghostly advisers. The complaint is that too many churches are being built by priests, to the detriment of those who, while they may perhaps be studious for orders, holy or otherwise, have not yet assumed the tonsure. Many architects, it appears, have turned priests, while we gather with less certainty, from a casual glance at the very voluminous correspondence on the subject, that some few priests have turned architects. Thus do both roads lead to Rome; and in either case the layman feels that he has a full-blown grievance. He more than hints that the clerical architect works for less than the accustomed fees. So far as we can see, this sordid view has not been sustained. One or two of the priest-architects have denied that they have worked for less than the recognised rate. As might have been anticipated, the clerics took the earliest opportunity of lifting the controversy to a far higher plane. One of them has been "rather shocked at the low views of art (in the wide sense of the word) implied in some of the letters." Some correspondents talk," he says, "as if the designing of a church were a thing to be learnt, a matter merely of patient study. Alas! many others think so; that is why one wanders through most of our churches desolate, comes away from much carving, marble, and wasted labour, with a sense of misery. The divine spark is not there." The gentleman who wrote that passage has much

more to the same effect. It is all very fine, but it evades the point at issue. Yet for this gear we could love him: "Does a man who really cares about art mind who produces something beautiful, so long as it is produced? . . . . I know that it is difficult as one grows older to preserve a shred of an ideal, and that one illusion is torn away after another. I still cling to my belief in the real artist. Angelico, with his brush and colours, has done good to the world for 500 years. Perhaps some painters were once cross with him, and said that he ought to be doing the work of his monastery instead of taking the bread out of their mouths. Religion is a subtle thing. Angelico has by his art spoken it to many millions whom he could reach in no other way. Who shall say that his religious training was useless in helping him to speak?" It now begins to dawn on us that the gentleman who started this controversy is pretty much in the condition of the man who went out to shear and came back shorn. He could hardly have reckoned that Angelico would be thrown at his devoted head; but he might have remembered that he was adventuring his body and soul amongst the skilled masters of dialectic; who, moreover, make a cult and a merit of fasting and abstinence, and might be expected to make light of the bread-and-butter question. It only remains for him to repent in sackcloth and ashes for daring to stick up for his rights. He will hardly be able to smile with us at this naive conundrum, propounded by another clerical antagonist: "Was it lawful for St. Paul to supplement his spiritual earnings by making tents (which, by the way, was the architecture of the desert), or is there any secular architect who is bold enough to condemn St. Paul and so many of our French clerical brethren? . . . " Yes; it is a most unequal contest, and whoever started it must be feeling that he is indeed a very profane person. He may have thought, at the outset, that priests were best employed in the edification of "churches not made with hands." We also might have arisen from a perusal of these letters with the firm conviction that only a priest was fit to build a church; but within a stone's throw of our offices stands Westminster Cathedral, and we are under the impression that its architect was a layman. The priests' sacrosanct theory of art is very alluring; but then, so is Mr. Felix Clay's ultra-materialistic view of the æsthetic sense; and between these opposite poles there is an ample field for the exercise of plain common sense.

Torrak and Wrack.

A rather alarmist writer, whose object was obviously political rather than industrial, having contributed to the "Morning Post" a jeremiad on the ruinous importation into this country of "Diseased Foreign Timber," which we are evidently expected to regard as the refuse of Sweden, Mr. Louis Zettersten points out that the hater of imports has allowed his political fervour to betray him into error. The writer, in dealing with "torrak" and "wrack," had classed the two kinds together, although they are very different in quality. Torrak, Mr. Zettersten maintains, is a very dry timber, and "nothing can be better as a building material," and it is not true, as the anti-importer stated, that "the Swedes never use such wood." On the contrary, experienced builders in Sweden are now using it extensively, and the export is rapidly declining. "Wrack," on the other hand, is an inferior quality of timber which cannot be used for house building; but this quality has for a long time been used by the Swedes themselves "for scaffolds and similar purposes." It is marketed under a special name, and at a specially cheap price. Why then, blame the Swedes? The cool implication that the Swedish exporters are rogues, and the English buyers fools, or worse, does not count for much in this country, where it is instantly recognised as a symptom of the dry rot of party politics; and, from the admirably temperate tone of Mr. Zettersten's letter, it may be gathered that he does not take too seriously the imputation cast upon his countrymen by a perfervid pseudo-patriot. But there is some small amount of real technical interest in Mr. Zettersten's disquisition on torrak and wrack.

Critics of Architecture.

A few weeks ago we had occasion to protest against the splenetic strictures of a French critic of American architecture, who saw nothing good in it, and who was particularly indignant because the Americans did not invent their own details. He might as reasonably complain that American authors do not invent their own words (as to some extent they do!); for surely correct architectural composition is the combination of recognised elements. We now find an English critic going out of his way in order to eulogise the architecture that the Frenchman condemned. The Englishman, in describing the recent exhibition of the work of Royal Academy students, writes: "The designs for architecture remind us too painfully that in this art, the first and most important of all the arts, we are far behind America in adaptability to modern requirements, originality, and beauty. American architecture is generally associated with sky-scrapers. These are usually laughed at by those who have never seen them, nor even pictures of the beautiful modern churches and modern houses throughout the United States. We have brilliant architects, no doubt, but no architecture, or perhaps no public to appreciate it." The Americans may now smile again—perhaps a little sarcastically, since they must feel that the Englishman's praise is only a shade more just than the Frenchman's blame. But the Englishman—if, indeed, he is not an American writing in an English newspaper—need not have extolled American architecture at our expense. Americans have not been slow to express their admiration of English architecture, and have given tangible proofs of their sincerity by inviting some of our best men to build for them; and we are sure that in England there has been no lack of generous praise of American work. Yet doubtless the two countries have much to learn from each other, but the expression of immoderate views will not assist the process. The statement that we have brilliant architects but no architecture is a curious sort of paradox to base on an adverse criticism of students' designs. If it was not "writ sarcastic," it must have been written in a hurry, by one who, although he admits that "Architecture is the first and most important of all the arts"—"the Mistress Art," as Mr. Blomfield calls it, with more brevity and beauty—was more conversant with the mysteries of brushwork, and made a false step the moment he quitted his own domain. The French critic, by the way, was a sculptor; and a painter and a sculptor disagreeing about Architecture rather reminds one of the pantomime freak between the sweep and the baker.

By-Law Blandly Interpreted.

A very nice point has been debated and determined by the Sunderland Town Council. Plans for a tall chimney that had been submitted by Messrs. Tyzach for approval were, technically not in conformity with the by-laws. Nevertheless the building committee recommended that the plans should be passed, because the borough surveyor had given assurance that the chimney as proposed to be built would be more safe than if it were built in strict accordance with the by-laws of the Corporation. This put the Council in a dilemma. Should they insist on the strict observance of their by-law, and worsen the chimney? Or should they allow the chimney to be built in the best way, and thus stultify their by-laws? The matter was keenly debated. There were, of course, inflexible councillors who stood out for the letter of the law. One Councillor maintained that the Council should "stick to" their by-laws; another that they should stand by them; a third, that they should "observe the law in their integrity." In the upshot, the Council did none of these things. They passed the plans by thirty-seven votes against thirteen; thus showing that, as a whole, they preferred the spirit to the letter, and were not to be beguiled by the cant phrases of the rigidly righteous. They are to be congratulated on their courage in interpreting an obvious and abortive by-law in the light of common sense fortified by expert opinion. It does seem, after all, to be a very heroic course to adopt; but it is not every Council that would dare to take it.

The Coming Boom.

Now is the time to build. That is the advice of the timber merchants. This seasonable hint (it is certainly seasonable at all times of the year, but most especially when business is most slack) was dropped, frequently, and in several places, at the annual dinner of a firm of timber merchants at Dundee. But the speakers had an object (perhaps they had more than one) in urging that the immediate purchase of timber is a matter of moment. Never again may timber be so cheap. Its price is going up, and the supply is being rapidly exhausted. It may be that in thirty years' time there will be no timber to buy. It would be wise, therefore, to lay in a good stock to-day, while it is to be had comparatively cheap. Dundee is not alone in tendering this advice. From Königsberg comes the news that the prices of timber there have been considerably strengthened in consequence of a largely increased demand for building wood, and "the situation has so much improved that the banks have signified their readiness to advance money on goods." The demand for timber has arisen all over Germany, where the building trade is becoming exceedingly brisk. Baulks of all sorts have risen in price, and the sawmills are overwhelmed with orders. We can only trust that the news is not exaggerated, and that the many's example may be quickly followed in this country.

"THE FUNCTION OF COLOUR IN STREET ARCHITECTURE."—I.

By P. M. Stratton, A.R.I.B.A.

I.—One autumn it was my fortune to visit Bristol, and afterwards to wander across Clifton Downs until forced to halt on the edge of the Avon Gorge. Far below, the silver waterway carried red and black ships, going up to Bristol Docks, or being taken down to the sea by noisy tugs. And on each side rose a vast many-coloured wall. On the right hand the wall was of stone, innocent of the touch of saw or chisel, and left all jagged and torn as when it had first been heaved up. But the wind and rain had beaten on it, the sun had caressed it, the iron in the stone had crept out and stained its face, so now to a half-closed eye the whole front seemed a mass of dull gold. But this was a background only, for russet and silver lichen, yellow fungi and green moss, which lit it up here and darkened it there, but always added life and fire to the mass. The further side of the river rose as steeply from the water's edge, but was clothed in autumn leafage. Along the slope the silver trunks of the birches shone through their thin foliage of delicate yellow. Further up, a clump of beeches was set like a jasper among the dull green of the oaks.

Later in the day found me walking down a typical London street, where every building was covered with a veil of soot. Here and there a little brickwork seemed to have escaped from its vesture to peep forth with a dirty red face and some new buildings of stone showed up like apparitions amidst the general dinginess. Indeed, it seemed a city of black shrouded corpses and pale ghosts. In the suburbs I knew there was a more striking and brazen disregard for the beauty of colour; for there the shops and houses showed little character but that of dull greed or cheap display.

Street architecture needs to furnish a substitute for the gorgeous and tender hues of the natural environment of man, which is as necessary to the health of his being as sunlight is to the leaf. Especially do the dwellers in manufacturing cities require some brightness of colour to quicken the dying embers of beauty within them. The children must be able to find the gay surroundings which their eyes by instinct and unconsciously are seeking; and the men and women must be helped to keep green the memories of field and hedgerow.

Therefore, let all colour schemes be founded on nature, so that her endless harmonies, contrasts and gradations may be transported to the towns. Let the architect of cities study her among the hills that heather clothes with a purple mantle. There he follows a path that is all yellow and gravelly in the centre, with an edging of short grass hung over by the shimmering blue of hairbells; for nature loves to adorn her margins. He will find mountains and hillsides are somewhat monotonous in hue, the formation of the earth takes a sober colouring that enhances its expression of Titanic energy or of calm strength. Thus the mains of Alps and Appennines are for ver white with snow; high precipices and like the Cornwall cliffs, black or rey from top to base. And in like manner that monochrome of Florence lies he Pitti Palace, bearing "a stern expression of brotherhood with the mountain eart from which it has been rent."

On the other hand, where form is meaningless or wanting in vigour, there colour should be strong and vivid and in great variety. Yet the bricks of the ordinary blank wall are generally specified to be carefully assorted to match in size and tint. A much happier effect would be created by the introduction of stone here and there into brickwork whose red should darken into purple, and be flecked with orange, and coursed occasionally with flints that shine like inlaid mother-of-pearl. Nature, indeed, often reserves her most vivid and startling contrasts for objects of mean or grotesque outline. The crimson toadstool and the piebald pony bear a direct relation to the quaint figures and heraldic devices of colour decoration.

All gradation must be left solely to the hand of Time to accomplish, unless, indeed, mosaic is adaptable to such an end as perpetuating the hues of a clear sky just after sunset, when the red on the horizon changes slowly through purple to the light blue above.

A careful study of the organisms, rather than the scenery of nature, will reveal that form is constantly defined with colour, but the anatomy, the building up, as it were, of a body is generally ignored in surface decoration. In all definition of features, the contrast is never so sharp as to make the part appear detached from the whole, as often happens in architecture. In some facades of brick and Portland stone, for example, the white piers and cornice and base are too much like a skeleton with the space filled in between by a red wall veil.

So being bound in a perpetual apprenticeship to nature, the architect will find his colouring approach more and more nearly to her perfect harmony. The vicious greens and vulgar reds that now stand in dead aloofness in our streets will be replaced by the golds and russets of the falling year, the pure white and black of winter, with April's living green, and

"All glaring pomps,
Which triumph at the heels of sovereign June,
Leading his glorious revel through our world."

II.—From an objective point of view, therefore, the city dweller needs an environment of colour. Moreover, an architecture of colour will be his natural expression. Man, that his being may expand, must come into contact with his fellows, as well as with Nature, so in crowded streets qualities appear that would have remained dormant in the country, character that would have stayed undeveloped in comparative solitude. Here, thought leaps to answer thought, wit to anticipate wit, skill in handicraft or games goes forth to win a name or fail, lessons are learnt of comradeship and sacrifice for a cause. The gorgeous 'buses, the costers' barrow green and red, and the prevalent purple of the London lassies' costume are all crude and barbarous attempts to express the romance and variety of city life. But modern architecture fails to do so, chiefly, I believe, through this lack of hue. All cities where art has flourished in the past have been far brighter in reds, yellows, and blues than the country towns and villages, for their life has been quicker, and in them the destinies of the world have been decided.

The turbulent democracy of Athens dwelt, I suppose, in streets more highly coloured, if anything, than their temples, but there is little certain information about the Greek cities. We know more of Rome. Snowy Carrara came down the Italian coast and up the Tiber for the arch of Constantine and columns in the Forum; from Numidia were transported unrivalled reds and yellows, and the blood-coloured breccia; Greece and Euboea gave their store; rose tinted onyx was shipped across from Algeria, onyx, too, from Egypt; and purple porphyry starred with crystals came in barges down the Nile.

Later, we find Venice, "a golden city, paved with emeralds. For truly every pinnacle and turret glanced or glowed, overlaid with gold, or bossed with jasper." The violent, furious city life of Florence was typified in the highly-coloured buildings; scarlet bricks and tiles, red terra cotta, yellow stone, and marble of every hue, were piled up in her streets in mingled and contrasted loveliness. Often the brightest patches of colour were laid on the roofs. Their red tiles are no purer in tint than those of similar ogee shape used round London, but they are brought down more into the street by porches over doors, roofs over shops, and bay windows. The brightness of the roof is set into the delicate pallor of the stucco, and green shutters add a third note to complete the scheme.

The street buildings of our ancient English towns are a delightful jumble of styles and a feast of colour. An old inn which hangs dark mullioned windows over the footway generally dominates the street. Its painted sign, bright blue, is held up with iron rods, wreathed round by scrolls and leaves that shine with gilt. Its walls are covered with light yellow plaster between black posts of oak. Down each side of the street red surfaces of brickwork surround green shutters and window framing, where houses have grown up in Stuart and Georgian times between the brown hanging tiles and striped half-timber work of earlier buildings. The warm-looking roofs of gables slice their colour into the blue and white of cloudy skies; and where the street ends an archway of grey stone, with windows and battlements over, half warns you away from sacred precincts, and half beckons you through to the green sward and hoary walls of the shrine round which the city clusters.

Most European cities of any antiquity are at one in this outward sign of gay colouring, and they are at one, also, in attaining this expression each in its own particular way. The complete beauty of their streets depends on their harmony with the scenery in which they are set, and this close fellowship with the earth can only be accomplished by a use of local material, so that the walls raised by man's labour are one with the walls of rock or the seams of clay beneath the surface. A brick building in such a city as Bath, for instance, does not correlate with its environment; it is a thing in bad taste, however well proportioned in mass or delicate in detail. The same principle applies to an erection of stone in a brick country, though not with equal force, for the greater intrinsic beauty of stone compensates to a small degree for its want of relation with its surroundings. And so it is the use of local materials carried on through many generations, which produces local variations in style, variations which are far greater in colour than in form.

The distinctive character of such a town as Bradford-on-Avon is the result of using the stone that lies all round beneath the surface. The old church of the Saxons, the nine-arched bridge and its chapel

over the river, the great tithe barn, St. Lawrence's Church of the 15th century, and next the fine series of Elizabethan and Jacobean dwellings culminating in Duke's House, with its great windows and quaintly-cut parapet; then the several stately and rhythmic fronts of Georgian times; all are bound into one fellowship of fair buildings, as having sprung from the common ground of the local quarry. The stone is neither monotonous nor vivid, but full of quiet change from light brown through green to grey, sufficiently soft to receive textures and to give a footing to lichen and moss.

It is colour which gives a town its look of home; of having grown in its position; of being the culmination of the landscape. It is colour which unites all its buildings of various times and styles into unity of character. It is colour which can bring us and our architecture into the stream of local tradition, into touch with a past which we must not allow to die.

(To be Concluded.)

Our Plates.

Sir Aston Webb, R.A., F.R.I.B.A., F.S.A., architect, so well known as to need no introduction to our readers, was born in London on May 22nd, 1849, and is the son of the late Mr. Edward Webb, engraver and water-colour painter. He was educated privately, and afterwards articled to Messrs. Banks and Barry, 1866. He became president of the Architectural Association, 1884, and president of the Royal Institute of British Architects, 1902-4; receiving the Royal Gold Medal for England in 1906, and the Royal Gold Medal of the American Society of Architects in 1907. Among his principal works are:—The architectural surroundings for the Victoria Memorial, London; new Government Buildings at east end of the Mall; the completion of the Victoria and Albert Museum, and the Royal College of Science, South Kensington; the Royal College of Science, Dublin; with Mr. T. M. Deane, R.H.A.; the Britannia Royal Naval College, and Sick Quarters, Dartmouth; the restoration of St. Bartholomew the Great, E.C.; the French Protestant Church, Soho, and other churches; and many mansions, infirmaries, and commercial buildings. In conjunction with Mr. E. Ingress Bell, he has been architect for the Victoria Courts and the new University, Birmingham; new schools, Christ's Hospital, Horsham; Royal United Service Institution, Whitehall; Metropolitan Assurance Society Offices, etc. Sir Aston Webb became an A.R.A. in 1899, and an Academician in 1903, receiving the honour of knighthood in 1904. He is chairman of the Board of Architectural Education.

Mr. C. H. Barnsley, of the firm of Messrs. John Barnsley and Sons, Birmingham, is the grandson of the Mr. John Barnsley, who founded the firm some 70 years ago. He represents with his cousin Lieut.-Col. John Barnsley, J.P., the third generation in this business. Mr. Barnsley was educated at King Edward's School, Birmingham. On entering the firm's works he was at first relegated to the carpenters' shop, and he has therefore a wide knowledge of the active and practical side of the building trade. For three years he was President of the Birmingham Master Builders' Association, and represented this organisation on the Council of the National Association of Master Builders, now the National Federation of Building Trade Employers, in which body Mr. Barnsley has held the offices of auditor, treasurer, vice-president, and now of president. Mr. Barnsley was also president in 1904 of the Institute of Builders, and in 1903 he was president of the Midland Centre of the National Federation.

Among the more important works which he has personally superintended for his firm are the Birmingham Council House and Municipal Art Gallery; the new General Hospital, Birmingham; the Drapers' Hall, London; alterations and extensions to the Grand Hotel, Birmingham; Christ Church Buildings, Birmingham; Midland Hotel, Birmingham; Almshouses and villas at Bourneville; Ansell's Brewery; development of estate at Edgbaston and Lightwoods; Birmingham School Board Work; "Highbury," Moor Green, the home of the Right Hon. Joseph Chamberlain, M.P.; work for the Birmingham Water Department; Metropolitan Bank, Birmingham; Lewis's Premises, Birmingham; Birmingham Conservative Club; extensions at Rubery Asylum; St. Luke's Church, Birmingham; Britannic Assurance Co.'s new premises, Birmingham; Parrs Bank, Birmingham, etc.

Mr. Wilfred Barnsley, son of Mr. C. H. Barnsley, and Mr. Gordon Barnsley, B.A., son of Lieut.-Col. Barnsley, having recently entered the business, the firm can now boast of four generations in the course of its long and prosperous career.

Competition Notes.

LIST OF COMPETITIONS OPEN.

Deposit for conditions given where known.

DATE OF DELIVERY.	COMPETITION.
Dec. 31	*CORNWALL COUNTY OFFICES.—Designs and *Estimates* invited. Premiums of £50, £20 and £10. Premium for successful design to merge in Commission. Particulars from C. L. Cowlard, Clerk to County Council, Bodmin. Deposit. £1 1s.
1909 Mar. 17	NEW OFFICES FOR THE STANLEY U.D.C., DURHAM. Cost £3,500. Premiums £30, £20 and £10. Conditions, etc., to be obtained from J. G. Ridley, Clerk to the Council. Stanley S.O., Co. Durham.
No date.	†SOUTH BANK-IN-NORMANBY. Town Hall, Council Offices, etc., for the Urban District Council.
No date.	SWINTON. New Schools in Cromwell Road for the Swinton and Pendlebury U.D.C. Limited to Architects having offices within ten miles of Manchester. Premiums of £50, £25, and £10. Instructions may be obtained by letter on or before November 5th, to W. T. Postlethwaite, Council Offices, Swinton, Manchester.
No date.	MIDDLESBROUGH. New Library in Dunning Road and Grange Road, East Middlesborough. Premiums, £50, £30 and £20. Particulars and conditions on application to Alfred Sockett, Town Clerk, Municipal Buildings, Middlesbrough. Deposit £2 2s., which will be refunded if the conditions are returned within ten days.

** This competition has been unfavourably reported upon by Correspondents.*

†The R.I.B.A. Council has requested Members to refrain from competing.

A gift of £1,000 has been made towards the cost of a new organ for the restored choir of Selby Abbey, on condition that the organ is to be constructed by a firm of eminent builders, is erected near the singers, and is not allowed to interfere with the architecture of the choir. Messrs. Hill, of London, have been chosen as the builders.

THE NEW GOVERNMENT BUILDINGS IN JAMAICA

A considerable amount of work in armoured concrete is now being carried out at Kingston, Jamaica. The illustration which we here give shows the new Public Buildings, containing the General Post Office and the Treasury, which are now in course of construction. The new building in the foreground of the view shows the King's House, a new residence for the Governor.

The architects and designers are Messrs. Nicholson and Corlette, of London, and the execution of the work has been placed in the hands of Messrs. W. Cowlin and Son, of Bristol, who are specialists in armoured concrete and licensees of the Coignet system, which has been extensively used by them, and which has been adopted for these buildings.

In getting out the design consideration has been taken of the danger from earthquakes, and the foundations of the buildings are constructed in such a way as to offer the least possible obstruction to the shocks or movement of the ground. The structures are practically erected on rafts containing a strong reinforcement of bars. The buildings are to be of the type which is usually adopted in hot climates, and they will be surrounded by verandahs. The columns supporting these are to be in concrete. The roof will be a flat terrace, over which will be spread several inches of gravel.

In order to give a brief idea of the construction, we may state that the pillars, which are to be square, will contain four or eight longitudinal bars, according to their position, with a diameter of about 1 in. These bars will be arranged in a symmetrical manner, and bound round by wire ties throughout the length of the column. The principal beams, supported by the columns, will be of a rectangular section, and will contain several straight bars of a diameter of about ¾ in. in the bottom or tensile part of the beams there will also be a corresponding number of bars of smaller section in the upper part of these beams. Both these members will be bound together by wire stirrups in order to resist shearing efforts. The smaller beams will be made in a similar manner. The slabs will contain a meshwork of bars of small diameter placed in the bottom part of the slab in order to resist tensile efforts. There will also be a large quantity of rods, which are to act as bracings connecting the various frameworks of the columns, beams and slabs in such a manner as to ensure a perfectly monolithic structure.

The scantlings of the posts will vary between 24 in. by 24 in. an 18 in. by 18 in., and some of them are to be octagonal. The scantlings of the principal beams will be 12 in. by 24in., with an average span of about 20 ft., and the secondary beams will have a scantling of 7 in. by 12 in. The average thickness of the slab will be 4 in.

The various staircases and balconies are also to be made in armoured concrete.

The twelfth congress of Russian cement manufacturers is to be held at Moscow instead of St. Petersburg as hitherto, eighty per cent. of the members belonging to Moscow. There will be a special section for the consideration of reinforced concrete.



Photo: Hallen, N.Y.

Sir ASTON WEBB, R.A., F.R.I.B.A., F.S.A.



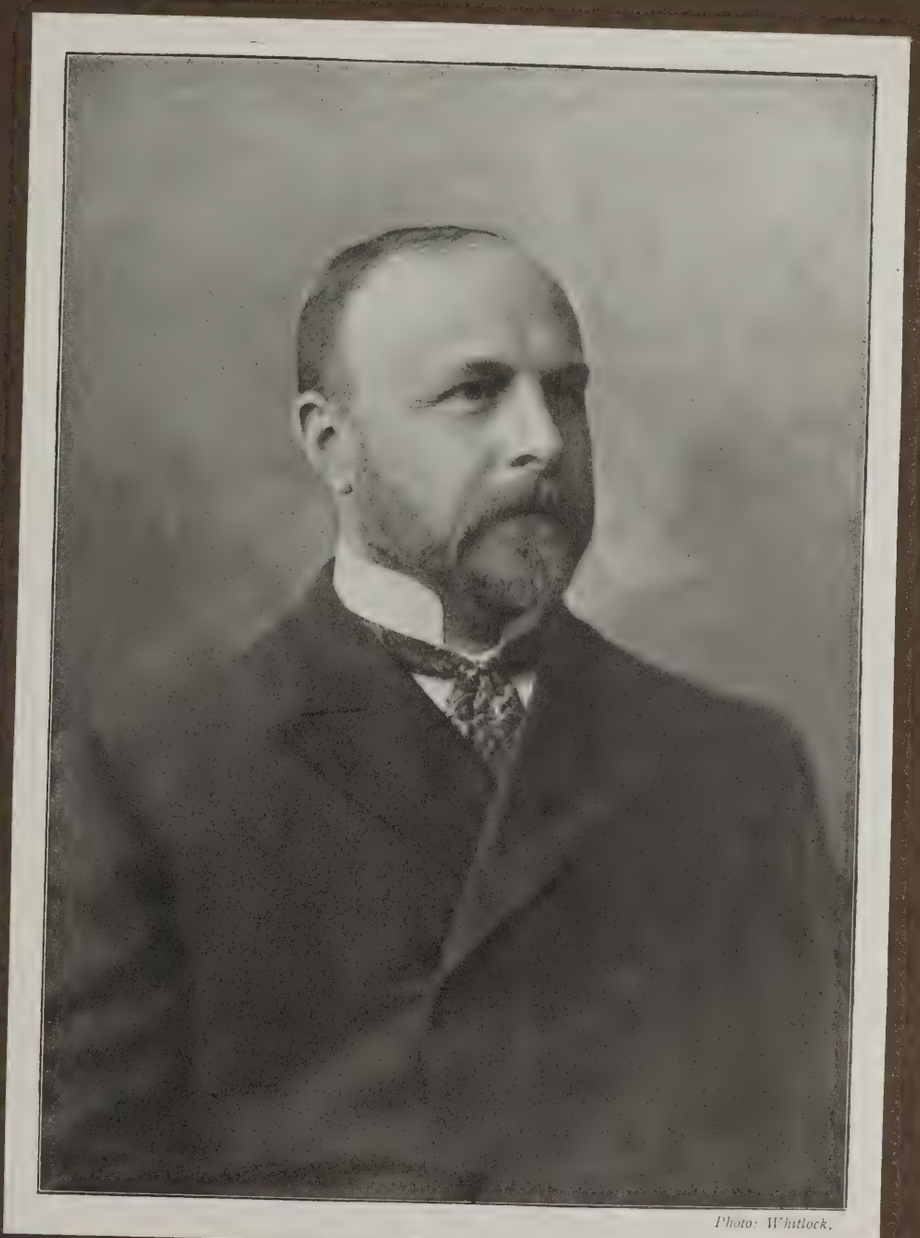
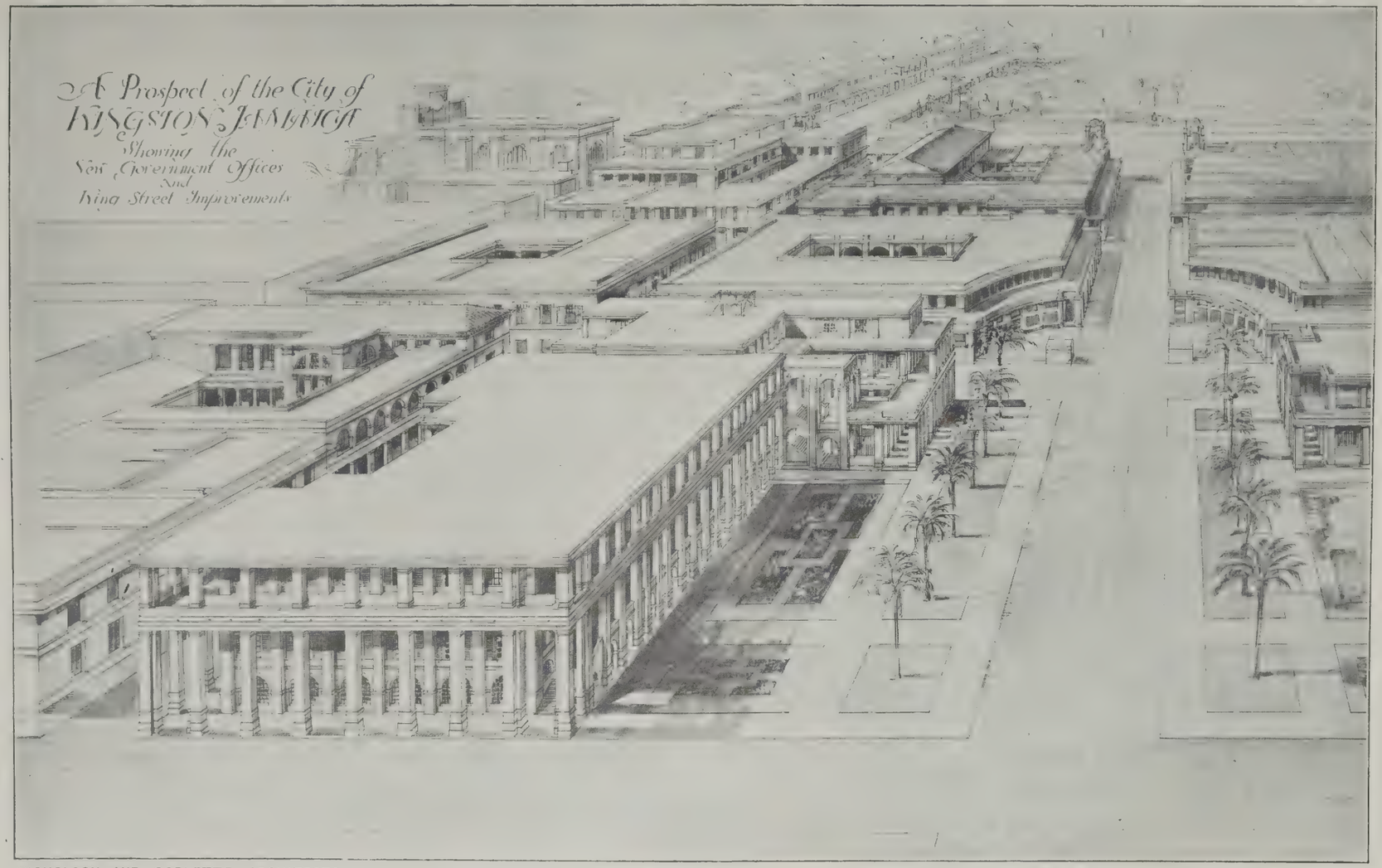


Photo: Whitlock.

Mr. C. H. BARNSLEY,

President of the National Federation of Building Trades Employers of Great Britain and Ireland, 1908.





NICHOLSON AND CORLETTE, ARCHITECTS.

Coignet Reinforcement.

Wm. Cowlin and Son, Contractors and Licensees.



W. T. OLDRIEVE, F.R.I.B.A., F.S.A.SCOT., OF H.M. OFFICE OF WORKS, ARCHITECT.

OBAN NEW POST OFFICE.

Summer visitors to Oban have often been struck by the meanness of the Post Office accommodation, a department hitherto housed in a one-storey building, more fitted for a new mining camp out West or a Rand shanty than for the transaction of business in a summer resort of the age and pretensions of Oban. This reproach is now being removed by the erection of a new building on a piece of ground adjoining the Municipal Offices. The new building will have a frontage to both Albany and Shore Streets, each 82 ft. long, and will be two storeys in height. Access will be obtained from Albany Street to the public office, the postmaster's room, the engineer's office, the boys' bicycle room, etc., all of which are on the ground floor.

The public office will be 25½ft. wide, fronting the street, and will have a depth of 35 ft. to the rear. It will be 13 ft. high and lighted by a four-light mullioned window.

There being a natural fall of the ground from Albany Street, the top floor of the Shore Street block is on the same level as the street floor of the Albany Street block. On this floor is placed the postmen's and clerks' retiring rooms, linemen's and mechanics' room, stationery stores, etc. On the floor below will be the heating chamber and engineer's store; also a covered loading platform, to which access is obtained from an open yard off Store Street. An electric lift will connect the loading platform with the sorting office

The whole building is being constructed on modern fire-resisting and hygienic principles. The elevation to Albany Street will be faced with local granite rubble from Ballachulish, with Giffnock sandstone dressings. The side and rear walls will be finished in rough-cast or harling, and the edifice will be roofed with stone slates throughout.

The cost of the building is estimated at £9,650. The architect is Mr. W. T. Oldrieve, F.R.I.B.A., H.M. Principal Architect for Scotland, to whom we are indebted for the perspective drawing which appears on this page. The contract is in the hands of Mr. Hugh Macdougall, a local builder and contractor, and the clerk of works is Mr. R. Bland.

MONOCRETE CONSTRUCTION.

The application of concrete (plain and reinforced) has taken a big forward step during the past year. The advent of "Monocrete" is likely to still further enhance its possibilities, and the simplicity of the method and apparatus should enable it to play a still greater part in the buildings of the future. The "Monocrete machines, which were exhibited for the first time at the Franco-British Exhibition of last year, are designed to build walls and buildings of any kind entirely without the hitherto inevitable forms. The necessity of forms and shoring for concrete work while it is setting has been a great drawback to its employment as an outside structural material; also the length of time lost in waiting for the forms to be removed has been a material factor in its making slower progress than its value as a suitable material warrants. The introduction of the Monocrete machine should prove a boon to the contractor and investor. The cheapness of construction in this method should go far to prove its importance in the near future. With Portland cement at usual rates, and sand, gravel, or suitable aggregate at reasonable prices, building in concrete by the aid of the Monocrete machine can be done at a less rate than the same cubical capacity in ordinary brickwork. The question of housing (especially that of the working classes) may therefore be placed on a satisfactory basis, more especially as the cost of plastering is reduced to a minimum.

The cost of installing a suitable sized plant is one that concerns the builder's interest, and the fact that the "small" man can take up one unit and add to it as occasion may arise is a helpful factor. The success of the system is guaranteed by the fact that the International Jury of the Franco-British Exhibition awarded the machine two silver and bronze medals. The "Colonial" type of machine is being purchased by the British Government, and they are in use on railways in Lagos in Western Africa. It is also stated that important progress has been made in fixing agencies in Australia, New Zealand, India, Ceylon, Argentine, Canada, and, in fact, in all parts of the world.

LONDON SUBURBS.

2.—Ealing.

The growth of London since the railway era is so vast and so arbitrary that it is sometimes difficult to say how much is London, how much is suburb, and how much suburban town. Between Ealing and western London there is some break, and the associations and appearance of the place are very much those of a flourishing town in business on its own account. Yet London pervades it; London is close by, and people whose business and whose pleasure are mainly in London are its chief support. Though built well out on the great plain of Middlesex, it does not suffer from the usual reproach of "flat" neighbourhoods, and its first aspect to a visitor emerging from the Broadway Station is exceedingly attractive, and this mainly from the fact that it is so exceptionally well provided not only with greens. parks. and open spaces, but with well-grown and leafy trees. It possesses, moreover, within its bounds some old mansions in well-timbered grounds, built in the days when no question had yet arisen of whether it were "in the country."

Compared with more than one place at a similar distance from London, it has an air of lightness, and its shops and buildings bear testimony to the growing importance of the suburban town in the economy of modern life. "Shopping" in the suburbs is, indeed, largely affecting their architecture: altogether Ealing is a pleasant and rising place. Its older houses, generally fronting upon green sward and trees, are mainly of the Georgian time; its modern ones exhibit a great deal of Tudor and other "revived" styles, often very pretty and only falling short of being successful from their builders not having revived enough; the newest exhibit, that combination of red and white which seems now to be a sort of national livery. Among these may be mentioned the building estate, practically constituting a new quarter, of the Ealing Tenants' Association, founded and flourishing upon the principle of "co-partnership." Here we find "town planning" altogether a pretty township, whose founders look forward to much social gathering among its tenants, and have provided a hall for the purpose. In the older parts, however, of the place older methods prevail. The English are slow to adopt changes, and all domestic building art must still be based upon the separation of classes.

Several fine churches enliven Ealing: the Parish Church, the design of the late Mr. Teulon in his well-known French style; All Saints', by Mr. W. A. Pite, a church in memory of Spencer Perceval, the Prime Minister who was assassinated in the lobby of the House of Commons in 1812; and Christ Church, whose very high tower and spire are almost enough by themselves to give us its designer, Sir George Gilbert Scott. It is hardly possible to over-state the influence of his designs in the days of the "revival" upon church building and re-building in town and country.

The Parish Church exhibits Mr. Teulon at his best; it is full of character, though foreign in appearance, apsidal, with a "narthex" porch, round arched with a little "plate tracery" of the earliest stage of Gothic, and has a very stately tower of a kind seldom seen in this country—not higher, indeed, than our East Anglian perpendicular towers, but in harmony with the building; the whole in brown brick, with stone detail.

In Ealing we find every variety of villa building and every known style, all set in gardens, trees, and parks, and if the whole effect, though agreeable, be a little confusing, it only confirms the idea that English suburbs will grow in their own way like English things generally. The more recent shops and restaurants are on a scale unknown until a few years ago, except in the principal London thoroughfares, and it may be said of Ealing that it exhibits suburban life at its best, and much that is satisfactory in building, even if the long-promised style which is to satisfy all modern wants assumes almost as many forms as there are roads in the parish.

SCAFFOLDING AS THE NEW ART.

By A. G. H. Thatcher.

It has long been a reproach levelled against even our most creative architects that in the practice of their profession it is impossible to credit them with an idea entirely new.

Assuming this to be true, and it would indeed be a bold man who attempted to prove otherwise, it is difficult to define the cause. To an exhaustive training in a rigid school of thought may perhaps be assigned a considerable share of the blame, the inventive faculties being dulled by the immense field of erudition which has to be traversed by those who aspire to be leaders in one section of the artistic world. In this respect, no doubt, the ancients had an advantage. Untrammelled by what had gone before, all possibilities were before them, and were used as opportunity offered. To that must be added a power to see and mentally seize the beautiful in any shape, and to so adapt their impressions to actual purposes as to leave behind as a legacy to those following the magnificently realised conceptions which form a text for the art teachers of to-day.

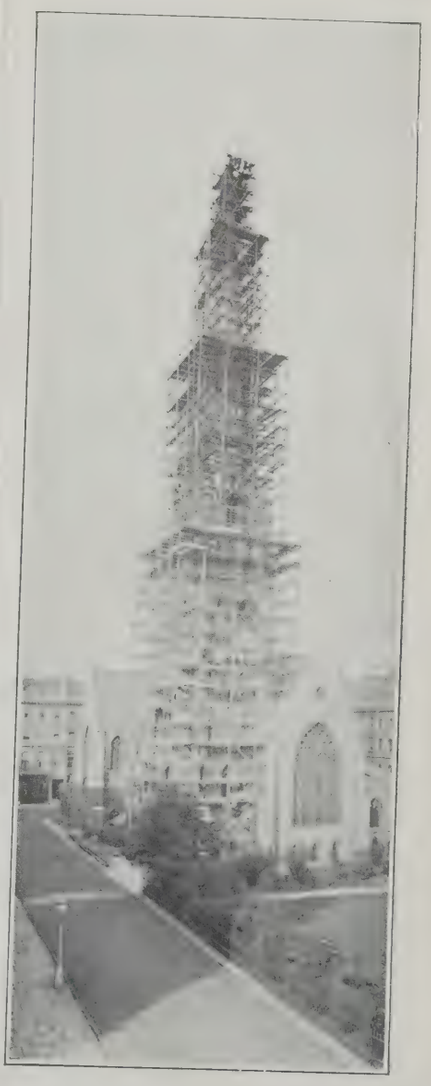
As an instance may be mentioned the origin of the Corinthian capital. A decayed basket upon the broken tombstone and the acanthus leaf issuing between the defective strands. Surely, a simple object, but when modelled in the imperishable marble, how perfect. It is perhaps here that a hint may be given to those aspiring to emulate the genius of the past. How very probable it is that, blinded by the harmonious symmetries put before them as the highest of human ideals, the natural beauties of lowly life are entirely lost sight of.

Allowing this to be true, it will be well, perhaps, if eyes are turned in the directions mentioned, for surely even if the designs of nature are exhausted the humble examples of everyday life and work may afford those seeking, a suggestion which only waits the inspiring touch of the divine afflatus to transform it into a glorious subject for future admiration.

It is, however, easy to moralise; it is more difficult to show the way. But, nevertheless, a change of recent years which is worthy of study may give a lead to those concerned in the matter. It must be impossible, even to those only ordinarily observant, not to have been attracted by the great development in the art of scaffolding. Within easy recollection—and this is especially true of that type of scaffolding known as the gantry—the old, ill-fashioned designs have given way to erections symmetrical and even graceful in their proportions. The rough standard supporting the overhead platform has now become, in many instances, a pier with cap and base. The platform itself, if not surrounded with balusters of ornamental design, is supplied with a balustrade which in its simplicity conveys an artistic idea. Some examples, in fact, are to the forefront with features that outrival the freedom of treatment, both of line and colour, so regularly seen at Earl's Court. That this movement is one that commands public interest cannot be gainsaid.

Who is there who has seen a Cockney admiring Westminster Abbey? Yet let a Scotch derrick swing its mighty arm across the footway to uncoil its slender tentacle and gracefully carry the object seized into aerial realms, and a crowd collects at once. One word of warning may perhaps be given. Colour does not necessarily add to the beauties of scaffolding. Outline is more than paint.

Queer shades of green and yellow are not yet appreciated. It is true the Greeks painted their marble buildings, and although such an evidence of taste may possibly revive in the modern world, the time is not yet. Something must be allowed for present feeling. Besides,



SCAFFOLDING AT CHRIST CHURCH, LANCASTER GATE, LONDON.

fumed oak is a nearer approach to less artistically treated nature, and this effect can be as easily gained by a brush.

Scaffolding has no doubt been long despised as being only a means to an end. It has no written history, although it must have existed from the earliest times. Although no certain knowledge is obtainable as to the means by which the ancients erected their buildings, it may be taken for granted that when pre-historic man propped the roof of his cave dwelling with a tree trunk, he showed a knowledge of shoring which is allied to scaffolding, and proves that these arts are of extremely early origin.

It is almost a pity that scaffolding on the whole is so impermanent. True, the scaffolding in the west front of St. Paul's Cathedral seems to belie this. If it cannot now be said that it has been in existence from time immemorial, it is only a question of time when such will be true. To the trained eye of the scaffolder, the beauties of his work are manifest. He cares nothing for the building. His pride is in its temporary clothing, and his regret must be intense when he sees his best efforts ruthlessly demolished. Perhaps after these few hints an inspired genius may, by judicious selection, give its principal beauties a permanent form. A capital designed upon an arrangement of

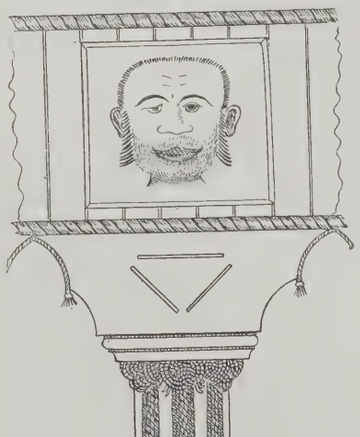


FIG. 1.

cordage and knots, as Fig. 1, would rival the Corinthian in simplicity of origin. The decayed ox skull again in the Doric order may be beautiful to the depraved taste, but who would not admit that an idealised representation of the human race would appeal more to those of finer feelings. Who knows; such a design may confer honour on the creative artist by being named after him (and when I think of this I almost wish I hadn't signed this article).

In conclusion, may one word of caution be added. Let the aspiring designer who may be induced by these notes to tempt fame and, doubtless, fortune, be careful, for in common with most of his kind he will most assuredly be laughed at.

Ingleby Chase, near Lincoln, the residence of Mr. William Mortimer, has recently had all the flues mounted with the "Edwardian" chimney-pot.

LABOUR STATISTICS.

From the just issued Board of Trade twelfth Abstract of Labour Statistics referring to the year 1906-7, the following notes are taken as being of some interest to the building trade.

FLUCTUATIONS IN EMPLOYMENT.

Considering industries as a whole, it appears that, taking the year 1900 as represented by the index number 100, there was a gradual fall in the amount of employment in each subsequent year down to 1904, when the index number stood at 95.9 as compared with the year 1900. Since then a gradual rise has taken place until 1906, when it stood at 98.7; the year 1907, however, shows a slight decline to 98.5. This seems a small difference to be the cause of so much unemployment as is reported. A glance at the tables giving the percentages of unemployed, as returned by the Trades Unions for important groups of trades, shows however, that certain groups are suffering much more than others, so that the broad average is misleading to some extent. For instance in the building trades the returns of only two branches—viz., carpenters and plumbers, shows that while the percentage of unemployed in 1900 was only 25 per cent. it has continued to increase steadily in each succeeding year until 1905, when it reached 8.3 per cent., in 1906 it fell to 7.2 per cent. and in 1907 to 6.7 per cent., which gives some indication that the building trade has turned the corner of depression, and is quietly getting to work again. Another instance is the shipbuilding trades, where in 1900 the percentage of unemployed was also 2½ per cent., but by 1903 this had risen to 12 per cent., and touched high-water mark in 1904 with 14 per cent. of unemployed. An improvement has since taken place, but the percentage is still high, in 1907 viz. 9.2 per cent.

PRODUCTION.

Inhabited Houses.

According to the reports of the Inland Revenue Commissioners there were in the United Kingdom in 1900, 42,518 separate dwellings, 28,470 hospitals, schools, and royal or diplomatic residences, and 544,428 houses solely used for trade, making a total of 615,416. In 1907 the corresponding figures were 79,393 separate dwellings, 33,509 hospitals, etc., etc., and 650,256 houses used for trade solely; total 763,158, showing a total increase in seven years of 147,742 buildings. As bearing on the depression which has prevailed in the building trade during recent years, the following facts may be noted. Dealing first with separate dwellings in 1900, they numbered 42,518, and rose in 1901 to 45,250, but fell in 1902 to 34,175; by 1904 they had again risen to 45,491, but in 1905 they jumped up to 68,487, and in 1906 to 73,873, and even in 1907 there was a substantial increase to 79,393, their present figure.

Hospitals, schools, etc., do not show so much fluctuation, the number in 1900, 28,470, remaining nearly stationary until 1903, when it rose to 30,230, but fell again next year to about the old figure, in 1905 and 1906 and 1907 a distinct advance was made to its present figure of 33,509. Houses used solely for trade which in 1900 were 544,428, increased gradually year by year until in 1905 they stood at 607,041, but jumped up to 634,031 in 1906, and again to 650,256 in 1907. In the face of the great depression in building which has prevailed since 1904, these figues seem remarkable. It would seem that in the latter years the new buildings which had kept the trade occupied down to 1904 and 5 only became liable for assessment by the Inland Revenue in the years 1905, 6, and 7. It seems clear, however, that the depression represents a natural reaction to some extent from the boom which caused the large increases shown above.

Changes in the Rates of Wages.

Considering the building trade only it appears that taking the year 1900 as an index number of 100, the average rate of wages has not changed at all during the past seven years, and compared with any year from 1874 to the present time the wages during the period 1900 to 1907 are the highest on record in this industry.

In 1874, a boom period, the wages were represented by the index figure 81.11 showing that since that date they have been advanced nearly 25 per cent. The rise has been gradual and pretty continuous.

Changes in Hours of Labour.

Hours of labour have shown likewise a considerable decrease; from 1900 to 1907 inclusive the total number of hours of labour remitted to the work people per week in the building trade alone amounts to 91,071 or over 4,750,000 hours per annum. Taking the above facts into consideration it is evident that the work people in this industry have been liberally dealt with by their employers.

Cost of Living.

It must however be remarked that the cost of living during the same period has somewhat increased; for example, bread, the mean average cost of the 4 lb. loaf having advanced from 4.99d. in 1900 to 5.48d. in 1907. Meat, fish and dairy produce also show an increase of about 4½ per cent., but sugar, tea, wine and tobacco show a decrease of 5.6 per cent. for the same period.

Trade Disputes.

Show as regards the building trade a marked decline in severity for the last two years as shown by their duration in number in working days. In 1905 412,683 working days were lost by trade disputes in this industry, whereas in 1906 only 56,201, and in 1907 23,128 days were lost, these being the lowest figures since 1893. The next lowest figure was in 190 when 114,371 days were lost and the highest figure occurred in 1896 when the loss was 1,060,227 working days.

As showing the growing resort to Conciliation Boards for a settlement of disputes, the number of cases considered b Boards has increased since 1900 from 2 to 58, while the number of cases settle by Boards in the same period has increased from 23 to 47. The number Boards that dealt with cases was 28, an the number which settled cases 20.

Summary of Occupations.

The tables under this head gives th number of persons occupied in buildin and works of construction for the year 1881, 1891, and 1901.

For the United Kingdom the numbe were 1881, 926,135; for 1891, 955,57 and for 1901, 1,335,820, thus making th building the seventh largest employin industry in the Kingdom.

Associations of Employees.

The total number of Master Builde Associations is given as 161, probabl however, many of these are only Ass ciations in name, and display no activi at present.

There apears to be a considera number of sectional trade Associatio like Bricklayers, Masons, Plumbers, et totalling in all 134, in addition to t Master Builders' Associations.

Trades Unions in the Building Trade.

The number of labourers' trades unions at end of 1906 is given as 41 (showing a decline since 1900 when they numbered 56), with a membership of 15,932. The number of other unions is given as 55 (showing a decline since 1900 from 75), with a total membership of 180,404. Their average accumulated funds per member is rather over £2. Their contributions in 1906 were about £2 10s., and their expenditure about £2 8s. per member.

The conclusions which may be drawn from the foregoing facts indicate that there is good ground for hope that a period of prosperity is at hand for the building trade; they show that the employers have dealt generously with their workpeople through the hard times by not demanding substantial reductions of wages; and that on the present level of wages and cost of living the workpeople are as well off as ever they were.

The publication of tenders was the subject of a special resolution at a recent meeting of the Kingston (Surrey) Board of Guardians. It was moved, and unanimously carried, that in future the principal quotations of accepted tenders should be published through the usual channels. Surely such a motion ought not to have been necessary; for, as the mover pointed out, the course advocated is everywhere common.

OLD ST. PAUL'S.

This view of the old cathedral, taken from an ⅛ scale model executed by Mr. John B. Thorp, shows the South front as it appeared about the middle of the 16th century. The church was begun after the first great fire in 1136, and the style of architecture ranged from Early Norman to Early English Gothic and Decorated; the nave being the first portion that was built was Norman, against this at the south-west corner was erected the parish church of St. Gregory, also Norman. The spire, probably the tallest in Europe, rose 520ft. above the pavement; it was finished in 1498, and was burnt down in 1561, the fire being caused by lightning in a great storm; this theory, although probably correct, was afterwards disputed, as a plumber a few years later confessed that he upset a pan of coals while repairing the roof. The choir was of pointed architecture, and was finished in 1255, this addition necessitated the removal of the parish church of St. Faith, which was then on the site, but the parishoners were given a place of worship under the choir. The Chapter House was on the west side of the south transept, and when the churchyard was being laid out a few years ago, portions of the foundations of this building as well as those of the cloisters were unearthed. After the spire was destroyed, Queen Elizabeth gave orders for the damage to be repaired. The restoration appears to have been very improperly done, for in 1620 James the First appointed Inigo Jones as architect, but he, knowing little or nothing about Gothic, endeavoured to turn the church into a classic building, adding a very fine Italian Portico to the west front.

In May, 1666, Christopher Wren drew up a report for renovating the cathedral, but in the Great Fire which commenced on September 2nd of that year, the whole building was burnt to the ground.

BUILDERS' WINCHES.

As an aid to expeditious building, the patent winches of Messrs. G. Stacey and Co. seem to be coming more and more into favour.

They have been used by Messrs. Stuart's on works at Hull, Greenhithe, Leeds, and London, where on one building, viz., the Waldorf Hotel, material was raised to a height of over 100ft.

Two winches were also used on the Manchester Royal Infirmary to hoist the material for the floors constructed by the National Fire-proofing Company, and, among many other jobs, may be mentioned Long Grove Asylum, where they were used to hoist material to the extent of 24,000 yards super, and new offices at 81, Bishopsgate Street, where the material hoisted comprised some 6,000 yards super of gauged concrete.



OLD ST. PAUL'S: FROM A MODEL BY JOHN B. THORP EXHIBITED AT THE FRANCO-BRITISH EXHIBITION.

Enquiries Answered.

Correspondents are particularly requested to be as brief as possible.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional, or legal matters

The querist's name and address must always be given, not necessarily for publication.

Answers by post will be sent if the enquiry is accompanied by a postal order for 1s., made payable to Technical Journals Ltd., and crossed, and a stamped addressed envelope. Such enquiries must be marked "Answers by Post" on the outside cover.

Setting Out Handrails.

HUDDERSFIELD.—CONIC writes: "Will you give me the method of setting out the handrail twist shown on plan (not reproduced); also could you recommend a good book on handrail ramps?"

The subject of handrail wreaths cannot be briefly expounded, and is already exhaustively treated in several excellent text books, including:—"Modern Practical Joinery," by George Ellis, B. T. Batsford, 94, High Holborn, 12s. 6d. net; "Stair-building and Handrailing," by Wm. and Alexander Mowat (published at 28s., but offered at some reduction). "Handrailing and Staircasing," by F. O. Creswell, 3s. nett; "Stair-building in its various forms," by J. H. Monkton, 17s. nett; Riddell's "Carpenter, Joiner, Stair-builder, and Handrailer," with a series of cardboard models of wreaths (published 45s., now obtainable second-hand at about half-price). It may be said that the extremely narrow well in the example shown will not make a satisfactory wreath—it is impracticable, as the hand of the user runs a risk of getting wedged in the narrow trim.

Noise from Gas Engine.

CREWE.—J. R. writes: "Would you kindly let me know the cheapest and best method of deadening the sound from a gas engine in a room over the engine house? There are concerts, public meetings, etc., held in this room, and the noise of the engine is objectionable. There is only a boarded floor over, not ceiled on the under side. I had thought of boarding the underside of joist over the engine house and filling in between with sawdust. Would this be satisfactory, or what is the best and simplest way of effectually stopping the sound in the room?"

No doubt you have already asked the engineers whether the engine is silenced so far as is practicable. I rather doubt if it be possible to entirely deaden the sound of the running, and feel sure that some vibration will be felt in the room above whatever you may do to the floor. The usual medium for filling in the space between the floor joists in such a case is silicate cotton (which is fireproof), or coarse stuff mixed with chopped hay may be employed—sawdust is not so good, and has also a tendency to bleed out should the sheathing boards shrink. F.S.I.

Trespass.

ASHTON-ON-MERSEY.—A writes: "I own the house marked A in plan enclosed (not reproduced), B owns house adjoining marked B; the division between the two gardens is a paling about 7ft. high, owned and erected by B. B asked to be allowed to come on to my land to tar my side of his boards, and I asked him to leave it over until we had amicably come to terms over a large hoarding he threatened to erect; he, however, refused (but offered acknowledgment as to this), and tarred the boards by sitting astride the fence and painting the palings with a long brush. He afterwards erected his hoarding and tarred that in a similar manner. Is not the fact of hanging over my land in this manner a trespass, especially as a fairly large quantity of tar was deposited on my land in the process (extending an average of 2ft. wide), and my dog got tar on his feet and brought it into the house on to the carpets. Is B not liable also for this damage? B's palings in one place overhang eight or nine inches; cannot I compel him to alter this? Still another point. B has a very large oak tree in his garden, as shown, two very large branches of which overhang my land, one being in close proximity to the roof, which it may damage, and the other hanging as it does over the front door entrance is a nuisance with its drippings; the leaves also are liable to stop up my gutters and drain-pipes. I have written to B (who has ignored my letter) asking him to cut off the oak tree branches, straighten his palings, and also pointing out the trespass and damage complained of. Do you think I can legally compel him to do as requested and also obtain damages and costs if compelled to go to court? B has been extremely vindictive and unpleasant in every possible way, hence my reason for pressing these matters."

As relations have apparently become very strained between yourself and your neighbour, I advise you to carefully consider the expediency of taking any action at all in the matters you enumerate. Are they really unbearable?

Dealing with each point as you name it, I am of opinion:—

That though "B" no doubt committed a technical trespass in hanging over his fence in the way he did, it is not such a trespass as would carry damages in a court of law. It seems a pity you refused the permission asked for.

That the damage done to the carpets by your dog is not such as can be claimed for from "B," though, of course, it was indirectly due to his operations.

That the overhanging palings are, in fact, an encroachment on your property is a matter of evidence, but if they can be shown to overhang, even to the small extent you mention, you have a legal right to have so much of the fence as forms an encroachment removed.

That the limits of the oak tree, so far as they are over your land form an encroachment, and that you are legally entitled to their removal; if after reasonable notice to remove them, "B" neglects to do so, you are justified in cutting them back to your boundary line (not further), doing the cutting in a workmanlike way and with as little damage to "A's" tree and other property as possible.

Finally, I advise you to employ a solicitor to communicate with "B," before you do anything more. It is easier to get into a legal action than to stop proceedings when once commenced, and it is very easy for you to take some wrong step if you deal with this matter personally. You have not, I believe, suffered anything which would secure you costs and damages in a Court of Law, and it appears to me—as a looker-on—that "the game is not worth the candle." You do not say what the hoarding consists of, but from your plan I conclude that it is entirely upon "B's" own land, and has been probably erected by him to prevent your acquiring a right of light over his property. This he is, of course, justified in doing if your windows are less than twenty years old, and if you wish to have a light out in that direction, the acknowledgment rental should be paid by yourself and not by him!

F.S.I.

Architectural Lantern Slides.

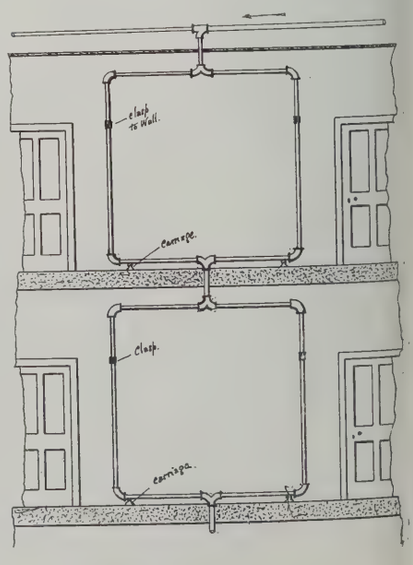
INVERNESS.—T. SQUARE writes: "Is it possible to obtain anywhere, either by hire or purchase, a set of lantern slides to illustrate a paper on early British domestic architecture — say, from the Roman invasion to the Tudor period—on the lines of Parker and Turner's 'Domestic Architecture'?"

We do not know of any collection of slides showing work during the period mentioned. Indeed, the examples of such domestic work now remaining are so few that it would involve considerable time and labour to collect photographs of authentic work. Perhaps some of our readers can help "T. Square."

Condensation in Buildings.

BIRMINGHAM.—H. H. H. writes: "Can you or your readers suggest an explanation and remedy for the excessive condensation frequently saturating many well-arranged modern buildings? Some premises and offices I know consist of a first-class five storey block with well-ventilated corridor to each floor and served with a lift. The floors are of concrete, paved with marble and mosaic. The walls are well painted and oak panelled, but although the buiding was completed some six or seven years ago it frequently happens that in cold, muggy weather, damp collects on the walls of the corridors and staircase, runs down the walls, carrying paint along with it, collecting in pool on the corridors and staircase, and then running down the staircase in a stream. The outside walls are of white glazed bricks, and it has been suggested that this fact has been a contributary cause. Is there any practical remedy?"

The cause of the condensation is the fact that the walls and floors cool slowly during the autumn to a temperature that at last is lower than the dew-point of the moisture in the air; and then condensation begins. Plastered walls absorb the condensed vapour to some extent, and porous bricks allow it to be dried out during the next spell of warmer weather. In your building, the non-absorbent tiles and polished wood prevent the absorp-



tion, and the non-porous glazed bricks prevent the drying. The cure for the water trickle and pools is warmed walls, and copious ventilation with warmed air. Perhaps the cheapest way to do this well will be to fix an hot-air apparatus in the basement and lead from it two or three large pipes to gratings in the ground floor corridor. The movement of the lift will then suck and drive the air along the corridors, and if the rooms have fires, these will draw in warm air and aid its distribution. If this prove insufficient for a five-storey building, hot-water pipes can be installed, either high or low pressure, though the accompanying sketch shows low pressure. Pipes are better than radiators, as the heat is more spread out, and they supply more genuine radiation to ceiling, wall, and floor. They may be rather larger on the ground and first floors, to compensate for the cooler water within them, though the hot-air apparatus, when installed, annuls such need. The pipes can follow any line of cornice or wall decoration on the tile dado, and will yield most heat when painted black. They must be strongly clasped to the walls, to prevent damage. The hot-air apparatus will need cleaning doors to its chamber and pipes, to allow of the removal of the smuts and dust that collect in a large manufacturing town. INGENIOR.

Building Stones in New Zealand.

BARNSLEY.—G. W. S. writes: "I am requiring information for the erection of a memorial cross at Auckland, New Zealand. Kindly give the particulars of the suitability, colour, and names of the stones or marble quarried in the Islands. Also the suitability of Sicilian marble for the climate and comparison of cost with native material, if the work was executed here and sent out."

The following particulars have been furnished to us by the High Commissioner for New Zealand, which I trust will serve your purpose:—

Extract from Handbook of New Zealand by James Hector, M.D., C.M.G., F.R.S.:—

"Marble.—The purest form of this series is found in many localities in the South Island; statuary marble occurs among the gneiss and hornblende schists of the West Coast. The grain of most samples hitherto found is rather coarse, but closer-grained kinds exist in Caswell Sound, where a quarry has been opened, and also in the Mount Arthur district of Nelsen.

"Granular or crystalline and subcrystalline limestone of every shade and colour, texture and hardness, occur plentifully, chiefly in the South Island.

"Extensive masses of the harder compact kinds occur in the Upper Palaeozoic formations. They are, generally speaking, of a blue colour and unfossiliferous.

"One mass or stratum occurs in the slates of the Kakanui Range; it is several hundred feet thick, with an outcrop of five miles in length, and is probably the best in the district of Otago.

"A great variety of excellent limestone suitable for building stones might be obtained from the Horse Range (Shag Valley side); at Twelve-Mile Creek, on Lake Wakatipu; Malvern Hills, Canterbury; and Hokanui Hills, Southland. In the latter district, a very fine kind is obtainable, very slightly coloured, it belongs to the Cretaceotertiary series.

"A white granular limestone called the Oamaru stone is worked in extensive quarries in the Oamaru district; but it occupies a large tract of the country in the north part of Otago and throughout Canterbury, and has a remarkable uniformity of colour and texture; its weight, wet from the quarry, is 105lb. per cubic foot, and when perfectly dry 92lb. A considerable quantity has been exported to Melbourne.

"The principal buildings of Dunedin are built of this stone, which shows a very fair amount of durability.

"At Wairoa, Auckland, there is a good hard close-grained stone, of a light buff colour, mottled with black grains."

We are unable to answer our correspondent's second question. Perhaps a New Zealand reader will oblige.

THE ROYAL INSURANCE BUILDINGS, ST. JAMES'S, LONDON.

This structure was designed by Mr. John Belcher, A.R.A., to accommodate the West End Branch Office of the Royal Insurance Company, Limited, and their offices occupy the greater portion of the ground and mezzanine floors. As it occupies probably the most valuable site in the west end of London, the utilisation of all the availabe space was a primary object. It is therefore remarkabe for its strength and lightness of construction, as only the strongest and most durable materials have been used, and the smallest possible space taken up by walls and supports, thus utilising to the fullest extent the limited but extremely valuable site.

Pentelikon marble has been employed in the construction of the facades. The steel framework is carried up to the roof which is also of steel filled in with hollow bricks. The retaining wall to the basement and lower ground floor is of ferro-concrete, and extends to a depth of about thirty feet below the pavement. The building is carried on seven steel stanchions each carrying from 400 to 600 tons dead weight.

The window frames and casements on the ground and mezzanine floors are of bronze, and those on the upper floors are of steel. The dormers are also covered with bronze and the mansard roof with Westmoreland slates.

The whole structure is of the latest fire-resisting construction. The staircase and landings are of Roman Grey stone with a lining of statuary marble and Tinos capping.

The Company's public office on the ground floor and the Board room on the mezzanine floor are panelled with specially selected mahogany, wax polished, and all the metal fittings are of oxydised silver. The fourth floor has a loggia affording an uninterrupted view of both thoroughfares, and provision has also been made for viewing processions from this, and from the mezzanine floor, where bronze balconies have been provided. The sculptured figures at third floor level are by Mr. Bertram Mackennal, and the coat of arms painted on the angle by Mr. Alfred Drury, A.R.A

The general contractors for the building were Holloway Brothers (London), Ltd., the clerk of works being Mr. William Gunning. The following are some of the sub-contractors:—

Pentelikon marble: Marmor, Ltd. *Ferro-concrete, basement wall construction*: Empire Stone Co. *Steel construction and girders*: Edward Wood and Co., Ltd. *Fireproof floors and partitions*: "Kleine" Patent Fire-resisting Flooring Syndicate, Ltd. *Tiles*: Craven, Dunnill and Co. *Casements and casement fittings*: Crittall Manufacturing Co. *Grates, art metal work, electric light fixtures*: J. W. Singer and Sons. *Electric wiring, bells*: Donnison, Sillem and Co. *Marble flooring and marble work*: J. Whitehead and Sons. *Art metal work and electric light fixtures*: F. and C. Osler, Ltd.; and Spital and Clark. *Door furniture*: N. F. Ramsay and Co. *Railings*: W. T. Allen and Co. *Lifts*: A. Smith and Stevens. *Heating and ventilating*: J. R. Cooper and Sons. *Lightning conductors*: R. Anderson and Co. *Pump*: Langdon Davies Motor Co. *Pavement lights and fire-resisting glazing*: The British Luxfer Prism, Ltd. *White glazed "Shepwood" Patent Partition Bricks*: Leeds Fireclay Co., Ltd. *Plaster work and special woodwork*: Holloway Brothers.



Photo: Bolas and Co.

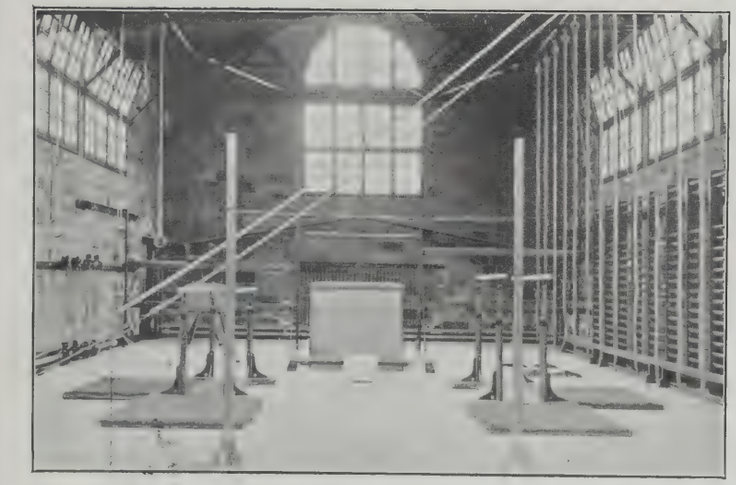
THE ROYAL INSURANCE BUILDINGS, ST. JAMES'S, LONDON. INTERIOR OF THE GENERAL OFFICE. JOHN BELCHER, A.R.A., ARCHITECT.

SOME COMPETITIONS OF 1908.

Award Announced	Building.	Cost.	Assessor.	Successful Competitors.	Remarks.
		£			
January ..	Elementary School, Southport	—	S. E. T. Lawrence	1st (£50) Cheers & Smith; 2nd (£30) A. Brocklehurst; 3rd (£15) Charles Adshead.	68 designs submitted; limited to Lancashire architects
,,	Municipal Buildings, Hertford	—	———	1st (£50) Charles Carter; 2nd (£20) R. Palmer Baines ..	98 designs submitted
,,	Municipal Buildings, Stirling	—	William Leiper	1st (£50) Salmon & Son,& Gillespie; 2nd (£30) Stewart & Paterson; 3rd (£20) Alex. Wingate.	
,,	Secondary School, Sowerby Bridge ..	—	J. Vicars Edwards.. ..	1st, Longbottom Culpan; 2nd, R. Fielding Farrar ..	28 designs submitted
,,	Y.M.C.A. Building, Manchester	40,000	Thomas Worthington	Woodhouse, Corbett & Dean	4 firms of Manchester architects invited to submit designs
,,	County Hall, London (Final Competition)	850,000	Norman Shaw, W. E. Riley, & Sir Aston Webb.	Ralph Knott	Second and Final Competition.
February..	Castleton Branch Baths, Rochdale ..	—	A. Saxon Snell	1st, Wallis & Bowden; 2nd, Butterworth & Duncan; 3rd, P. W. Hathaway.	
March	Municipal Buildings, Acton	—	Norman Shaw	1st (100 guineas) Davis & Oglesby; 2nd (50 guineas) S. B. Gridley; 3rd (25 guineas) Mackintosh & Newman.	
,,	City Hall, Perth	25,000	J. J. Burnet	1st (£50) H. E. Clifford; 2nd (£30) Stewart & Paterson; 3rd (£20) Campbell Douglas, & A. N. Paterson.	136 designs submitted
,,	Royal Grammar School, Colchester ..	15,000	T. G. Jackson	1st, Newman, Jacques & Round; 2nd, Spalding & Spalding; 3rd, Goodey & Cressall.	17 designs submitted
,,	Town Hall, Radcliffe, Manchester.. ..	12,000	G. H. Willoughby	1st, W. M. Gillon; 2nd, D. Bird; 3rd, H. Lord; 4th, Gilling & Moorhouse.	54 designs submitted
April	Secondary School (County High School), Harwich.	6,500	Leonard Stokes	1st, Brown & Burgess; 2nd, Eade & Johns; 3rd, Bisshopp & Cautley.	13 designs submitted
,,	Municipal Offices, Conway	—	Porter and Elcock ..	F. D. Cheers	
,,	Two Estates, Warrington. Garden Suburbs	—	Segar Owen	A. & J. Souter	21 schemes submitted
,,	Technical College Extension, Sunderland..	—	A. W. S. Cross	1st, Brown & Spain; 2nd, Vaux & Marks	Competition limited to local architects
,,	Secondary School, Yeadon and Guiseley ..	—	———	1st (£35) W. M. Broadbent; 2nd (£20) Philip A. Robson	
,,	Elementary School, Bootle..	11,000	———	Crouch, Butler & Savage	149 designs submitted; school to accommodate 1,000 children
..	Day Training College, Dudley	—	———	Crouch, Butler & Savage	Competition limited to 30 selected architects
,,	Wesleyan Church and School, Feltham ..	5,000	———	Crouch, Butler & Savage	Selected from among five other invited designs
,,	Secondary School, Lowestoft	—	A. Morris Butler	1st, Brown & Burgess; 2nd, R. Scott Cockrill	School to accommodate 300 boys and girls
May ..	New Masonic Hall, Leicester	8,000	S. Perkins Pick	1st, H. H. Thomson; 2nd, W. M. Cowdell; 3rd, R. W. Bedingfield.	Limited competition
,,	High School for Girls, Stockport	11,000	J. W. Simpson	1st, Spalding & Spalding; 2nd, Cheers & Smith; 3rd, Applyard & Quiggin; 4th, G. H. Brady.	20 designs submitted
,,	Schools at Anerley	—	———	Cecil A. Sharp	Limited competition
,,	Enlargement of Banstead Downs Golf Club Premises.	—	———	Cecil A. Sharp	Limited competition
,,	Elementary School, Romford	—	———	Cecil A. Sharp, in conjunction with A. S. R. Ley	
June	Gardens of the Peace Palace at the Hague..	25,000	———	Thomas H. Mawson	Englishman, Dutchman and German invited to compete
,,	Council School, Kingsdown, Bristol ..	7,389	W. L. Bernard	W. S. Skinner	School to accommodate 500 scholars
,,	Plans of Farm Buildings	—	———	1st (£50) J. W. Hepton; 2nd (£25) Clark and Moscrop; 3rd (£15) Samuel Taylor and Son; 4th (£10) J. M. Holmes.	
,,	Church Buildings, Blackheath	—	Philip A. Robson	Wills & Anderson	Buildings for use as elementary school, etc.
July ..	New Hostel, Bangor College	25,000	———	Henry T. Hare	
	Homœopathic Cottage Hospital, Southport	—	R. Norman Shaw	1st, H. Percy Adams & C. Holden; 2nd, Briggs & Wolstenholme; 3rd, Haigh & Thompson.	
,,	Baptist Church and Schools, Leeds.. ..	8,500	W. H. Thorp	Percy Robinson & W. Alban Jones	Church to accommodate 500 persons
,,	Workhouse Extension, Islington	—	Lewis Solomon	Greenaway & Newberry	7 competitors
,,	Secondary School	—	———	Joseph Holt	
,,	Shrewsbury Public Hall and Institute, Andsell .	—	———	G. H. Willoughby	Competition limited to architects practising in Manchester, Blackburn, Lytham and St. Anne's
,,	Public Libraries, Rowley Regis	—	———	1st, Wills & Anderson; 2nd, Crouch, Butler & Savage ..	103 designs submitted by 99 competitors
,,	New Schools, at Eccles	—	———	1st, Henry Lord; 2nd, Charles Clegg & Son; 3rd, J. N. Fletcher.	
,,	Extension of Princess Alice's Hospital, Eastbourne.	—	A. Hessell Tiltman.. ..	W. Haythurray	
,,	Secondary School, Market Drayton ..	—	H. Beswick	Joseph Holt	98 designs submitted
,,	New Schools, Tebay	—	———	Sproat, Farmer & Warwick	About 50 designs submitted
,,	Extensions to St. Chad's Church, Leeds ..	—	H. C. Corlette	J. Harold Gibbons	Limited competition
August ..	New Schools, Tiverton	—	C. Harrison Townsend ..	1st, W. H. Ashford; 2nd, W. H. Atkell	231 designs submitted
,,	Infants' School, Cotteridge..	—	———	J. P. Osborne	
,,	New Schools in Grove Road, King's Heath, Birmingham.	—	———	Ewen Harper & Brother	
,,	Widening of Market Gate, Warrington ..	—	Prof. C. H. Reilly	1st & 3rd (£50) Wright, Garnett & Wright; 2nd, Wm. & Segar Owen; 4th, Mr. Beesley.	Final competition; 12 designs submitted
,,	Council Schools, Northenden, Sale.. ..	—	———	Magnall & Littlewoods	
,,	Emergency Hospital, Ilford	—	H. Percy Adams, F.R.I.B.A.	1st, Armstrong & Wright; 2nd, Ewen Harper & Bro.; 3rd, Chatterton & Couch.	54 designs submitted
,,	Restoration of St. George's Church, Bolton	7,000	Austin and Paley	1st, J. L. Simpson; 2nd, F. Freeman	
,,	Intermediate School for Boys, Cardiff ..	—	Leonard Stokes, F.R.I.B.A.	1st (£50) and 3rd (£30) Teather & Wilton; 2nd (£40) James & Morgan.	34 sets of plans submitted
,,	New Receiving and Vagrant Wards, Islington Workhouse, London.	Estimated at 3,350	Lewis Solomon	Two premiums (£15 & £10) Greenaway & Newberry ..	Another plan adopted
,,	Workhouse Extension, Dudley	—	C. E. Bateman, F.R.I.B.A.	Nicol & Nicol	Limited competition
September ..	Free Library, Ellesmere Port	—	J. Swarbrick, F.R.I.B.A...	Sproat & Warwick	Four architects entered competition
,,	New Grammar School, Malton	—	Paul Waterhouse, M.A., F.R.I.B.A.	1st, W. H. Bingley; 2nd (£10) Bottomley, Son & Welburn; 3rd, Clarke Moscrop & Feetham; 4th, C. H. Channon.	
,,	New Secondary School, Cleckheaton ..	—	Vickers Edwards	1st (£50) William H. Thorp, F.R.I.B.A.; and (£30) W. S. Braithwaite; 3rd (£20) R. Fielding Farrar.	64 sets of plans submitted
,,	Congregational Church House, Manchester	—	Paul Ogden, F.R.I.B.A. ..	1st, Bradshaw & Gass; 2nd, J. Gibbons & Sons; 3rd, J. & J. Swasbrick.	Many meritorious designs submitted
,,	Upper Standard School, Rotherham ..	12,000	E. R. Robson	1st (£50) David B. Jenkinson; 2nd (£20) James Totty ..	
October	"Daily Mail" Ideal Homes Competition..	500	E. L. Lutyens	1st (Gold Medal & £25) Arnold Mitchell	
,,	,, ,, ,, ...	750	———	Frank Bromhead	
,,	Swansea Cottage Homes' Site	—	Geo. T. Brown; Marcus Hoskins, H. Bedford Taylor; Raymond Unwin.	1st (Gold Medal) James Crossland; 2nd (Silver Medal) Gilbert Waterhouse; 3rd, John W. Aldiss.	
November	Secondary School for Girls, Brighouse ..	—	———	Sutcliffe & Sutcliffe	15 competitors
,,	Garden Designing, Letchworth	—	R. Hackness; Kelway and Sons; and Mawson Bros.	Class I: David Smith; Class 2: W. H. Johns; Class 3: 1st, M. & A. R. Wilson; 2nd, F. J. Landsell; Class 4: 1st, Cayley & Rochester; and, Miss L. A. Dunnington.	
December	Glamorgan County Hall, Cardiff	—	W. D. Caroe	1st, Harris & Moodie; 2nd, Pearson & Milburn; 3rd, Henry T. Hare.	198 designs submitted
,,	Poster for Building Exhibition, 1909 ..	—	Sir Aston Webb, R.A.; Sir George Frampton, R.A.; Ernest George, P.R.I.B.A.	Geo. Denham	Promoted by H. Grevill Montgomery, M.P., 20 designs submitted
,,	New Baths and Pump Room, Bakewell	—	———	1st (£25) Boyden & Walton	



Exterior.



Interior.

GYMNASIUM FOR UNIVERSITY COLLEGE, ABERYSTWYTH.
YOUNG AND HALL, ARCHITECTS.

Frazzi Construction.



INTERIOR OF CHURCH OF "OUR LADY OF WILLESDEN."
The whole Interior is finished in Frazzi with smooth surface.



A PORTABLE MOTOR GARAGE AT LEWISHAM. C. HARRISON TOWNSEND, ARCHITECT.



INTERIOR OF NEW FACTORY FOR MESSRS. ROWNTREE.



HOUSE WITH CAVITY WALLS IN MONOLITHIC BRICKWORK.



NEW FACTORY FOR MESSRS. ROWNTREE IN MONOLITHIC BRICKWORK.



POWER STATION IN MONOLITHIC BRICKWORK.

SPECIAL ARTICLE.

A History of the Development of

BRITISH ARCHITECTURE

(1066—1866,)

in pictures.

WITH SHORT EXPLANATORY NOTES ON

ENGLISH MEDIÆVAL ARCHITECTURE;

By Edward S. Prior, M.A., F.R.I.B.A., F.S.A.

THE EARLY RENAISSANCE;

By J. A. Gotch, F.R.I.B.A., F.S.A.

THE LATER RENAISSANCE;

By Mervyn E. Macartney, B.A., F.R.I.B.A., F.S.A.

123 ILLUSTRATIONS.

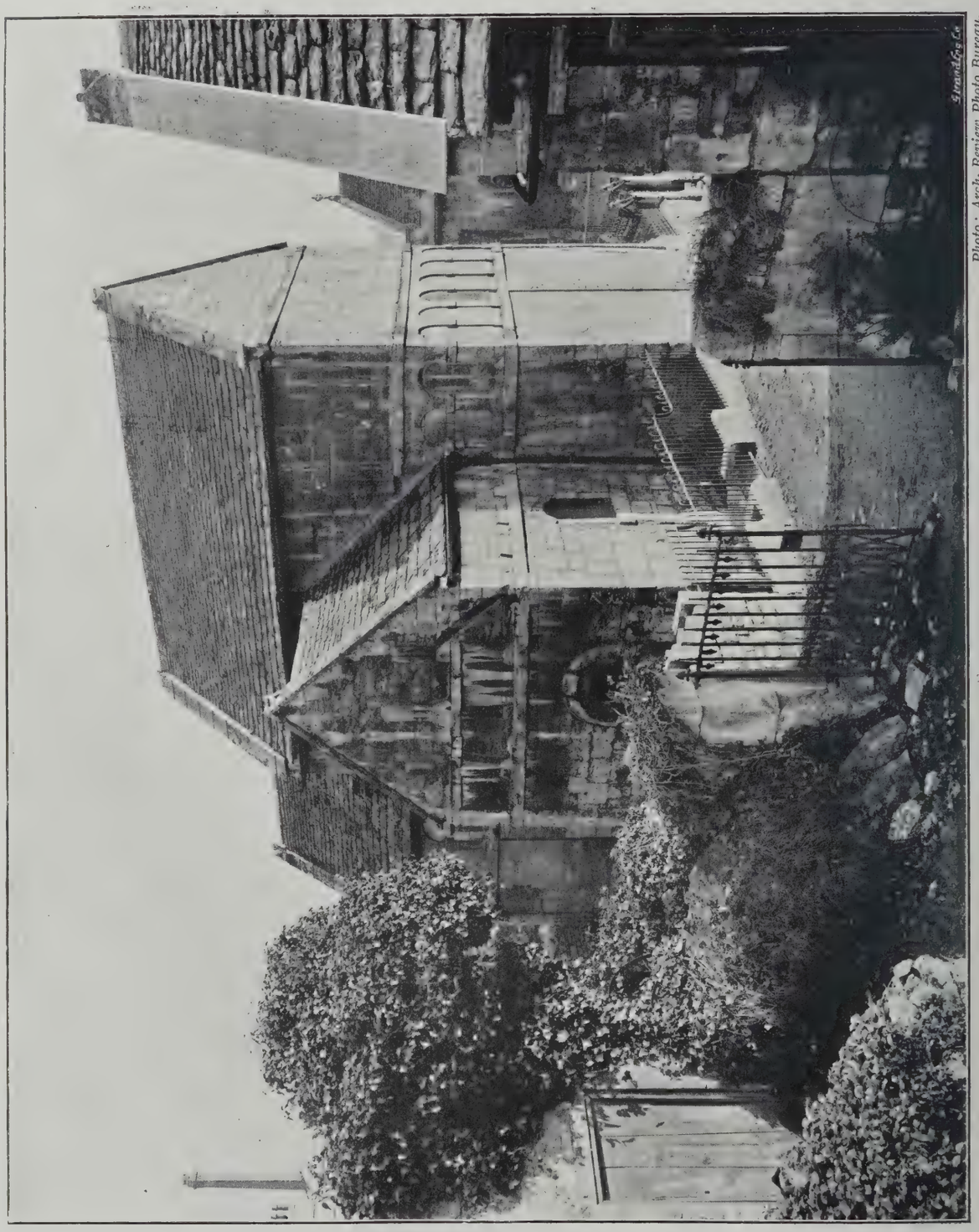


Photo: Arch. Review Photo Bureau.

THE SAXON CHAPEL OF ST. LAURENCE, BRADFORD-ON-AVON.

ENGLISH MEDIÆVAL ARCHITECTURE.

By EDWARD S. PRIOR.

The Roman building left in the British Isles has nothing above ground of importance besides what many provincial cities in France, Germany, and Spain have; on the other hand, England may be envied for the record of VIIth to Xth century art that appears in Anglian and Viking (Keltic) crosses, many of them elaborately sculptured. There remain over a hundred stones which show this art in the north and west of England, besides many in Wales, South Scotland, and Ireland. The church building of the Saxons is also left to us in an architecture which can in many instances be confidently dated before 1050, though this in no case makes the body of any large church, and its interest is more archæological than architectural.

ANGLO-NORMAN ROMANESQUE, C. 1050, C. 1160.

Following on the Conquest of England, the style of Anglo-Norman architecture becomes of moment in the history of Romanesque building. The amount and scale of it in the southern part of our island will bear comparison with what was being done abroad at this date, and no district of Europe of the same extent can claim the possession of work of greater importance in the development of Romanesque. The character of this building was due to the circumstances of the Norman invasion. The Benedictine domination of West Europe had been used as a political force to complete and establish the Conquest, and this monastic annexation of England resulted in an era of building extraordinarily fertile in great churches. Between 1060 and 1160 were set out and built in our island abbey and cathedral churches remarkable even in an age of massive architecture. Also, owing to the habit that in England the seats of bishops were frequently set in the Benedictine churches, their structures have survived to our day, whereas in France the greatest abbey churches, such as St. Martin's at Tours or Cluny in Burgundy, have been practically effaced. The combination of monastic with cathedral dignity is almost peculiar to England, and the monastic type given to our early architecture has throughout been one of the sources of English style, and in one way and other has separated the art of our mediæval building from that of the Continent.

The Early Benedictine Building.

M. Camille Enlart, has in Michel's "Histoire de l'Art" excellently summarised the main distinctions of the English Romanesque; the unadorned massiveness of the Anglo-Norman construction; the great length of the many-pillared naves; the projection of the transepts, and the apse-bayed extension of the quires; the right-angled simplicity of the masses, and the uncompromising sheerness of the towers. The nave and lantern (1077-1088) of St. Albans Abbey church (where spoilt by modern rebuilding) give us excellent examples of the earliest Benedictine building (1). In the well-preserved transepts of Winchester (1079-1083) and Ely (1090-1130), as also at Norwich (1096-1119), and particularly in the massive cathedral of Durham (1093-1133), is to be seen the great style of the Anglo-Norman monastic cathedral, remarkable not only for the Egyptian solemnity of its immense piers, but for the science of its builders. Here at Durham, as early as anywhere, was achieved that construction of ribbed vaulting, whose evolution became the creative force in mediæval style.

In the planning and details of this first English Romanesque the immediate origin is from the school of Normandy. In plan the above abbeys and cathedrals were, with the exception of Norwich cathedral, planned, as Canterbury was, by Lanfranc, on the "parallel apsed" type, which is that of the Conqueror's churches at Caen. It is the same in the construction of the bays—Chichester Cathedral (1090-1108), for example, was built with a bay design that closely follows that of the abbey church at Cerisy la Forêt (1030-1080).

But it must be also observed that the Benedictine domination was wide-spread in Europe, and dependence on the architectural province of North France does not make the whole sum of the English story. For example, some of the earliest abbey churches of Norman building, Westminster (1050-1165), Bury St Edmunds (1070-1096), and Lewes (1070-1200), had been planned with an aisled apse and radiating chapels; (2) Norwich (1096-1117) shows to this day a great part of such an east end.

The Late Benedictine Building.

Towards 1100, moreover, the Norman plans were superseded, as in the Canterbury rebuilding, 1096-1107; in that of Lewes, *c.* 1100; in the building of Reading abbey, 1121-1140. Also the central towers of the west fronts at Lewes, Bury, and Ely, are not of Norman use, but an echo from the great building in progress at Cologne and other places on the Rhine. Thus, too, in the second quarter of the twelfth century there are found extensions of the western facade in English churches with a great western transept, somewhat in German fashion. At Bury (*c.* 1130) this was 260ft. wide; at Ely (*c.* 1150-1180) nearly 200ft., in each case with flanking towers, as well as the central. The great western transept with flanking towers is found, too, at Lincoln (*c.* 1150-1160) and Peterborough (*c.* 1177-1193), the facades designed with big cavernous arches to their whole height, a method of building outside the manner of the Norman school.

Except at the last-named, these westward completions of the east-county abbey-churches retained Romanesque style up to the last quarter of the twelfth century, and as in Bishop Pudsey's Galilee at Durham (*c.* 1160), clung to Norman ornaments when these had been discarded elsewhere. But the belated building of the round arch in these instances may indicate not only the conservatism of the masons in the Benedictine buildings, but also that style in East England was still in touch with German Romanesque.

The Western Romanesque.

In the west of England English Romanesque developed in the first post-Conquest building, with certain differences, from that in the east; *e.g.*, it had a shorter, wider setting out of the naves, and apses polygonal instead of circular, as at Gloucester (1089-1100) and Tewkesbury (1090-1100). A similar departure from Normandy precedent is found in the columns of the naves of these abbey-churches, which are lofty cylinders that reduce the triforium galleries to insignificance. These peculiarities both of plan and construction may, however, be traced, as much to Lombardic as to Germanic origin.

The Cluniac Romanesque.

It is probable also that certain variations in England from the standard style of Normandy were due to the influence of the Cluniac building. This reformation within the body of the Benedictines was the moving religious force of the last years of the eleventh century; its architecture was for a time paramount in the south as well as the east of France, and came into England also. A much extended quire with double transept appeared in the mother house of the order at Cluny (*c.* 1090) and so too was it planned at the Cluniac, Lewes, in England (*c.* 1100), and then side by side was the similar setting out in the quire enlargement at Canterbury. And this model was followed in the eastward extensions of the English church for a couple of centuries.

Another indication of English arts having their origin in the Cluniac cloister is to be found in the twelfth century advance of figure-sculpture. There appear specially two developments; one in the south-east of England, as if spreading from the Cluniac, Lewes (Rochester west doorway being its most elaborate example); the other in the Severn valley, as if from the Cluniac house of Wenlock: the south porch sculpture at Malmesbury is a specimen. In both localities an elaborate Romanesque figure sculpture (3) dates to about the middle of the century, a special richness appearing in the tympana of doorways and in fonts.

The Native English Romanesque.

Side by side, however, with the importations of plan and style due to the cosmopolitan character of twelfth-century monasticism, there was the current building at the hands of the native masons. By the second half of the twelfth century this had certainly asserted itself as a national style. Since the smaller monas-

(1) Mr. Gardner's photographs at the Tufton Street Museum of the Architectural Association, and in those of Harrow School and Eton and Winchester Colleges may be consulted with advantage.

(2) St. Martin at Tours is considered one of the first of this planning—which occurs also under Cluniac influence extensively in the middle and south of France.

(3) In Kent, Barfreston; the Brighton font, etc. In the Severn Valley, Shobdon, and Kilpeck in Herefordshire, and many doorheads in that county, in Gloucestershire, Wilts., etc.

tic houses would not be able to train bodies of masons of their own like the great houses, but made a casual use of the local artisan, their church-building was cognate to that of parish-churches, and constituted with these latter no inconsiderable part of the twelfth-century style. The influence of this native craft grafted Saxon ideas on to the Benedictine architecture as can be well seen in the church at Romsey, where was one of those half-dozen nun's houses which in the neighbourhood of Winchester, the ancient Saxon capital survived the conquest, and carried on Saxon tradition. In the Romsey quire, built 1110-1120, we have not the Norman apses, but square-ended chapels. It is the same also in the hospital church of St. Cross, near Winchester, 1140-1160, while at Romsey an aisle is found squaring the presbytery at St. Cross, a square gable-end replaces the apses, and in both the details of construction as to window grouping, pier-sections, and arch-mouldings, exhibit English masons experimenting outside the lines of a Continental progress. The nave of the Southwell canons (1110-1150), and the remains of Malmesbury Abbey (*c.* 1150), are other examples of a native progressive building, the latter providing an early instance of the pointed rib-vaulting. The big cylindrical piers of these smaller monastic churches are to be noted as an evolution away from the functional use of engaged columns which the Normandy school had developed; they show the habit of that simpler art of English church-building which was mindful of the continuity of the wall and thought less of the mechanism of the vault. A peculiar development of pier is to be seen at Romsey; also at Jedburgh (South Scotland), and especially at St. Frideswide's, now the Christ Church Cathedral of Oxford (*c.* 1160), where the triforium gallery is tucked in under the pier arches.

The Cistercian Romanesque.

But in the direction of simplicity of construction (as antagonistic to the elaborate ornamental Romanesque) another important influence upon English style lay in the Cistercian building, which was in England very considerable from 1140 to 1200. At first, or, at any rate, in some cases (*e.g.*, at Fountains, where Burgundian details are evident), we may suppose there were brought not only the Cistercian plans, but also the building character of the mother houses, Citeaux and Clairvaux. In the same way *c.* 1170, the canons of Prémontré, founded with an equally strict and simple profession as to Cistercian, may be thought to have taken into England from St. Martin's at Laon masons or lay-brethren, who, skilled in the plain church-building of the order, would repeat the features of it. Yet in England most often the early Cistercian and Premonstratensian building, though it has parted with the profuse Romanesque ornament of the Benedictine tradition, as at Ford (Dorset, *c.* 1145), Buildwas (Shropshire, *c.* 1148), Roche and Kirkstall (Yorks, *c.* 1150-1180), Bradsole (Kent, *c.* 1181), has adopted the local style of English building, with no marked feature outside the native art. Such plainness was that, too, of the smaller Benedictine buildings, which were outside form the conservative masoncraft of the great houses, Ely, Peterborough, or Durham. Out of such mixed elements grew the impetus which with some rapidity towards 1170 advanced to the creation of English Gothic as a style outside any particular Continental school.

THE TRANSITION TO GOTHIC, c. 1160—c. 1200.

This may be reviewed in three divisions as belonging roughly to three districts, to be separated from those in which the architecture of the great Benedictine abbeys was still Romanesque.

The Northern School.

In the North of England the reformed communities, Cistercian monks and Augustinian and Premonstratensian canons were building their churches from 1160 onwards in many places. The quire of the Canons Church at Ripon, now that of the cathedral, affords a valuable if not very extensive example of this architecture. The same kind of work was in progress on a greater scale in Archbishop Roger's quire of York Cathedral, destroyed in the fourteenth century. Lanercost Priory Church, in Cumberland, consecrated 1169, has the same constructive style, and an example of pointed rib-vaulting. There came a wide extension of similar work, with a gradual advance in lightness and temerity of execution, in the building of the Cistercians at Fountains, Byland, Jervaulx, Furness, etc.; of the Benedictines at Tynemouth; of the Augustinian Canons at Lanercost, Hexham, etc.; of Bishop Pudsey at Auckland and Darlington. The northern style, so created in English Gothic, can be distinguished (1) by plans having a square-ended presbytery usually projecting to full height from an aisled quire; (2) by clustered piers of simple elements and slender proportion; (3) by an early development of pointed ribbed vaults; and (4) by lofty pointed lancets deep set in the wall, ranged with shafted arcades outside and inside the building. In these examples, the square-planned abacus of the Continental transitional usage can be seen early changing to the round-planned native type; also the use of the multiplied mouldings is here developed to a degree which makes them the sole decoration of the building scheme—carving, whether of the leaf or the figure, being sparsely used.

The Western School.

A second district of transitional style was in the west—where an individual Gothic, distinct from that of the north, is to be seen in the making. Its origin may be traced to the masoncraft of the Benedictine Abbey of Worcester, which showed new features in the building of the circular chapter-house (*c.* 1140), and then in the erection of the west bays of the nave (*c.* 1160), achieving in this latter an advanced Gothic construction, the fine vaulting of which is still to be seen in the aisles (4).

To what extent the Cluniac building at Wenlock Priory, a daughter of Charité sur Loire, may have been a power in the architecture that sprang from this beginning is uncertain; but at any rate, as already mentioned, an early figure-sculpture, which appears of Cluniac initiation, is distributed all along the Severn Valley, and in the same district there develops a leaf-carving of great liveliness and sculpturesque beauty. We can trace, too, the circular chapter-house of Worcester being adopted in the Cistercian foundations of Margam and Dore in South Wales, and with this the Worcester order of tripled shafts. While in these and many other works by their side, came the grace of the foliage capital, to b seen first developed at St. Mary's Shrew bury, the near neighbour of Wenlock.

The province of the western school e tended from Lichfield and Chester in Mi England to St. David's, in South Wale and across the sea to Dublin, in Irelan where the Christ Church Cathedral w erected *c.* 1175. In South England a di tinct example of the mason-craft appea at Whitchurch Canonicorum, Dorset.

The pointed arch was used by the we tern masons at Worcester, Dublin, a Llanthony (*c.* 1160-1175), though t round arch survived at St. David's (1180). The plans show a square-endi to the presbytery and eastward extensio of square chapels as at Hereford, Lla daff, and Dublin, and there are ma pecularities of detail which separ their art from that of the north and e of this date. In its southern extension t western school of building met and a sorbed the development of English l Romanesque that has already been ferred to at Malmesbury and Oxford. peculiar chevron moulding, founded the Norman zigzag, which continued w into the thirteenth century, beca characteristic of the province. The qu and transept of Glastonbury, which dated by documents to 1184, m be taken as the characteristic ample of both elements in the sou western transitional craft. But B hop Reginald's Cathedral of Wel building by the side of Glastonbury, hibits rather the Shrewsbury and Dub characteristics. There seems to my m no doubt that to this bishop (1174-11 must be assigned what we see of the ea work in the quire, transept, and east b of nave (5), though to the eye accustom to the French and German details of same date, the tracings of its mouldi seem very advanced. Here, however, elsewhere in our English art, the preco of finely divided moulding is remarkal as well as the complete use of the poin arch.

The South-Eastern School.

The third school of English tra tional style is that of the south-east counties, which can take its full illus tion from the rebuilding of Canterb quire (1174-1184). The story of this w is to be found in the contemporary hist of the monk Gervase. With his acco in our hand we can identify the deta so as to distinguish the large I played first of all by the French intro tions of the Master William of S (fresh, it is supposed, from the e Gothic building of Sens Cathedral), then by the different craft of the C stone masons working under him and successor, William the Englishm Under the new master (1180) foreign ments disappear, and we have the w of the native masons, grounded in na style in the building of Canterbury, create the English Gothic. The basi their craft was the English use Purbeck marble in detached shaf and thin moulded strings. It is difficu explain how the art and skilful wor of this marble grew up in the quarri Purbeck, at Corfe in Dorset. One be allowed to see the idea of it in the of Flemish black marbles as shafts Laach Abbey Church, near Cologn 1150), which prevailed in the angl country between the Ile de France

(4) Similar work of this date is to be seen also at Bredon, on the Severn, from which came the stone for the Worcester work.

(5) i.e., the lower stories—the nave vault later building.

he Rhine). The lie of Canterbury (6) towards the Continental district of this use, and then the fact that we find *c.* 1150) importation into England of objects of Flemish marble, such as fonts and slabs (which afterwards seem copied by the Purbeck marbler), give groundwork for this conjecture. But the peculiar progress of the English masons lay in the working out of the idea, their style proceeding on the same lines of multiplying mouldings and slender shafting which had appeared in the contemporary stone-workers of the north and west of England. The English technique can be seen in (1) the round-planned abacus; (2) in the carving of the crocket capital with the broad thumb-like midrib to the leaf, distinct from the treatment of either the Ile de France carvers or that of Normandy. The nave (7) of the Temple Church (consecrated 1185), in which we find a Purbeck-marble use of the same kind, was probably building side by side with Canterbury quire. So London was possibly the first workshop where the marblers got their skill. The east chapels of Chichester were begun (1186) immediately following the work at Canterbury, and in their building all the French character of that quire has dropped out (8) the pointed arch comes more completely into use, and the art of Caenstone and Purbeck marble develops features which seem carried on by the same masons to the Winchester chapels 1205). Lincoln quire (begun in 1194), and the Ely galilee (1198-1215), are contemporary, and show the propagation of this manner of English Gothic, which has been called "Early English." In this the characteristic Caen-stone mouldings of south England are found worked in the local stones, and often some local marble has been taken to imitate the shafts and string-courses of Purbeck.

EARLY ENGLISH, c. 1200-c. 1250.

A great impetus was given to cathedral-building by the return of the bishops to England, when the Pope's Interdict of England was removed (1213), and on King John's death in 1216 the national movement of our art had full play. The character of our architecture for the next generation may be described as largely insular, and, therefore, deserves the name of "Early English." The absorption of Normandy by the central French power brought to an end the Norman connections across the Channel, so that English builders were thrown very much on their own resources, except so far as the influence of Henry III.'s court tended to the promotion of French fashions.

The English style, if it be put beside the great French Gothic, which at the time was achieving that architectural supremacy which spread it throughout Europe, can be seen with important differences. In the first place, on the constructive side it never achieved either the scale or the system of the French architecture. That concentration of building stresses on to definite fixed points by means of arches which makes the essence of Gothic as compared with the domical methods of Byzantine, or the lintol treatment of Classic and Egyptian building) never reached at this time in England complete realisation; the wall was not exterminated as a building asset, as we see this done at Amiens or Sainte-Chapelle in Paris. On the other hand, in delicacy and variety of moulding, and especially in the tracery of vaults and windows, there were many refinements obtained in the English art that only later appeared in the French. In one point there is an exact parallel. Just as the art of the Ile de France at this period spread itself as a distinct style supplanting the local transitional Gothic masoncrafts, so in the British Isles a practical uniformity of masoncraft replaced the local schools of it, which had belonged to the transition. The south-eastern manner (already described) of building with a soft white freestone, set off with dark marbles, appears after 1220 in all parts of England—at Fountains and Durham in the north, and at Exeter, Wells, and Worcester in the west. Moreover, in Scotland, at Elgin and Glasgow, and in Ireland, at Kilkenny and Dublin, the methods of building are those of English masons.

Early English Plans.

The English traditions of quire-lengthening with double transept and eastward extensions of square-ended Lady-chapels appeared in many forms in thirteenth century church-plans. Two special varieties were simultaneously in use for the largest churches; one practically confined to the south and west of England, in which the high body of the presbytery was stopped short while eastward of it are lower extension of square-ended chapels; the other characteristic of the north and east of England, where the high gables of the quire were taken right on to sheer endings of full height to the east. In France among the largest foreign churches only Laon has this latter ending, but certain of the Breton cathedrals and larger churches exhibit both of the English types.

Early English Vaults, Windows, etc.

The early introduction of extra ribs (*tierceros*) and ridge-pieces (*liernes*) into the English vault made its development differ from that of the Continental. Thus the English vault was low in comparison with the Continental, and particularly the flying buttress was sparingly used, and never had either the constructional efficacy nor the conspicuous external assertion given to it in the French cathedral. On the other hand, the lancet window, in its beautiful groupings and with its lofty grace, is a feature of English style, giving our smaller work a dignified elegance, specially striking when combined with lofty wall arcades on gables and fronts as at Ely quire, Lincoln, and the many abbey churches of Yorkshire. In detail the round-planned abacus of the pier, and with this the moulded capital, have a character of finish and delicacy in the English treatments which so appear usually to depend on architectural qualities, rather than present themselves as great combined conceptions of scuptural fancy, like the fronts of French churches, such as Chartres and Reims. Particularly the great cavernous porches, peopled with a thousand statues, of the French school were absent. The English doorways were in comparison insignificant, and the figure-sculpture of the English church was detached in rows of arcades, though sometimes covering the whole front of the building, as at Peterborough, Lincoln, and especially Wells (9) and Lichfield.

Early English Examples.

The chief works of this era were as in the French art, the great churches of the Bishops, *e.g.*, at Lincoln (1198-1260) and at Salisbury (1220-1258), whose cathedrals may be taken as the typical buildings of the English art. The smaller quire of Beverley, in Yorkshire (1225-1245) is a building designed also not for monks but for secular canons, with all the best points of the English character. The limitations as well as the beauties of Early English can be seen in other examples, such as the Worcester quire (1202-1240), Ely "Presbytery" (1235-1252), York transept (1250-1260), and the Durham "Nine Altars" (1242-1280). The difference of English architectural motives from those of the French can also be appreciated in the great architectual screens that were built at Peterborough (1190-1230) and at Wells (1220-1242). Finally, one of the best examples of the peculiar manner of building that can be specially called English Gothic lies in the quire of Westminster Abbey (1245-1260), although here built directly under French influence as to the plan of its apsed *chevet* and the height and narrowness of its bay-scheme. It is clear that the tracings of plan and construction at Westminster were an intended importation of the ideas of the great French cathedrals, but the technique of the architecture is that of English freestone masons and Purbeck marblers.

MID-GOTHIC. C. 1250-C. 1300.

The plan and constructive features introduced at Westminster from the French style had no effect on the subsequent English development; still, that building appears as the early introduction of much that made a new era for our art. The distinct by-way which the English art had followed for half a century runs into the main course of European art about 1245, and our masons are to be seen absorbing many of the developments of masoncraft which the building of Amiens cathedral and the Sainte-Chapelle, at Paris, had introduced.

Mid-Gothic Tracery.

Of these absorptions that of the widest consequence was as to bar-tracery, for this transformed both the construction and the decoration of English architecture. The wide window meant a more logical type of Gothic construction than had as yet been achieved in the English art, and its tracery led bit by bit to the most typical developments of English style. It is remarkable that in this way English building served as the "host," to use a biological term, from which were hatched out the forms which finally bred in France itself to French "Flamboyant."

Mid-Gothic Carving.

Another of the introductions of the second half of the century was that of naturalistic foliage in stone carving, which had for some time developed in the art of both the Ile de France and the Caen-stone masons. By its side the naturalistic treatment of drapery had been achieved by the sculptors of Paris in the statues of Sainte-Chapelle. Both appear now in the English art (1270 to 1290).

(6) See too at Chichester, Boxgrove, New Shoreham, and New Romney, work 1150-1170, of Picardy style.

(7) The complete rebuilding of this in the nineteenth century has practically destroyed its evidences of style.

(8) The capitals of the piers of the presbytery show, however, a type to be seen at Notre Dame, Paris, but with English detail.

(9) Only at Wells is any great quantity of this sculpture now in existence.

Mid-Gothic Examples.

The developments of detail can be seen with immediate effect in London in the cloister and octagonal chapter-house of Westminster (1250-1260), and then in the building (1260-1300) of the great quire of St. Paul's (destroyed in the fire of 1666), which had considerable elaboration of window. By 1270 the revolution was complated in all parts of England, initiating what may be called the central or summit style of our English mediæval building. Its finest works can be seen at Salisbury in the cloister and chapter-house (1250-1280), laid out on the Westminster lines; at Lincoln in the "Angel Choir" (1256-1280), in which much of the sculpture seems that of Westminster; in the nave at Lichfield (*c.* 1270); in the north transept of Hereford (*c.* 1270); in Merton Chapel at Oxford (1275-1280); in the fine octagonal chapter-house of Wells (1286-1310); and in that of Southwell (*c.* 1290). Beautiful fragments of this art are to be seen, too, in the buildings of many ruined abbey-churches, such as St. Mary's, York (1271-1290), Guisborough (*c.* 1290), Kirkham (1290), Bridlington (1279-1290), all in Yorkshire; Thornton Abbey chapter-house and quire in Lincolnshire (1270-1300), and particularly the beautiful Tintern Abbey in Monmouthshire (1262-1300).

The broad proportions of this church-building, its lowness and the full romantic detail of its architecture, as well as the English character of its plannings, separate the whole effect with some distinction from that of contemporary French building, in which the rigid logic of constructiveness was in some instances now getting lean and mechanical. The chief experiments of English masons (1250-1300) lay in their development of branch (*tierceron*) vaulting, the whole history of which can be seen in English circular and octagonal chapter-houses, vaulted from a single pillar. The series runs from the twelfth-century example of Worcester, through those of the early thirteenth century at Lincoln and Beverley, to the three consummate examples of this period at Westminster, Salisbury, Wells; to be immediately followed by that of York, where the pillar is dispensed with, and the wood-ribbed vaulting peculiar to England takes the place of stone (10). As well as the chapter-houses, one cathedral can be taken as the example of style in our late thirteenth century masons. The rebuilding of Exeter Cathedral was begun *c.* 1270, and its choir and transepts show work before 1300. Though the complete finishing to the west facade lingered on till 1350, the early work was the model of the whole, and the effect is mainly that of a building of the mid-Gothic English style. It is to be noted how in this the early slender shafted use of Purbeck marble has been replaced by full clustered columns and how every variety of tracery finds place in the broad windows.

DECORATED C. 1300-C. 1350.

The first part of the fourteenth century carried every variety of constructive decoration in England to the extreme of luxuriance. In the search for motives our building made one striking variation of architectural form which is of importance to the history of Gothic style outside our islands. This was the introduction of the ogee curve (*accolade*) into arch and gable.

(10) See besides those at York other examples of wood shaped to resemble stone vaulting at St. Alban's quire (c. 1290), Lincoln cloister (c. 1290), Selby quire (c. 1320), and Ely octagon (c. 1345).

The Ogee Curve in the Canopied Niche and Window Tracery.

Up to *c.* 1300 geometrical figures and finished lines of regular arch-construction governed the shaping of stone for architectural use. But now sinuous and continued lines are set upon the face of architecture, to the neglect and often to the denial of the actual facts of construction. The complete surrender of all decorative architecture to the flowing motive was the particular mark of the last French Gothic style, called Flamboyant. But that a hundred years earlier the English mason had laid the foundation of this surrender is undoubted, and this is now recognised by Continental archæologists. Indeed, in North England, at any rate, for some twenty years the flowing line dominated tracery and canopy lines. Still, it must be observed that generally for English building of the first part of the fourteenth century the ogee curving was only one of many unconstructional devices by which the architectural decorator achieved that romantic exuberance of variety which he affected. The real plaything of his genius lay in the canopied niche, flanked by pinnacles and headed with a striding gable. These "decorated" niches of every shape, varying from extreme simplicity to extreme bravado, are the staple of fourteenth-century architecture, and are pressed into every service of decoration, in glass painting, tile decoration, and in all the uses of woodwork, as well as in all stone constructions, large and small alike. In the constant repetition of this use the gable lines curved upwards at the meeting point, and licked up, as it were, the arch construction that had had the function of supporting them, until at last an ogee-headed decoration masking the actual structural fact was built as the stock architectural form (11). Still, as regards the window tracery, the ogee curve had many rivals, and when towards 1330 it seemed on the point of universal adoption, its decorative supremacy was immediately invaded by the straight-lined panels of the Gloucester school of masons—in half a generation, only a quite limited sphere had been conceded to the *accolade*.

In the treatment of the canopied niche, and its decoration by ogee and other fanciful lines, there were in England simultaneously some dozen more or less distinct manners which were characteristic of different schools.

The Northern School.

There was a well-marked northern school of decorated art, which may be called the York school, since its craft worked in the magnesian limestone (Huddlestone from Tadcaster being the chief kind) centreing from York. Its examples abound in the fine group of Yorkshire abbey and collegiate churches that were built in the fourteenth century, and carried on the traditions of the previous Yorkshire Gothic. The fronts of these northern churches were composed with very wide and lofty windows, flanked with buttress masses of great bulk and variety, and crowned with solid pinnacles, and crowded with a multitude of niches, while the gables were enriched with pierced and pinnacled parapets. Much of this art, whose province stretched northwards and westwards to Durham and Carlisle, has perished, but the quires of Ripon (*c.* 1300), Selby (*c.* 1315-1330) (12), Howden (1310-1355) give the character. The window traceries show a flowing tracery with a peculiar constructive scheme in its arrangement, as of vegetable growth, and the screens and canopies were developed with extraordinary luxuriance of sculptured ornament and a peculiar projecting ogeed arch that is characteristic (see the Percy Tomb at Beverley, *c.* 1330).

(11) Some of the earliest instances of the reverse curve in an arch form are in wood screens, to which of course it was not constructively inappropriate—e.g. in the chancel screen of St. Mary's Hospital, Chichester. Here on one side the geometrical piercings are regular and complete, on the other the bars run together, and the ogee curves absorb the geometrical spandrels.

The East Midland and London School.

Further south, passing into the region of the Lincoln, Ancaster, and Rutland stones, though we find the Yorkshire character in the niches and traceries, there is a greater flatness of decoration (see Lincoln centre tower, *c.* 1307, and Southwell quire screen, *c.* 1340, as extreme examples); and when we get to Ely (Lady Chapel, octagon crossing and quire, 1321-1350), and Norwich (east side of cloister, *c.* 1300), though there the connection with York art is close (*e.g.*, the canopies of Ely Lady Chapel), there are mixed characters in the building due to the influence of another big province of style. This we may roughly call that of London, although the fourteenth-century work of the great London monastic churches is no longer in existence to give examples. Still, there are remains in the districts round, as well as the small fragments left in London itself (as in Ely Chapel), sufficient to mark the capital city as the centre of a distinct type of work in which (a) the ogee curve has much less supremacy than in the York school; (b) the window traceries are without the marked constructive *branching* growth, and intsead develop wide square spacings (one variety of which is specially called Kentish traceries, to be seen in Prior d'Estria's screen at Canterbury, *c.* 1305); and in which (c) the gabled canopies are straight-lined and the fillings, largely geometrical, as if more than in other parts of England in touch with the Continental conventions of the date. There is, too, to be seen (d) in work immediately of the neighbourhood of London (as at Waltham Abbey Lady Chapel, *c.* 1320, and Dunmow Priory, Essex), a peculiar succession of fillets and hollows as well as great delicacy in the mouldings.

The West Midland School.

To the west, in the district of the Dunstable stone, as in St. Albans Lady chapel (1291-1326), there is London style of less delicacy; and at Dorchester (quire, *c.* 1300), and Oxford (B. Lucy's Chapel 1320), where the window traceries develop themselves down into the lights, we reach the confines of the sandstone masoncraft of the Midlands, which becomes of coarser execution in Lichfield quire and Lady chapel (*c.* 1320-1340). Throughout the Midlands there is (as distinguished from the *branched* tracery of the North of England) a predominance of diapered patterns, which combine flowing with geometrical designs. Especially developed is a variety called *reticulated* tracery, that is widely spread in England, Ireland, and Scotland (see Westminster Abbey cloister, 1330-1380, and Wells Lady Chapel, 1310), as well as the Oxford window above mentioned).

(12) Bolton Abbey in Wharfedale has a beautiful ruined quire of the art. The great west window of York and the east window of Carlisle are the largest of the style, but modern restorations have much falsified the mediæval building of the fronts of these Cathedrals, and lately also that of Selby.

The South-Western School.

Further west again we have a peculiar potting of the work with a profusion of all flower, as in Gloucester (south isle of nave, 1318-1320); at Tewkesbury quire and vaulting of nave, *c.* 1325). At St. David's (Gower screen, etc., 1324-1347) we find a rich and romantic type of fourteenth-century style, which is worked in the free oolities and sandstones of South Wales and its borders, and boldly uses ogee and other variously-shaped arch-forms as features of construction. In close connection was the art of Exeter Cathedral (already touched on), in which window traceries of geometrical patterns in all kinds of variation are mixed with the reticulated and branching types of the Midlands and the North. One interest of its south-western art was its conveyance across the Channel to Brittany, which so became for a time included in its school, many churches there have the square-ended chapels and eastern gables of the English southern art and the mixed flowing and geometrical traceries and constructional ogee arches of Exeter and St. David's (see Treguier, Folgoet, St. Pol de Leon).

The Bristol and Gloucester School.

But among the many and varied manners of fourteenth century art, the most significant is that which developed first at Bristol and then at Gloucester. The essential quality of this lay in its placing architectural construction on the level of the production by city crafts of architectural furniture—screens, shrines, and monuments such as had long been the work of shops. One can see the genesis of the Bristol style in the furniture of Exeter quire (*c.* 1308-1316), *e.g.*, in the sedilia, in which stone and marble are given all the unity of wood or metal construction, with a series of tabernacles set one on the top of the other. With just this ideal of reducing masonry to a skeleton of worked stone was the vaulting of Bristol quire carried out (*c.* 1315), which appears a long step from that of Exeter in the direction of the complicated constructions that were to be the rule for 200 years. The Bristol craft of skeleton stone-framing was passed on immediately to Wells (for the support of the tower *c.* 1328), and probably to Salisbury for the building of the spire (1334). The Gloucester mason carried it still further in the replacing of the twelfth-century transepts and quire (south transept 1331-1357, and quire 1357-1377). Here all the elements of the English perpendicular style have been created. The characteristic upright panel was used in the tracery of the east window at Bristol, and gets further development in Wells quire (*c.* 1340). At Gloucester it has become necessary filling of architectural spaces, whether of wall or window, the whole scheme becoming one of masonic dexterity. At Tewkesbury the open-work chantries show framings of stone-work, with many devices of constructive decoration on the Gloucester lines. Finally, Gloucester Cathedral itself is just an enlarged version of a chantry making use of the mass of the Romanesque construction for its support (13).

(13) Also the reredos of Christ Church Priory, Hants., and the tomb of Edward II. in Gloucester Cathedral. The furniture-craft of Exeter and Bristol was in close connection with London at this date. The collegiate church of Ottery St. Mary, near Exeter, should also be mentioned in connection with the genesis of the Gloucester style.

PERPENDICULAR, C. 1350-1550.

The Black Death of 1349 was the event which lifted the craft of the Gloucester mason from its place as a mere local variety of style, and established it as the standard architecture for the whole of England; and, moreover, bequeathed this style as an enduring national type of art. These effects may be sketched as resulting as follows. First, by the extinction of the many local crafts—the extermination of the masons providing a fair field for a fresh style; secondly, by the circumstance that the Gloucester mason survived the plagues, for we find him continuously employed during the years of them, and his work shows no break or change of style; thirdly, by the organisation of labour made necessary by the plague, legislation endeavouring to bind the artisan to the soil, while the mason was given free license to travel, and his status considerably raised. Such king's clerks as William of Wykeham would seem to have made bureaux of building, pressing masons into Government service for the carrying on of the royal works. Under these circumstances the Gloucester mason was alive to build, was in demand, had leave of travel, and was efficiently organised—no wonder, therefore, that his style of building spread.

Early Perpendicular Works.

At any rate, there came all over England, *c.* 1375, a uniformity of building detail that is in much contrast with its variety of thirty years earlier. The local manners, as those of Yorkshire and the Eastern Counties, were not superseded immediately after the Black Death, but still they became tinctured with the lean construction, the straight-lined traceries, and rectangular panelled spacings of the Gloucester ideal. York quire (in which building was resumed 1361), and the similar fresh starts at Hull and Newark churches, show architecture with many of these features of the Gloucester mason-craft (14). In the Eastern counties the grand ideas of the early fourteenth century died hard, as witness Walsingham quire; yet Ely Lady Chapel (east window, 1371) and Peterborough west porch (*c.* 1375) have acquired Perpendicular detail. In London building went on with no perceptible break, but as the Court at this time was often at Gloucester, the intermixture of the western style comes immediately into the works of the king under the suveyorship of William of Wykeham. In the West, close at hand to Bristol and Gloucester, the passage of perpendicular building into general currency can be seen in the building of Edingdon Church (*c.* 1361), in the rebuilding of the Winchester west front (1360 or 1370), in that of Canterbury nave (1379-1400), in Winchester College (1387-1393), in Winchester Cathedral nave (1390-1400). The Lady Chapel of Christchurch Priory in Hampshire, too, is of this early work.

Perpendicular Chapel-Building.

The peculiar magnificence of the last English mediæval building is to be seen in the collegiate chapels of New College, Oxford, 1380-1400; of Windsor, 1473-1525; of King's College, Cambridge, 1446-1540; and in Henry VII.'s chapel added to Westminster Abbey 1500-1512. In these later works, though the details of tracery and moulding show small variation from the Gloucester types, there has developed a flattened arch form, which is the special constructive mark of the style. Also in the elaborate fan-vaultings (first to be seen on a large scale in the Gloucester cloister of 1351-1377), a use of elaborate hanging pendants from the ceilings was particularly developed under the King's surveyors, and had its most complete realisation in Henry VII.'s Chapel at Westminster. Many fan-vaultings of great beauty were without these characteristic pendants however, as at King's College Chapel and those of the rebuilding of Sherborne Abbey Church (1436-1500), the Peterborough eastern chapels (1438-1500), and Bath Abbey Church (1500-1539). Elaborate lierne vaults with sculptured bosses at the intersections of the ribs equalled these fan-vaults in complication, as at Gloucester, Winchester, and Norwich Cathedrals, and in Windsor Chapel.

(14) See also at Howden and Durham; this Gloucester influence very probably came by way of London.

Perpendicular Parish Church Building.

The chief expression of perpendicular style lay, however, in the hands of the builders of parish churches, who by the end of the fourteenth century had enlarged them nearly to the size of cathedrals and abbey churches. Though the tracings of fifteenth century details scarcely alter from first to last, and are uniform throughout England, there is the greatest variety in their use, and particularly in parish building some special ideals of the English style of building were carried forward to their fullest realisation.

Perpendicular Wood Ceilings.

Wood ceilings and roofs, for example, had in the Perpendicular style their chief development, so that the most important examples remain in the domestic and parish church building. There had been characteristic English uses of wood throughout our mediæval architecture for ceilings; of the twelfth century, in Ely Cathedral nave; of the thirteenth, in Hayling Church, near Portsmouth; of the early part of the fourteenth century in the great hall of Worcester (now destroyed); and in the great roof of Westminster Hall of the latter part of the fourteenth century. In this series the early construction of a flat ceiling boarded under the great tie beams, gave place, first to open framed roofs, with constructed "principals," on Continental likeness, and then to the shaping of these to give an open arched vista through the length of the nave. For the complete furtherance of this ideal, English carpenters worked out the scientific hammerbeam method which allows the roofing of large spans with open ceilings, yet using only short timbers. Such are seen carried to the verge of audacity in the magnificent East country roofs, such as Blythborough and Wymondham in Suffolk, Sall and Trunch in Norfolk. Another type aiming at the same expression of continuity in the ceiling was with curved braces to the rafters from end to end, and is characteristic of the West-country roofs, such as Curry Rivel in Somersetshire and Kilkhampton in Cornwall. Another variant for the same purpose of lifting the wood construction for the benefit of openness lay in making the rafter-roof of low pitch, as in many of the city churches, especially of Mid-England—a good example is to be seen in south transept of Ely Cathedral.

Perpendicular Spires and Towers.

In their towers and spires, too, the fifteenth-century builders of parish churches showed considerable ambitions. Here, again, an interesting history of develop-

ment could be traced from the low stone steeples of the twelfth century to the lofty Northamptonshire spires of the thirteenth, and so on to the varied treatments which in Oxfordshire and Lincolnshire and other Mid-England counties produced beautiful fourteenth-century examples (15). After 1400, parish-church spires become still more ambitious, as those of Coventry and Louth in Lincolnshire. But by the side of the spire developed the fifteenth-century tower, never intended to be surmounted with a spire, as at Boston (Lincolnshire). In the character of their towers, just as in the wood ceilings, the local characteristics of building are apparent. In the Eastern Counties the square sheer type of flint panelled decoration has fine examples of Wymondha (Norfolk) and Lavenham (Suffolk). the West of England the freestone buil ing of the Somerset masons was shown richly-panelled and buttressed erectio as *e.g.*, of St. Cuthbert's (Wells) and Mary's (Taunton). As a final example can be pointed out how the mother cat dral of England, that of Canterbur erected in parish church style a lof central tower, the "Angel Steeple."

(15) Some of the most distinguished are those of Salisbury, Lichfield, and Norwich cathedrals, and of the parish churches of Patrington, Yorkshire; Kettering, Northants; Newark, Nottinghamshire; and Heckington and Grantham, Lincolnshire.



Photo: S. B. Bolas & Co.

PETERBOROUGH CATHEDRAL. THE NAVE LOOKING EAST. ANGLO-NORMAN.

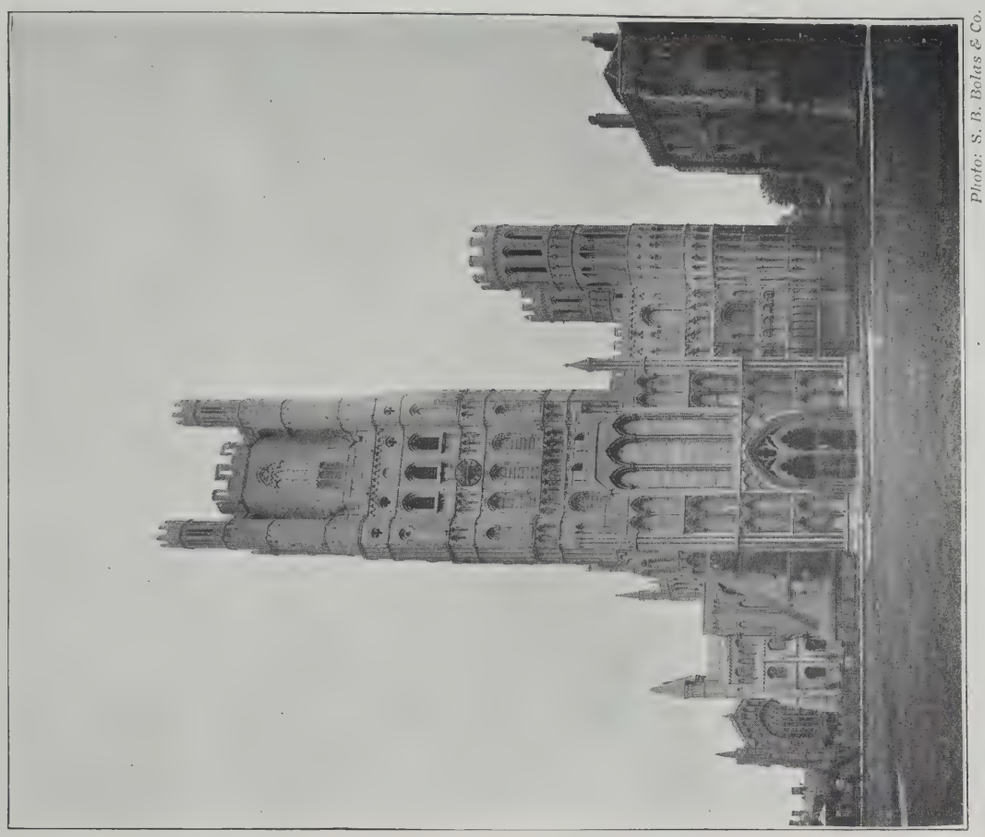


Photo: S. B. Bolas & Co.

ELY CATHEDRAL : WEST FRONT.

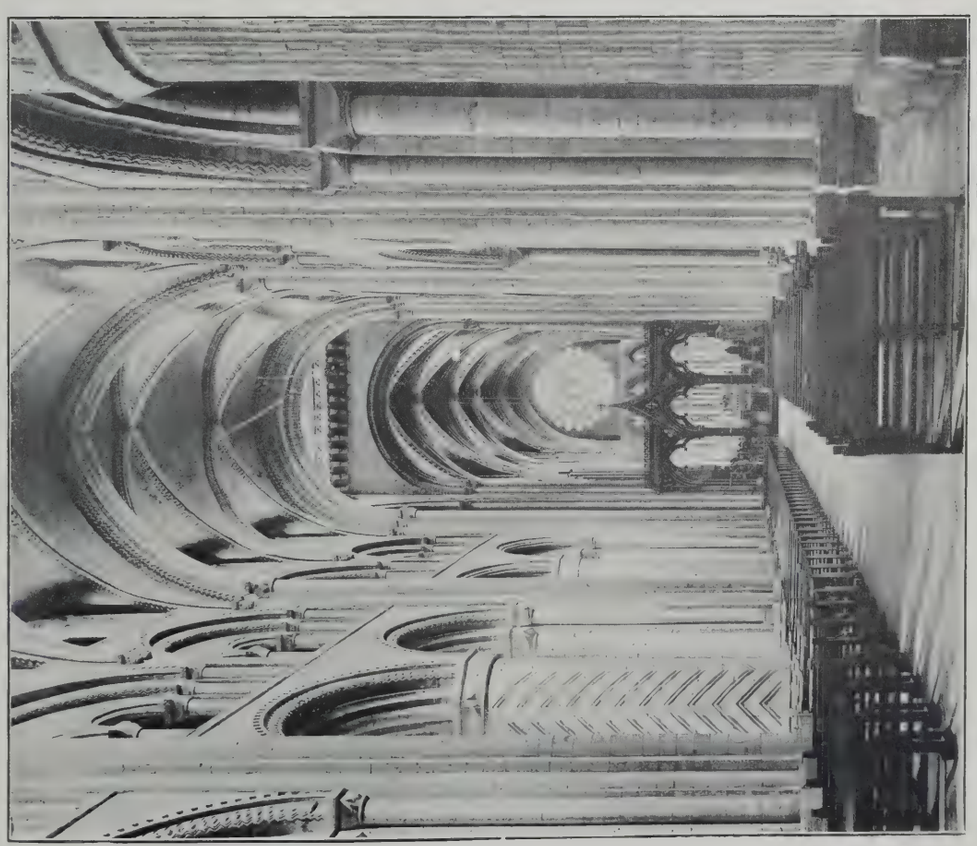


Photo: S. B. Bolas & Co.

DURHAM CATHEDRAL : NAVE LOOKING EAST.
ANGLO-NORMAN.



TEWKESBURY ABBEY: THE NAVE. ANGLO-NORMAN. *Photochrom Co.*



SOUTHWELL CATHEDRAL: THE NAVE. ANGLO-NORMAN. *Photochrom Co.*



WORCESTER CATHEDRAL: THE CHAPTER HOUSE. ANGLO-NORMAN. (WINDOWS LATER)



Photo: S. B. Bolas & Co.

DURHAM CATHEDRAL. GALILEE, LOOKING SOUTH-EAST. ANGLO-NORMAN.



KIRKSTALL ABBEY. THE NAVE, LOOKING EAST. ANGLO-NORMAN.

Photocrom Co.



ELY CATHEDRAL. THE EAST END. TRANSITIONAL.

Photochrom Co.

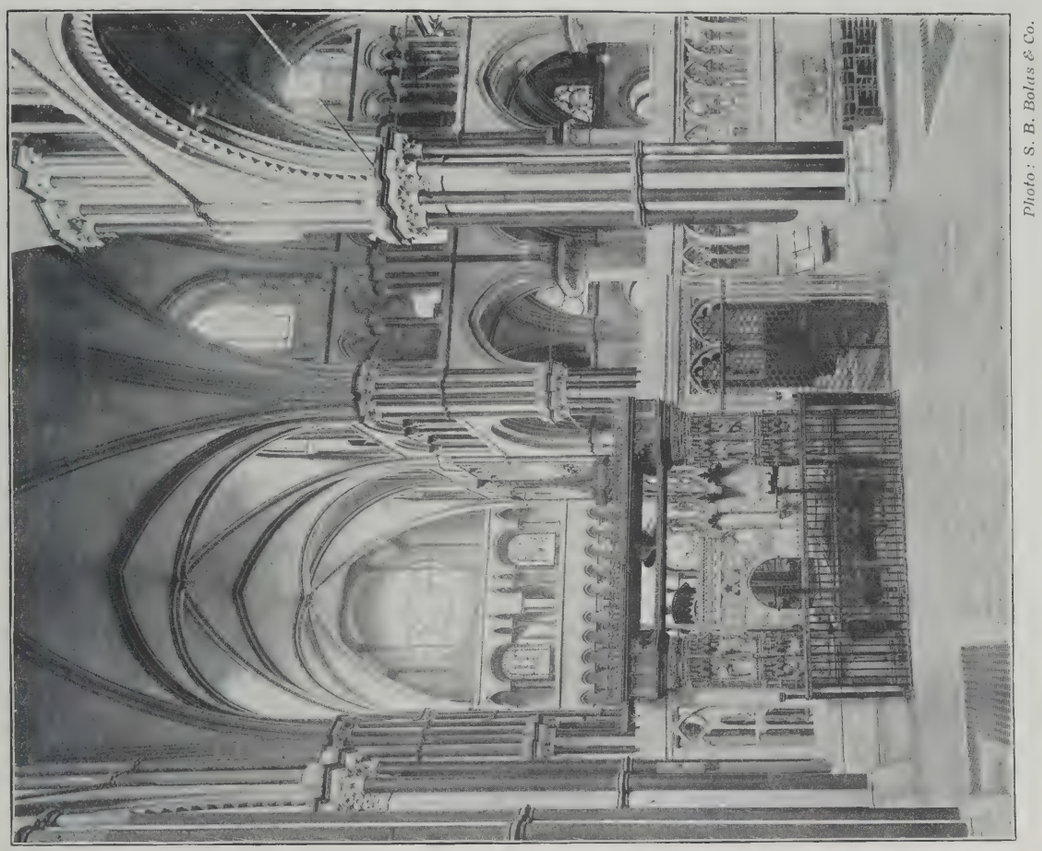
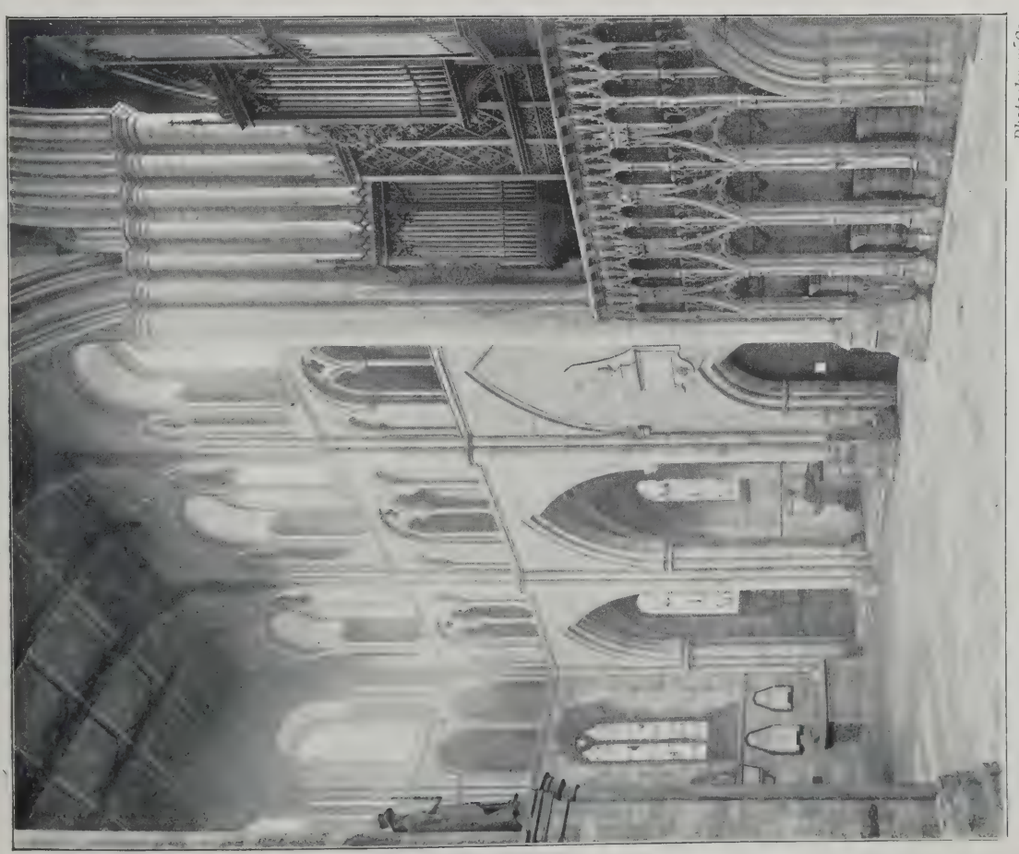


Photo: S. B. Bolus & Co.

CANTERBURY CATHEDRAL: SOUTH CHOIR TRANSEPT. SOUTH-EASTERN SCHOOL (TRANSITIONAL).



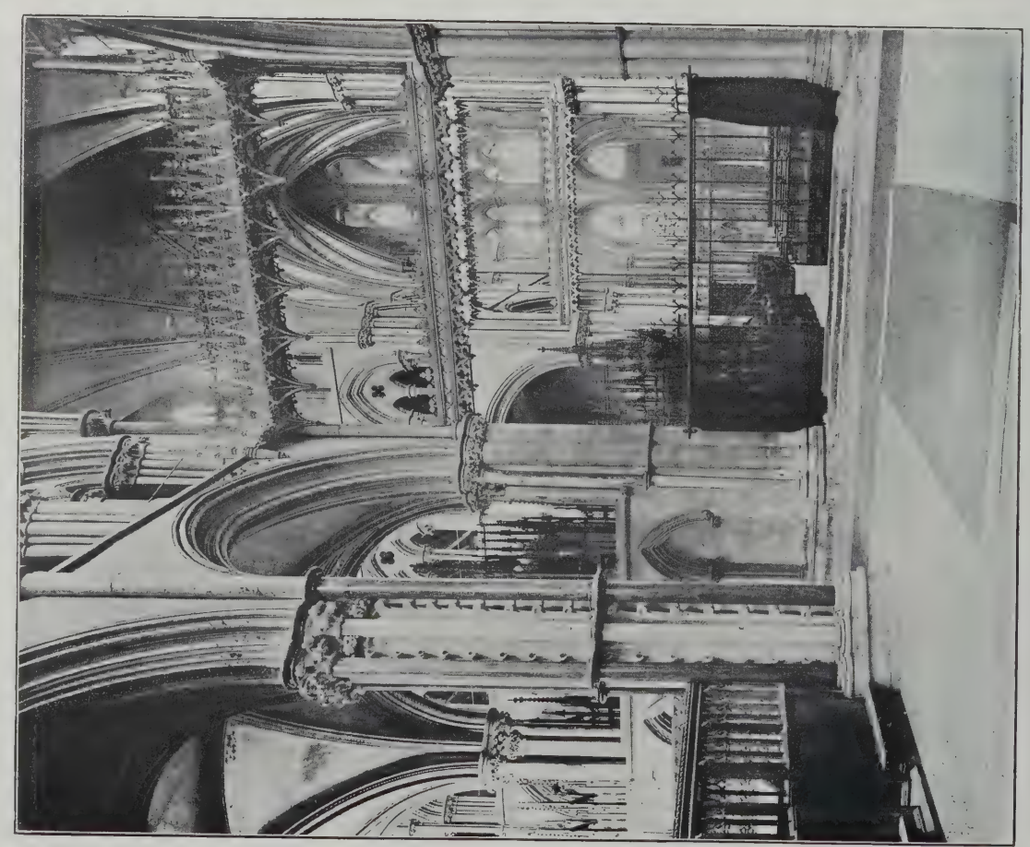
Photochrom Co.

RIPON: NORTH TRANSEPT. NORTHERN SCHOOL (TRANSITIONAL).

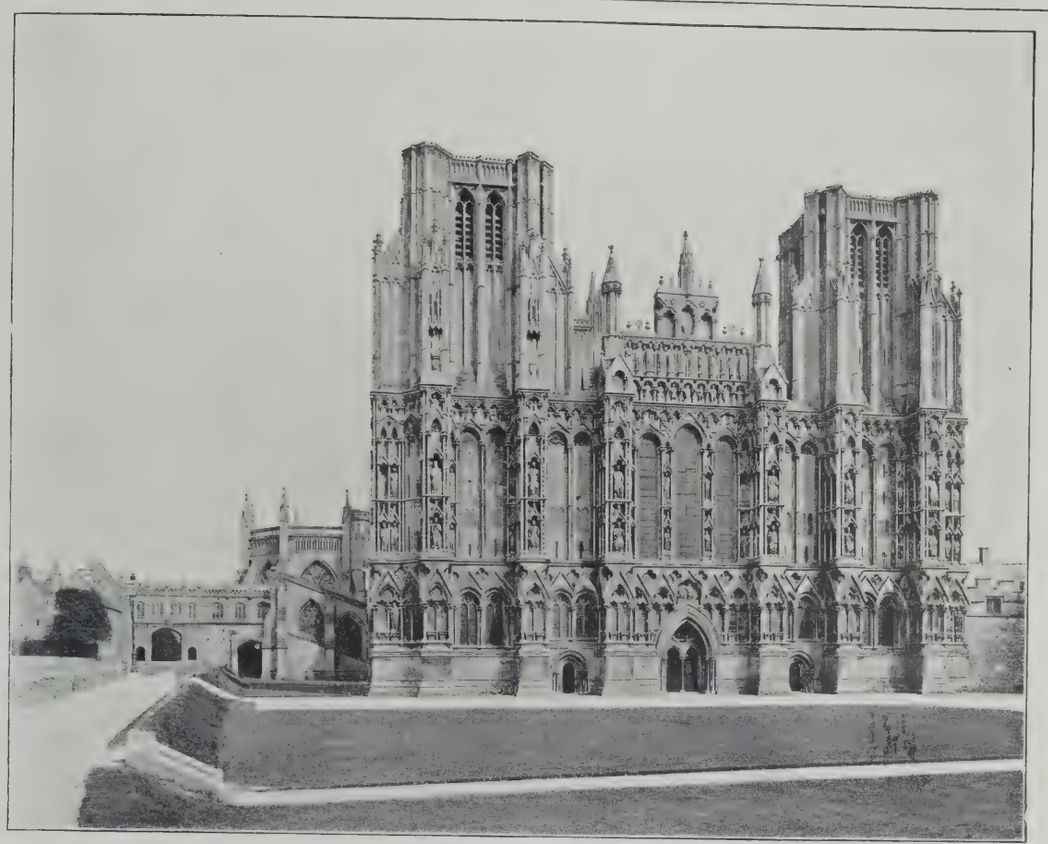


Photo: S. B. Bolas.

SALISBURY CATHEDRAL: NORTH FRONT. EARLY ENGLISH.



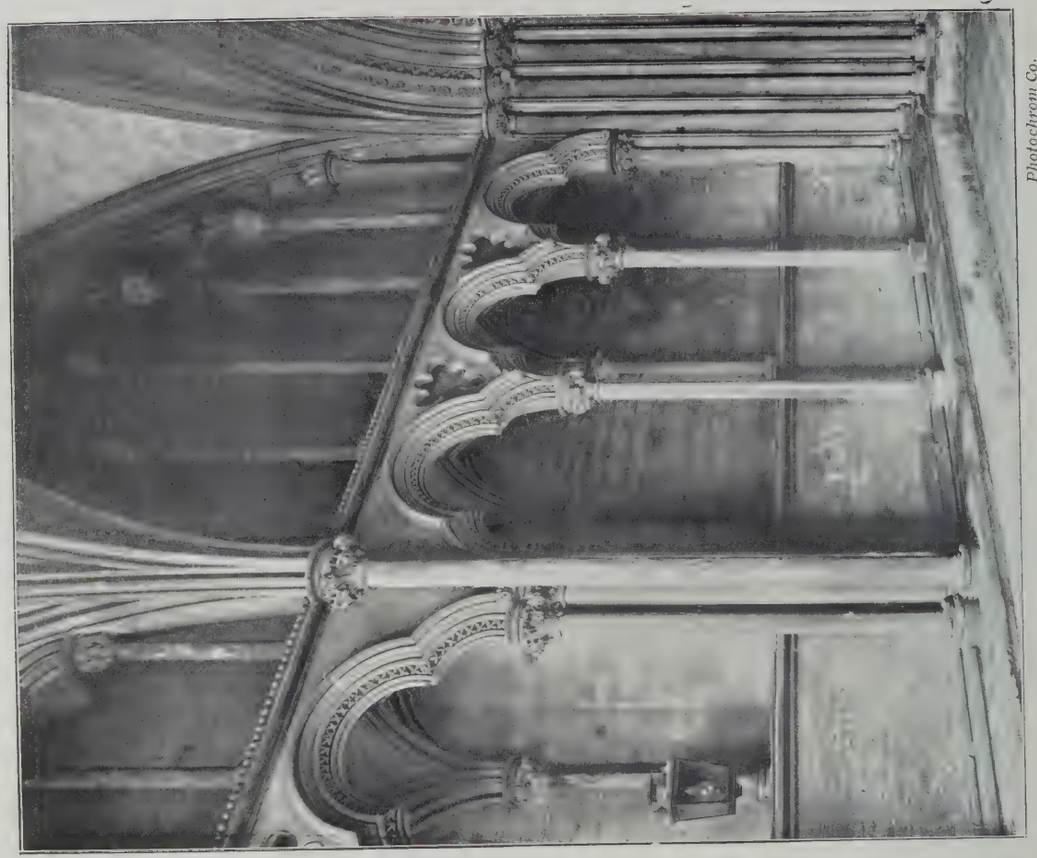
LINCOLN CATHEDRAL: THE LESSER TRANSEPT. EARLY ENGLISH.



WELLS CATHEDRAL: WEST FRONT. EARLY ENGLISH. *Photo: S. B. Bolas & Co.*



PETERBOROUGH CATHEDRAL: WEST FRONT. EARLY ENGLISH. *Photochrom Co.*



Photochrom Co.

ELY CATHEDRAL: GALILEE. EARLY ENGLISH.

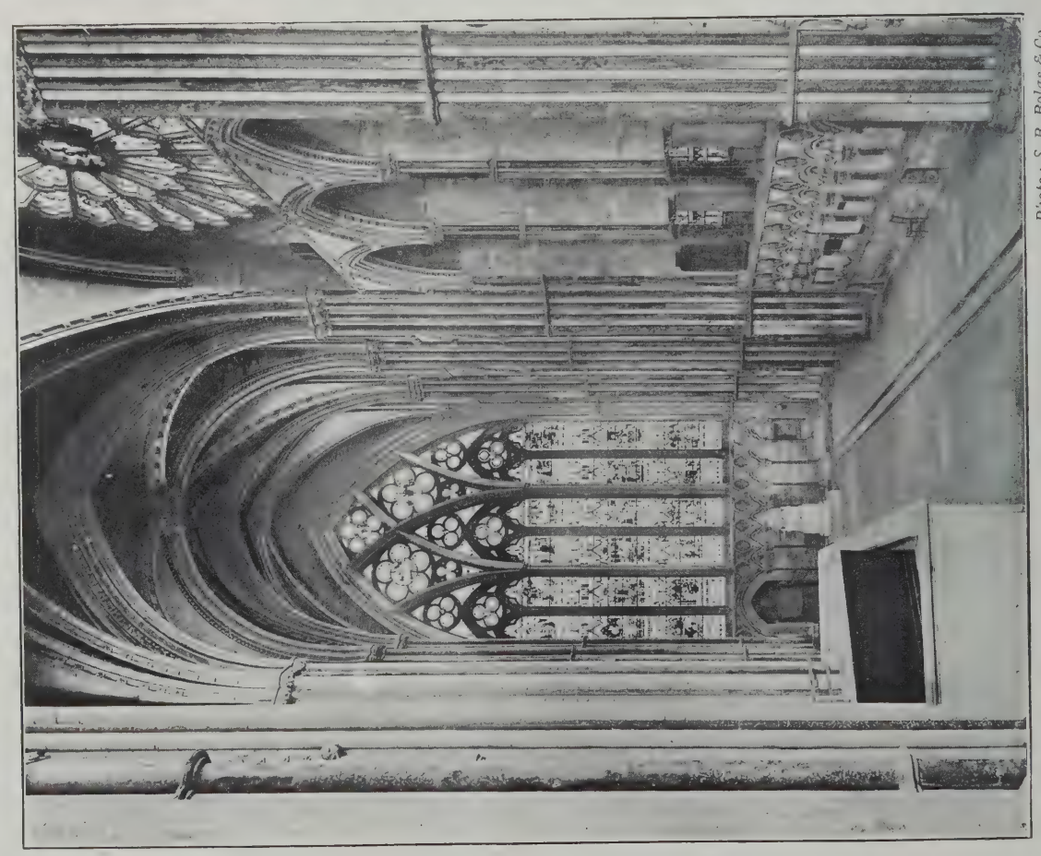
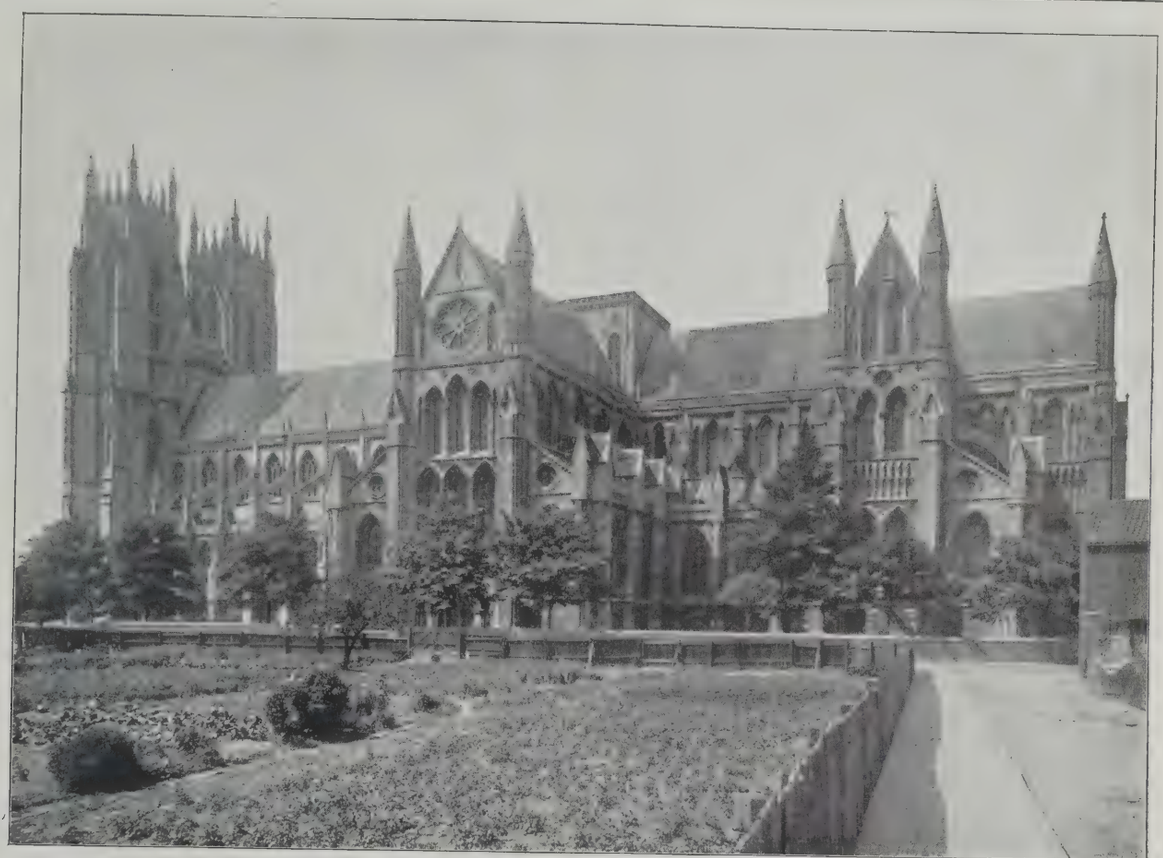


Photo: S. B. Bolas & Co.

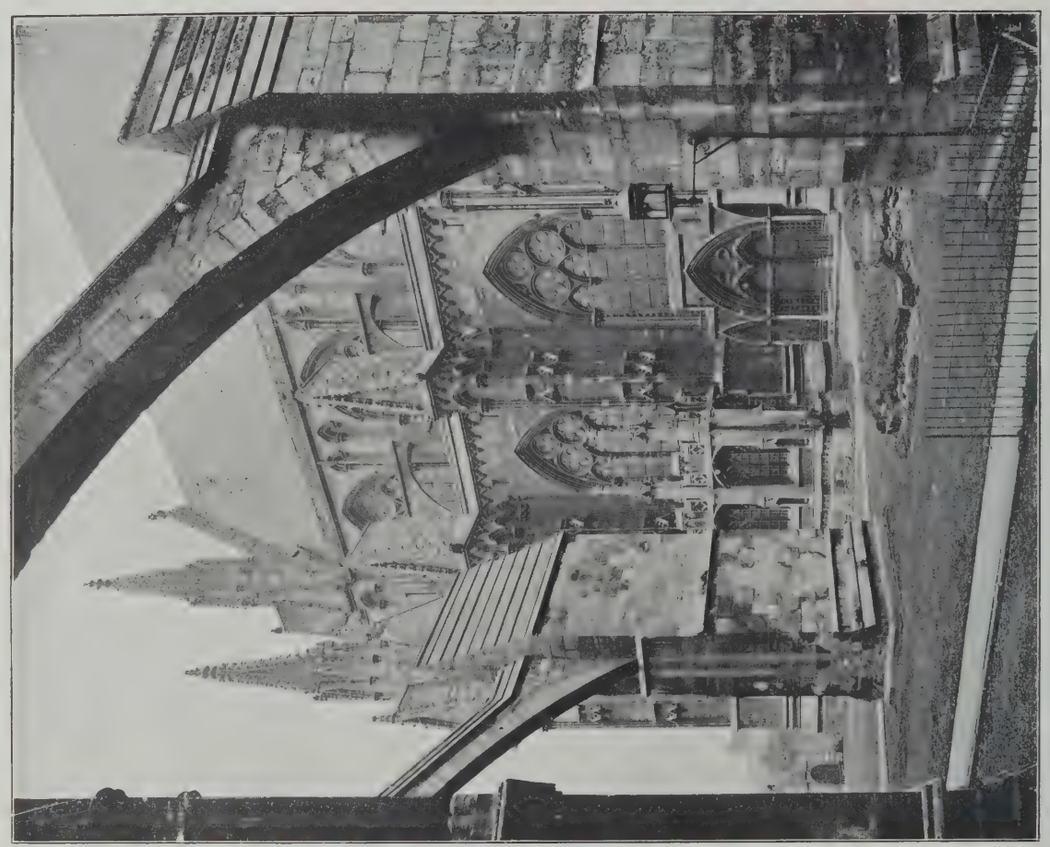
DURHAM CATHEDRAL CHAPEL OF NINE ALTARS, LOOKING NORTH.
EARLY ENGLISH.



BEVERLEY MINSTER FROM THE SOUTH. EARLY ENGLISH. *Photochrom Co.*

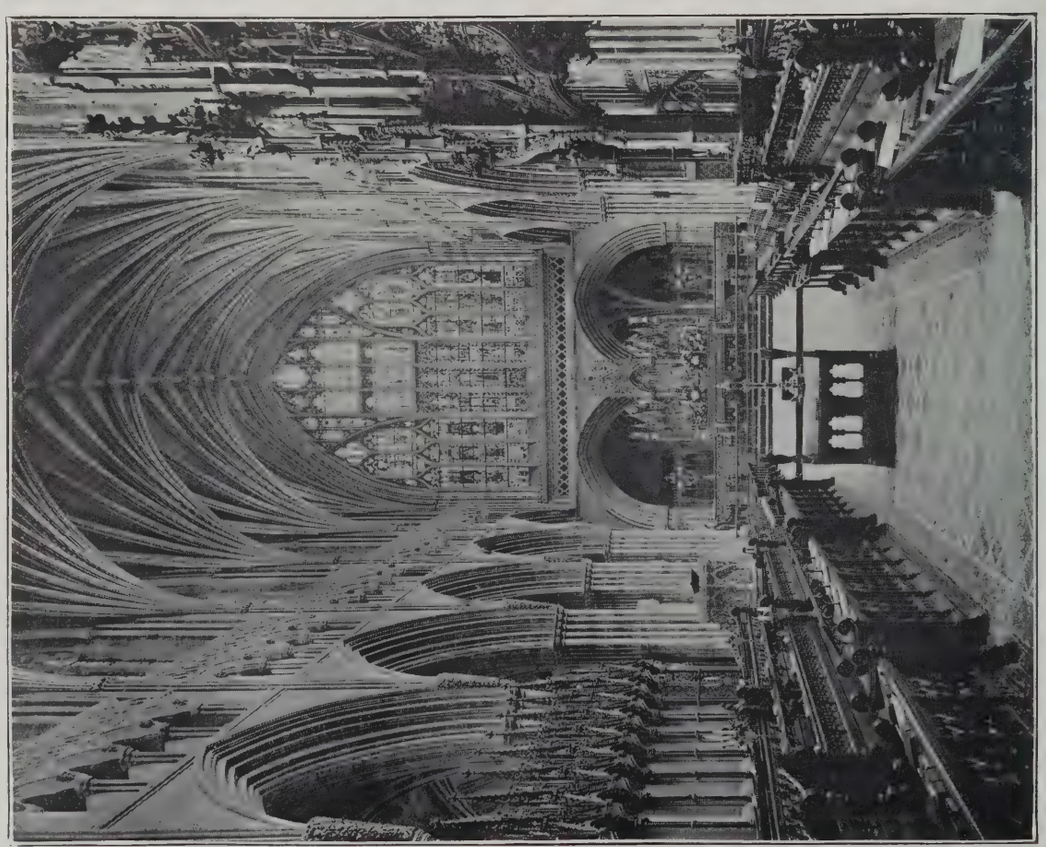


LINCOLN CATHEDRAL. THE ANGEL CHOIR. MID-GOTHIC. *Photo: S. B. Bolas & Co.*



Photos: S. B. Bolas & Co

LINCOLN CATHEDRAL: SIDE OF THE ANGEL CHOIR. MID-GOTHIC.



EXETER CATHEDRAL: THE CHOIR LOOKING EAST. MID-GOTHIC.



CARLISLE CATHEDRAL: THE CHOIR, LOOKING EAST. - DECORATED.
Photochrom Co.



EXETER CATHEDRAL: SOUTH-EAST END. MID-GOTHIC.
Photo: S. B. Bolas & Co.



TINTERN ABBEY: INTERIOR LOOKING WEST MID-GOTHIC.

Photochrom Co.



BRIDLINGTON: THE PRIORY CHURCH. NAVE, LOOKING WEST. DECORATED.

Photochrom Co.

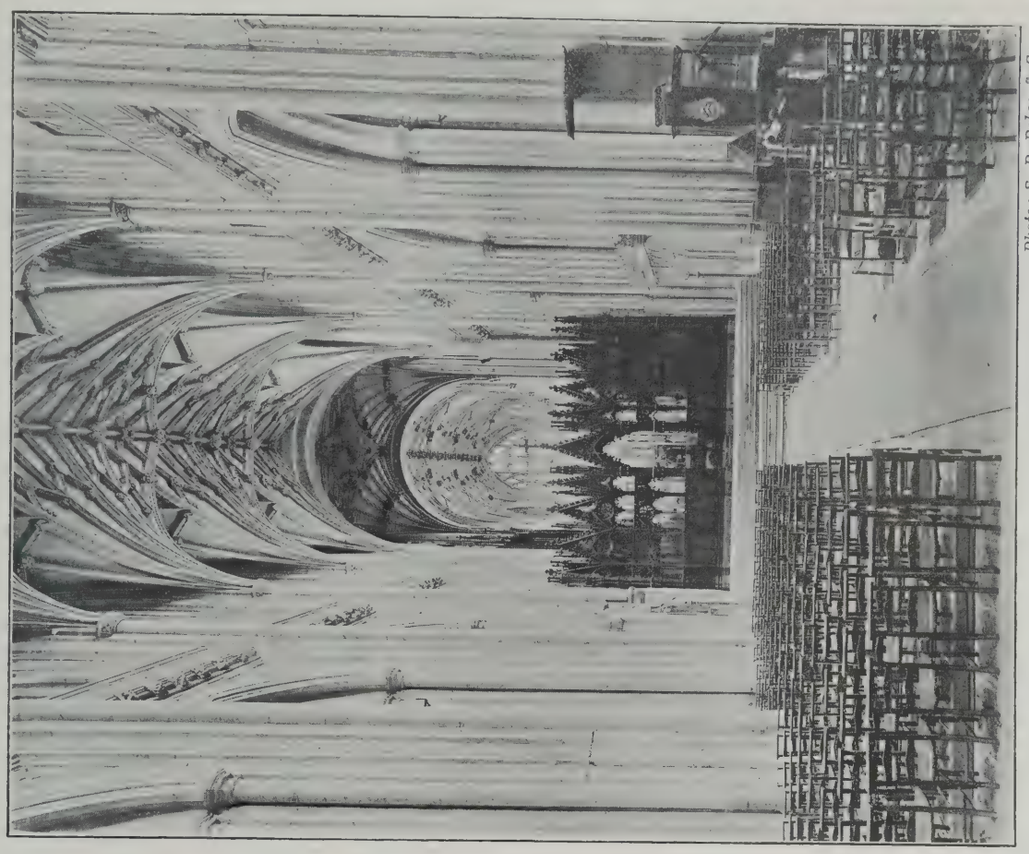


Photo: S. B. Bolas & Co.

WINCHESTER CATHEDRAL: THE NAVE LOOKING EAST DECORATED.

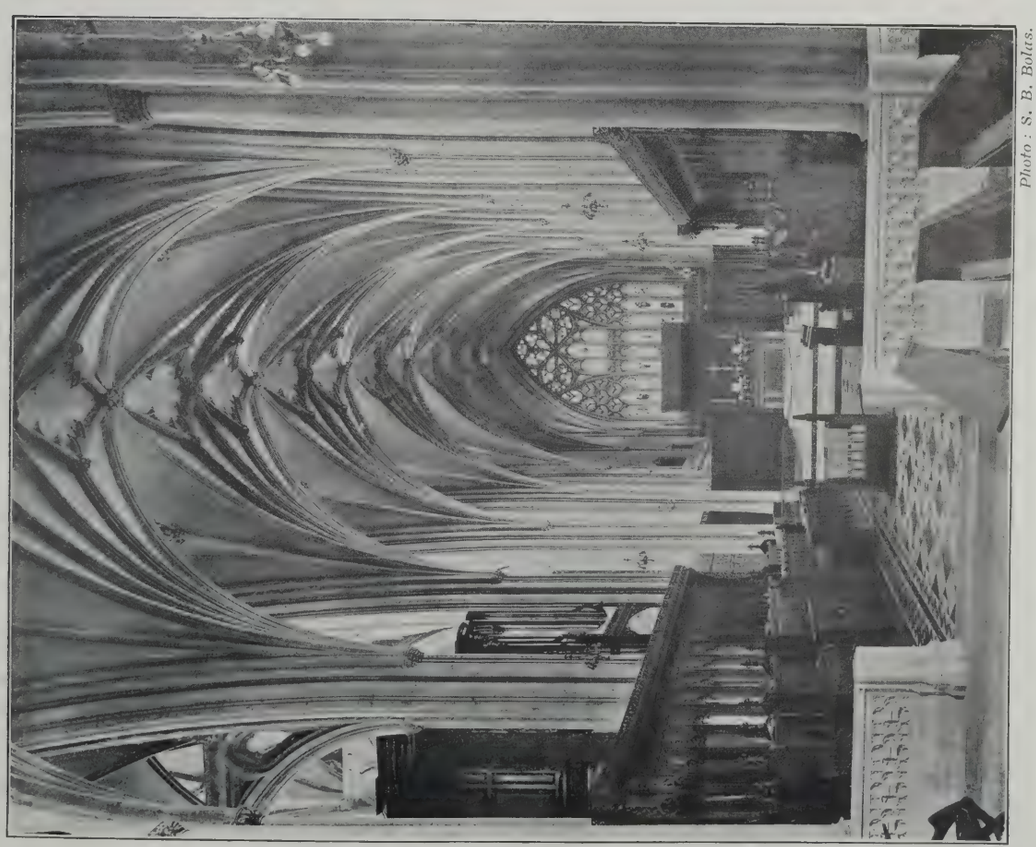


Photo: S. B. Bolas.

BRISTOL CATHEDRAL: THE CHOIR—LOOKING EAST. DECORATED.



ELY CATHEDRAL. LADY CHAPEL. DECORATED. *Photochrom Co.*



WELLS CATHEDRAL. LADY CHAPEL. DECORATED. *Photochrom Co.*

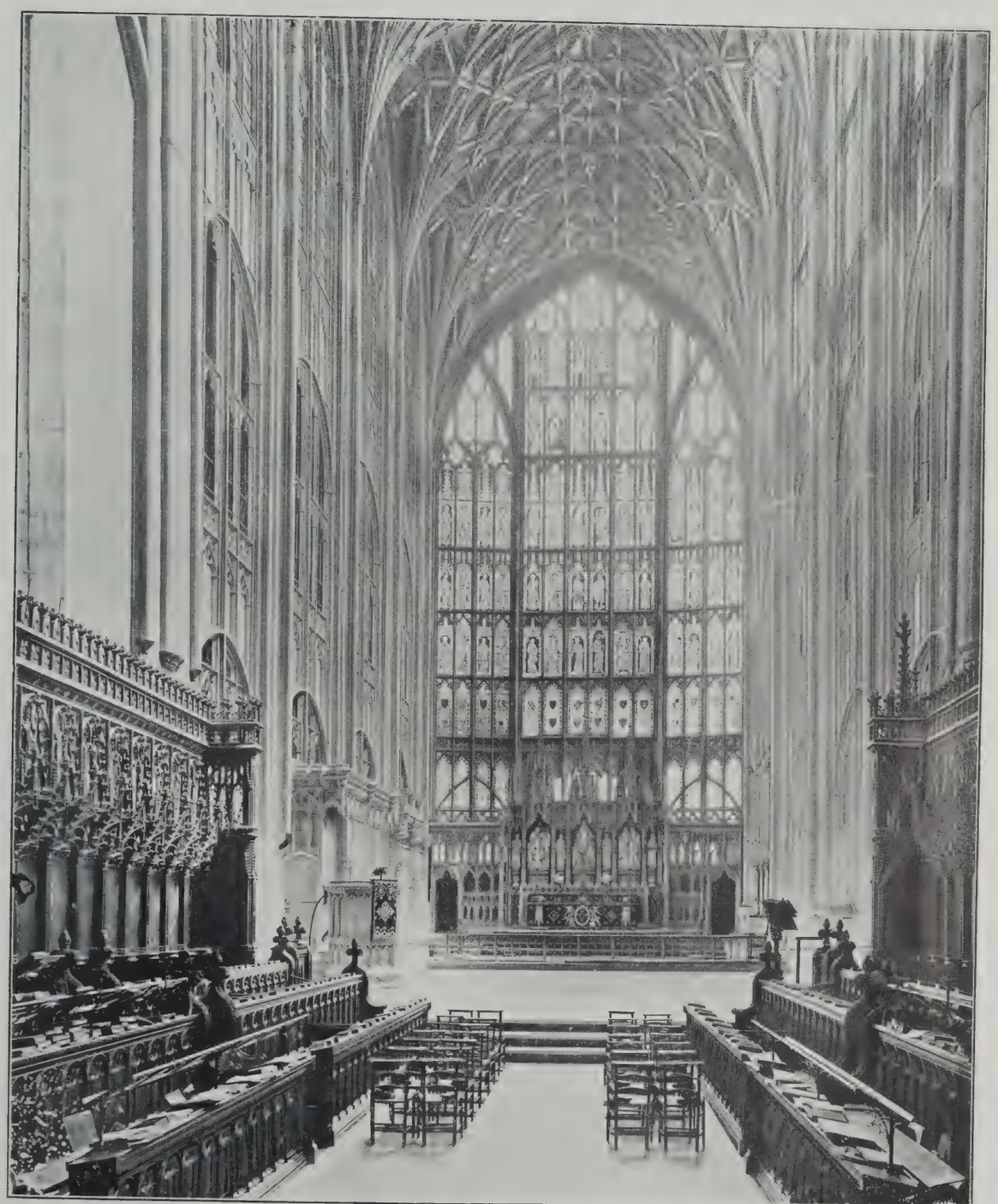


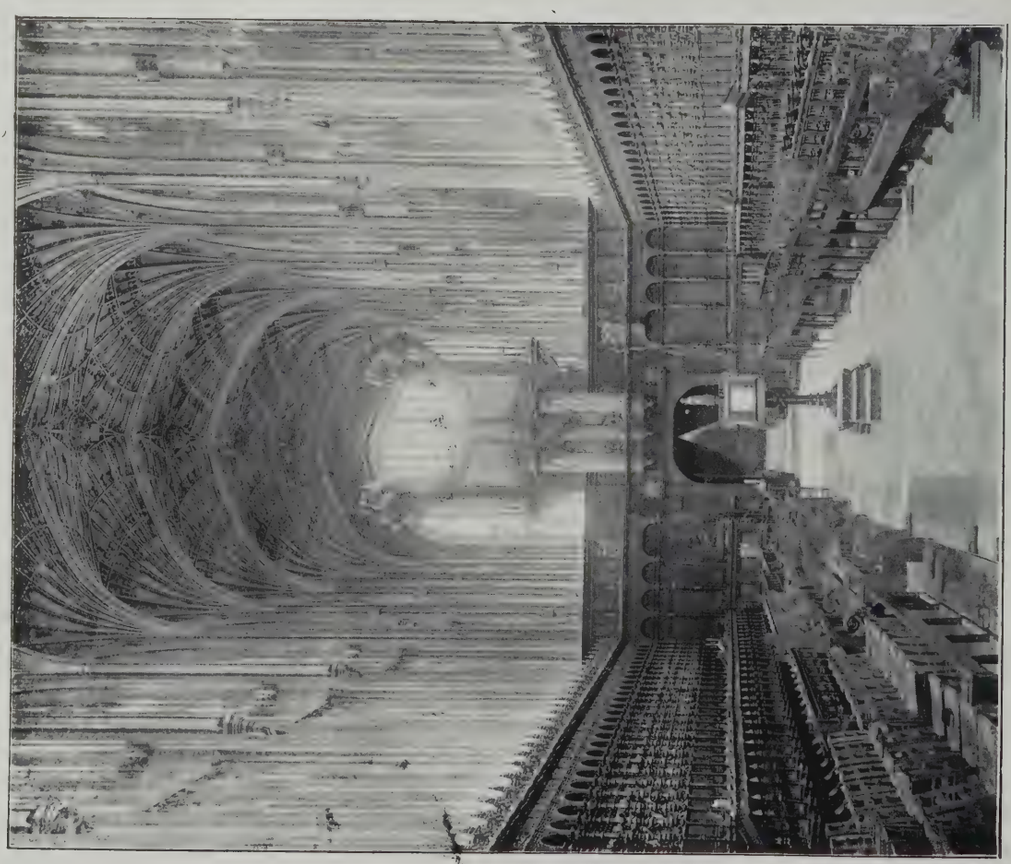
Photo: S. B. Bolas & Co.

GLOUCESTER CATHEDRAL THE CHOIR, LOOKING EAST. PERPENDICULAR.



Photo: S. B. Bolas & Co.

CANTERBURY CATHEDRAL THE NAVE LOOKING EAST. PERPENDICULAR.



Photochrom Co.

KING'S COLLEGE CHAPEL, CAMBRIDGE. PERPENDICULAR.



SHERBORNE. PERPENDICULAR. *Photochrom Co.*

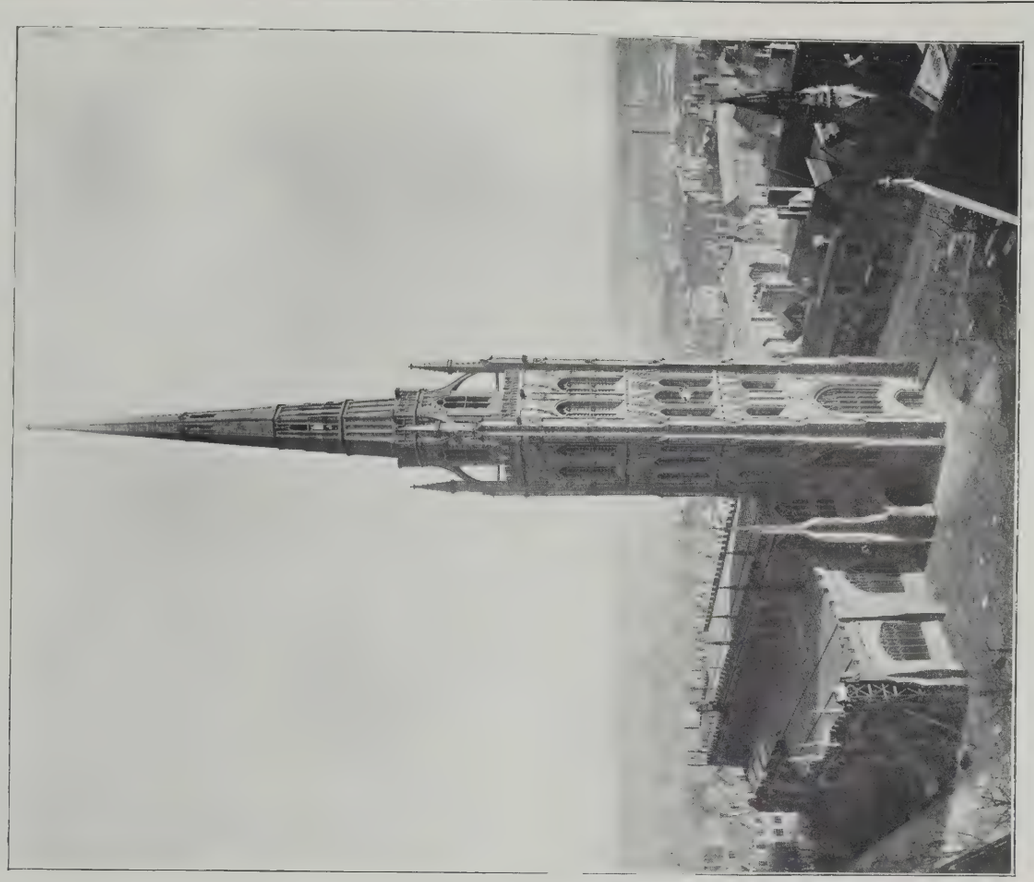


ST. BOTOLPH'S CHURCH, BOSTON: INTERIOR. PERPENDICULAR. *Photochrom Co.*



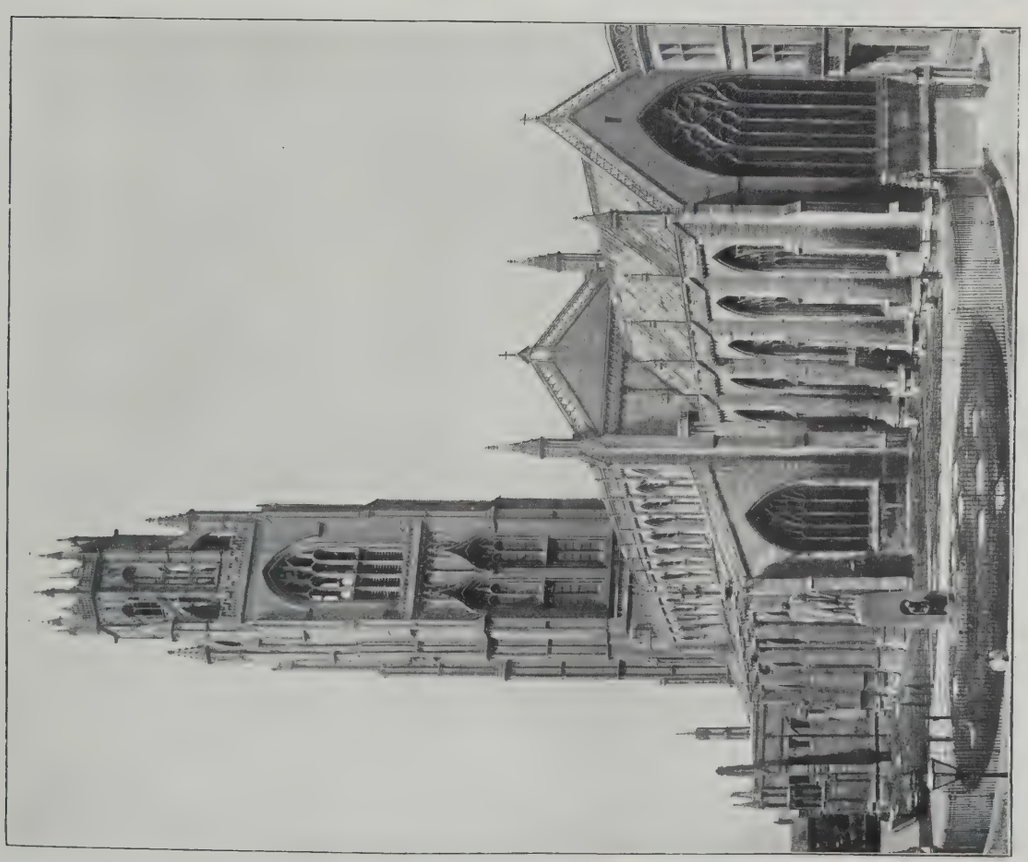
Photo: S. B. Bolas & Co.

THE CHAPEL OF HENRY VII., WESTMINSTER ABBEY. A.D. 1516.



Photochrom Co.

COVENTRY: ST. MICHAEL'S CHURCH. PERPENDICULAR.



Photochrom Co.

BOSTON. LINCOLNSHIRE: PARISH CHURCH FROM THE SOUTH-EAST. PERPENDICULAR.

SOME MEDIÆVAL CASTLES AND HOUSES.



Photochrom Co.

NORMAN TOWER. BURY ST. EDMUNDS.



ROCHESTER CASTLE. *Photochrom Co.*



CARNARVON CASTLE FROM THE RIVER. *Photochrom Co.*



BODIAM CASTLE, SUSSEX. *Photochrom Co.*



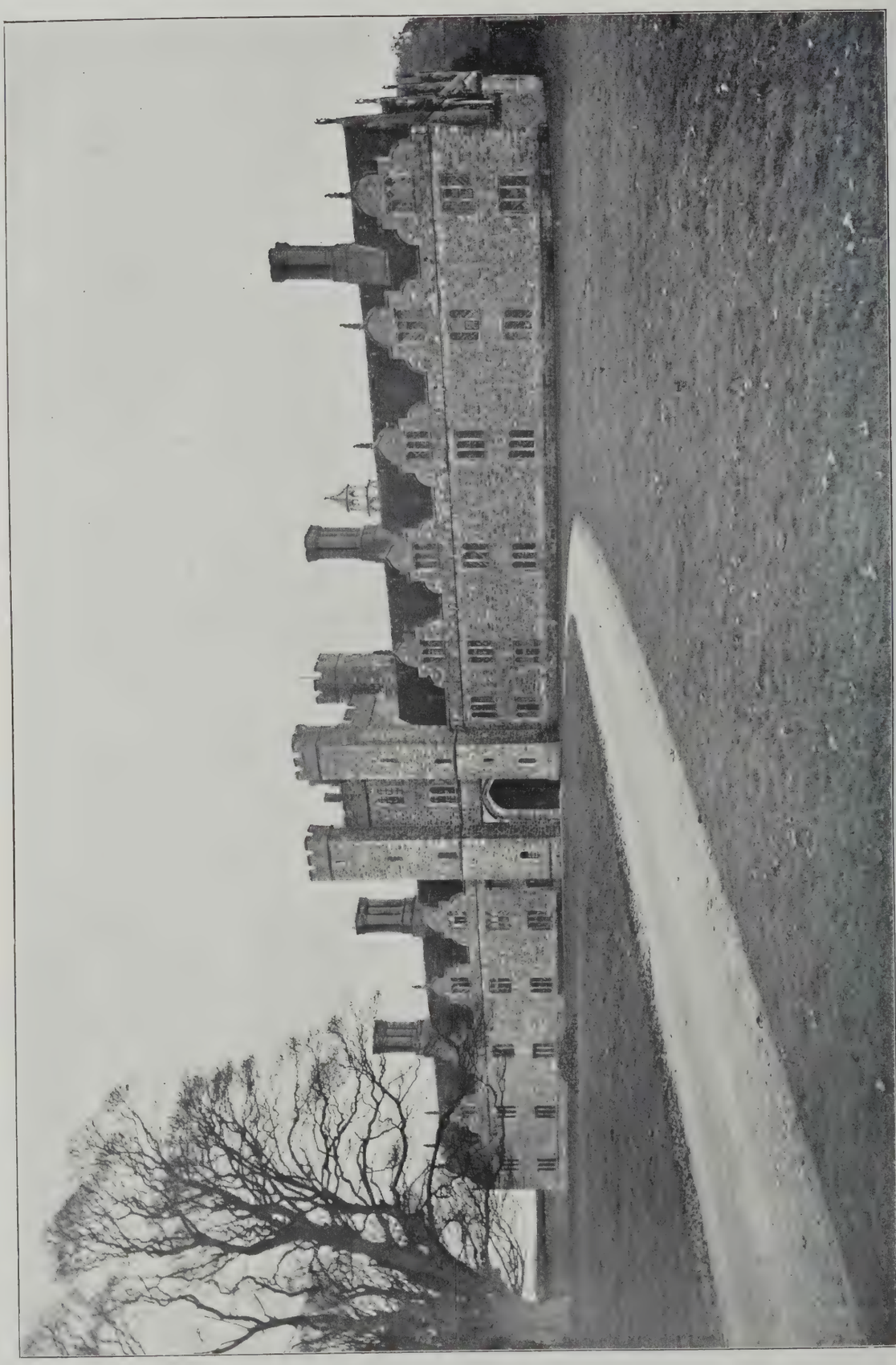
WARWICK CASTLE FROM THE NORTH. *Photochrom Co.*



COMPTON WYNYATES, BANBURY. *Photochrom Co.*



BATTLE ABBEY: THE GATEHOUSE. *Photochrom Co.*



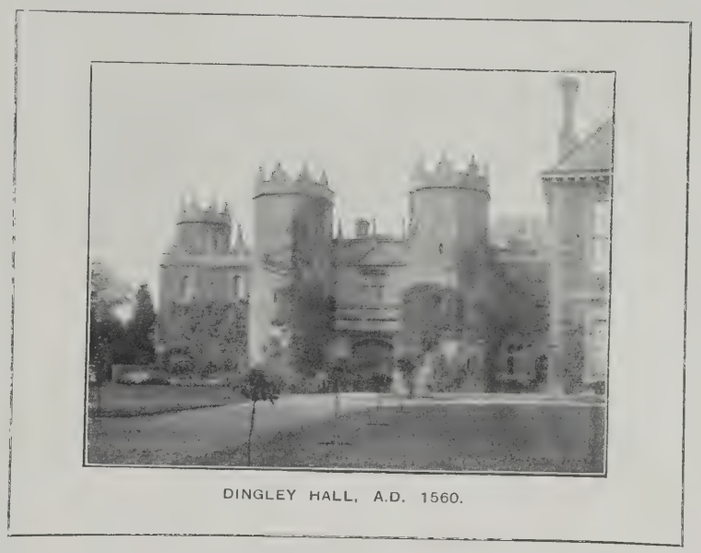
Photochrom Co.

KNOLE KENT.

THE EARLY RENAISSANCE.

By J. A. GOTCH.

The Italian influence which made itself felt over the whole of Europe in all branches of design towards the end of the fifteenth century, reached England in the early years of the sixteenth. So far as anything so elusive as the beginning of a new style can be traced, it was to the Italian Pietro Torrigiano that we owe the introduction of Italian detail into England; and it was in the tomb of Henry VII., executed by the command of his son Henry VIII., that the foreign detail was first used. The splendid chapel at the east end of Westminster Abbey was built by Henry VII. to contain his tomb, and a design was prepared for the latter before his death; but when the direction of affairs fell into the hands of the new king, he discarded this design and entrusted the new one to Torrigiano, thereby frankly falling into line with the other great patrons of art throughout Europe in seeking inspiration from Italian sources. Another powerful and munificent patron of art, Cardinal Wolsey, also employed Italian artists in his great palace at Hampton Court; but it must not be supposed that the general appearance of that building was foreign: on the contrary, it was thoroughly English in conception, and only in certain ornamental details was the new influence apparent. For many years, and in all parts of the country, this restricted use of Italian forms was prevalent. They did not affect the general structure or appearance of buildings, but only certain parts of the ornament, particularly the carving. Nevertheless the tendency towards the Italian manner grew continually stronger, and it became more apparent as the sixteenth century drew towards its close. Many students in various branches of design travelled to Italy to acquire facility in the fashionable style, and on their return offered their services to wealthy noblemen and others who were engaged in works of building. For the convenience of those who could not go abroad, books were published from time to time setting forth the rules which governed the classic "orders," and giving examples of design in various branches of the building trade. Not only were some of the books in themselves crude, but they occasionally fell into the hands of unlearned artificers who availed themselves of their contents in a manner yet more



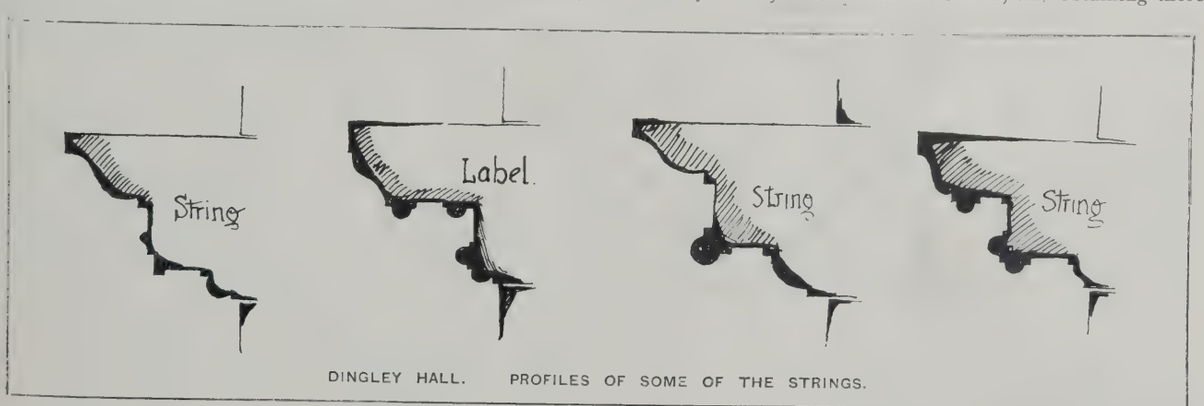
DINGLEY HALL, A.D. 1560.

crude, with results that strike the modern enquirer as sometimes humorous, sometimes pathetic, but nearly always interesting.

The workmen of the time, with whom (it must be remembered) lay the design of the details of their several trades, had been brought up in the traditions of their own country and district, and they evidently found the new style rather puzzling and difficult to blend with their native ideas. Nevertheless, they attacked the task with all the vigour and lightheartedness characteristic of the age; and produced work which, though far from classically correct, is yet highly piquant. In fact, its attractiveness lies in the struggle between old and new ideas which it illustrates.

This curious strife is chiefly confined to the ornament, the dressings with which the body of the building was adorned. In the essential qualities of planning and general design, the buildings were thoroughly English. The one foreign quality which was particularly emphasised at first was symmetry. Mediæval buildings—at least domestic buildings—were as a rule irregular in their disposition, although towards the end of the fifteenth century a tendency towards symmetry is observable. But with the growth of the classic influence symmetry became more and more adopted, often to the detriment of a truly logical treatment. Wing was made to answer to wing, door to door, window to window. But subject to these limitations the old freedom of planning was preserved. As the years went by, however, the new influence increased, and not only was a more strict symmetry adopted, but a more truly classical arrangement of features and a more careful attention to detail.

One of the early efforts of a country mason to combine classic profiles with some of the beads to which he had been accustomed in Gothic work is to be seen in the cornices and strings at Dingley Hall (1558-60). But the day was coming when details of all kinds were to be supplied no longer by the workman, but by the functionary who hitherto had chiefly concerned himself with furnishing the general design and in overlooking and, to a certain extent, harmonising the work of the various handicraftsmen, and who was known as the "surveyor." As the text-books increased, and the desire for classic detail hardened, the surveyor took more and more to supplying designs for all the trades, and obtaining thereby a



DINGLEY HALL. PROFILES OF SOME OF THE STRINGS.

more homogeneous building; his duties became more like those undertaken by the modern architect; but with the advent of the first distinctive English architect, Inigo Jones, a fresh chapter was opened in architecture, and one at which the Early Renaissance stops short.

It will be seen from the illustrations how symmetry influenced the general arrangement of the plan, and also how classic detail was applied in a very free-and-easy manner to such features as pilasters, entrance doors, cornices, strings, and chimneys. Sutton Place, near Guildford (1523-5) is thoroughly Tudor in general appearance, but the ornamental detail is quasi-Italian. At Dingley (1558-60) where are the curious cornices already mentioned, the old arrangement of an entrance door placed between two defensive towers is preserved, but, like pistols of which the charges have been drawn, the towers here are more formidable in appearance than reality. At Kirby (1570-5) and Montacute (1580) which are examples of the larger kind of house, all thought of defensive precautions is abandoned, and the windows are so large as to dominate the design. Both these houses depend for their effect upon a symmetrical treatment, which, in the case of Kirby, results in a singularly dignified and noble façade. The smaller houses, such as Barlborough (1583-4) Sydenham (*cir.* 1600) and Stibbington (1625), also derive much of their character from the same cause, and owe very little to the use of classic detail. Lanhydroc (1651) is an interesting example of the retention at a late date, not only of an ancient feature in the shape of a defensible gatehouse, but of a treatment which, in less remote districts, had long been superseded by more strictly classic methods.

The finest example of Early Renaissance woodwork in England is the organ screen in the chapel of King's College, Cambridge; the detail is admirably vigorous, and is so well done that it cannot be the work of a beginner. There is no record as to who designed or executed this screen, and it is generally attributed to foreigners; but there were certainly a number of English craftsmen who were producing excellent woodwork of a similar character at that time. The detail is very like that of contemporary French work, and it is interesting to note that during Henry VIII.'s lifetime much of the new style partook of French character, whereas after his death it inclined towards the Dutch. The date of this screen is fixed within a few years by the initials which it bears, and it must have been executed between 1532 and 1536. The fine roof of the Middle Temple Hall (1574) is an example of the survival of mediæval methods amid the new kind of decoration; but these large open-timber roofs were being gradually superseded by highly-ornamented plaster ceilings, such as may be seen at Canons Ashby (*cir.* 1584), or the Red Lodge at Bristol (1590). The latter affords also an excellent specimen of the elaborate panelling with which the finer houses were adorned.

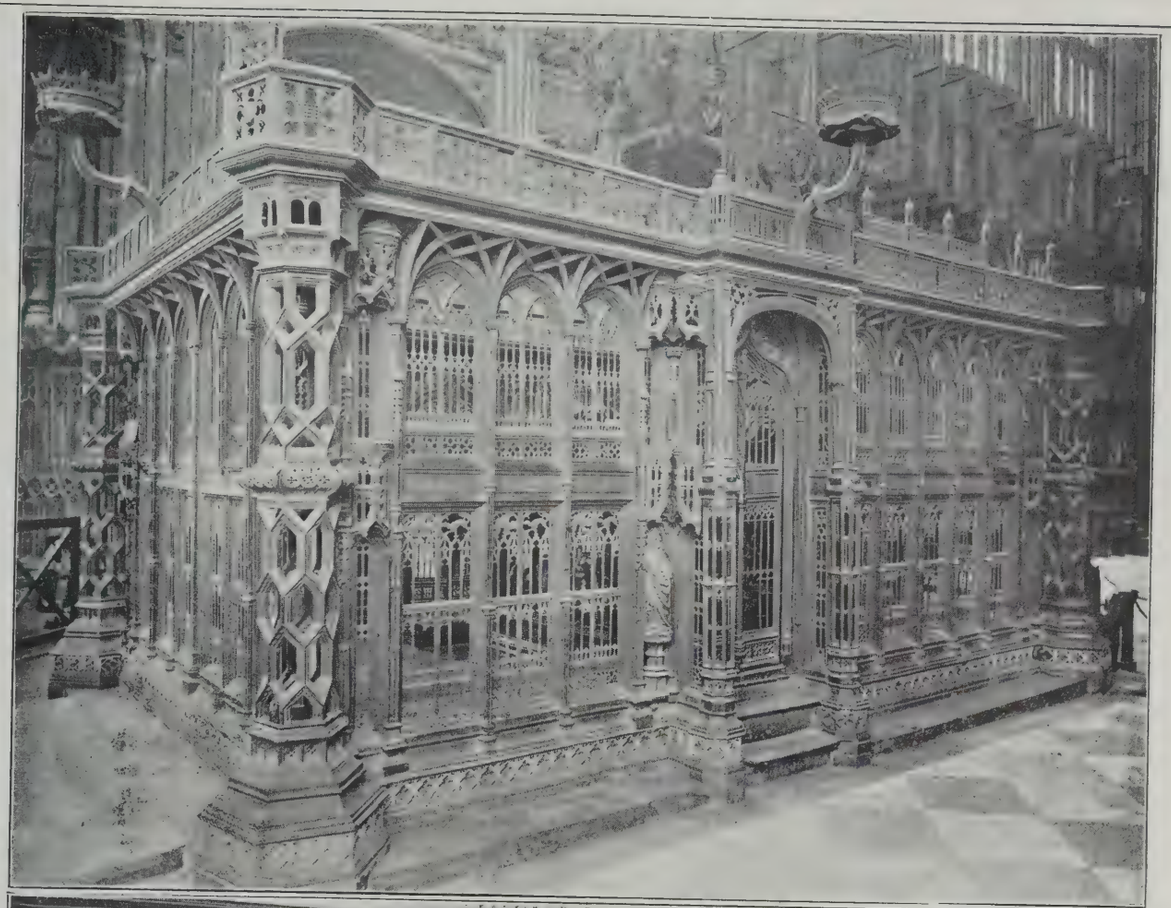
There was not much church-building after the dissolution of the monasteries, but there was a large amount of new woodwork, pulpits, screens, and pewing supplied to many churches; one of the finest examples is to be found at Croscombe, in Somerset (1616).

The last of the small illustrations gives a good idea of one of the long galleries which were so common a feature of the period; great pains were taken in planning houses to secure the longest gallery possible. This one at Knole (1605) is not by any means of abnormal length, but it shows how the ceilings were covered with a continuous pattern of raised ribs, and how the walls were clothed with wood panelling of simple but effective design.



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MIDDLE TEMPLE HALL, LONDON.



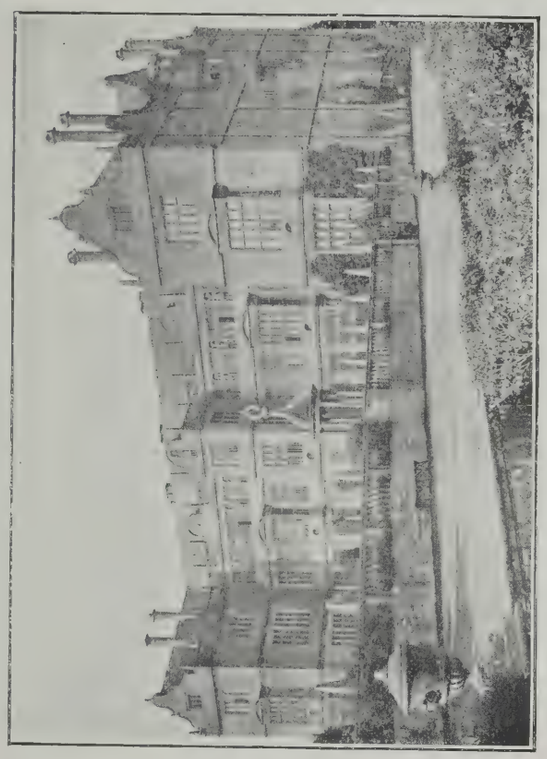


WESTMINSTER ABBEY. TOMB OF HENRY VII.

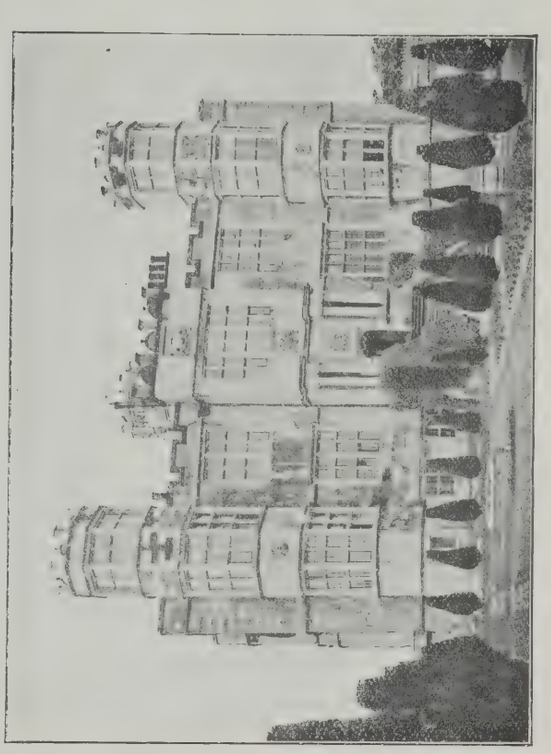
Photos: S. B. Bolas & Co.



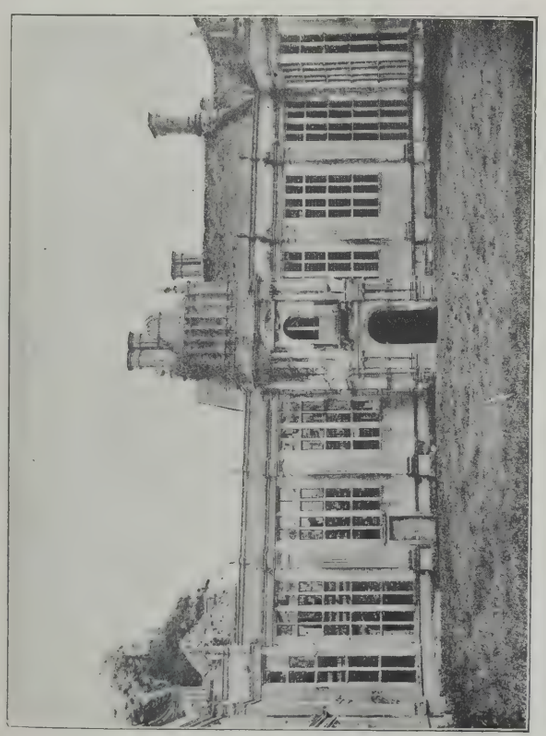
KING'S COLLEGE CHAPEL, CAMBRIDGE. THE SCREEN. *Photochrom Co.*



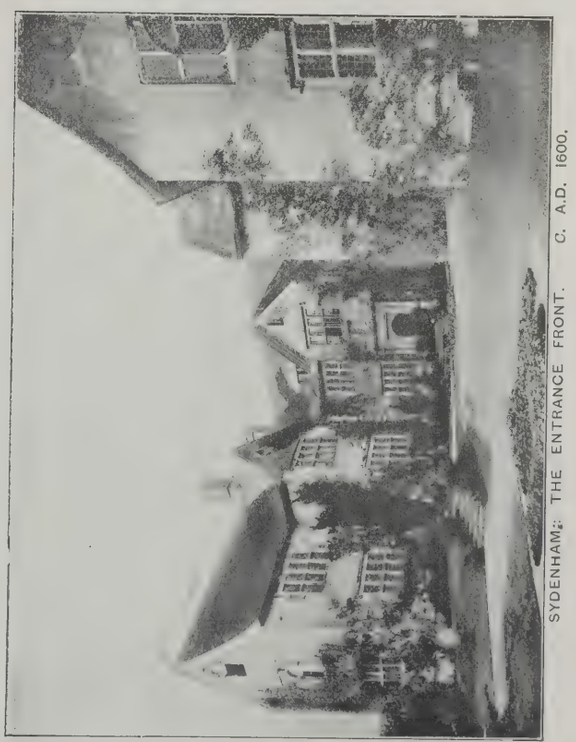
MONTACUTE HOUSE: THE GARDEN FRONT. A.D. 1580.



BARLBOROUGH HALL. A.D. 1583—1584.

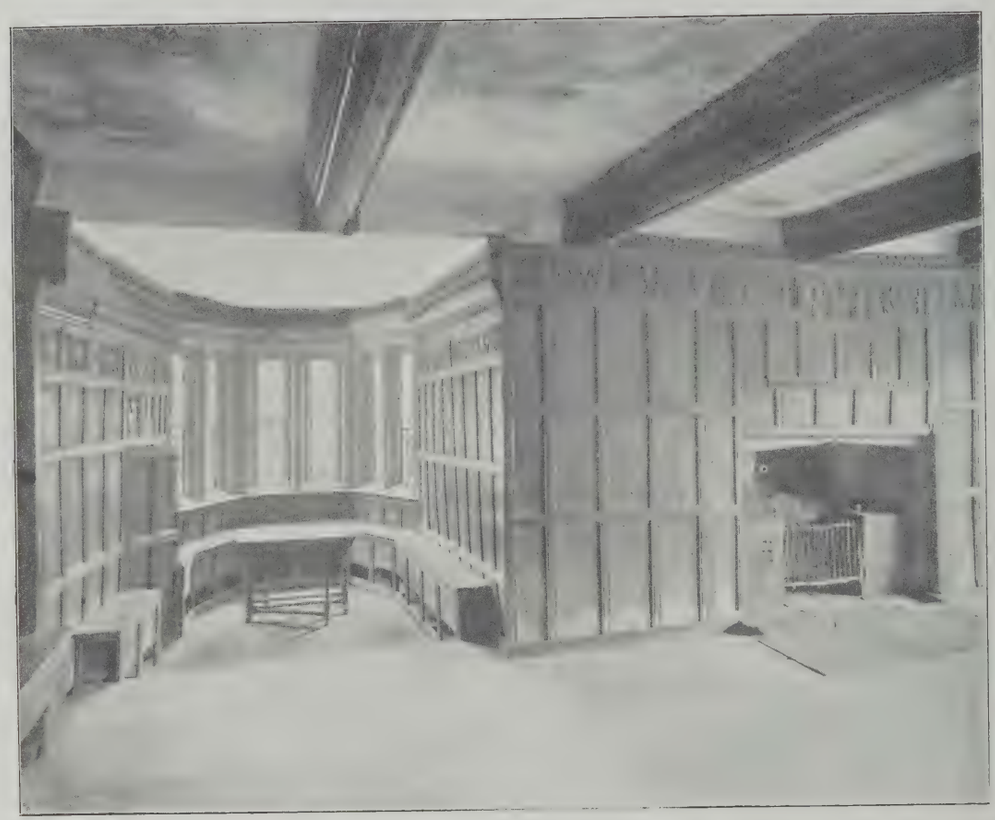


KIRBY HALL, NORTHANTS: SOUTH SIDE OF THE COURTYARD. A.D. 1570—1575.



SYDENHAM: THE ENTRANCE FRONT. C. A.D. 1600.

From "A History of Renaissance Architecture in England." By kind permission of Mr. B. T. Batsford.





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HADDON HALL. WINDOW IN THE LONG GALLERY. A.D. 1567—1584.



HADDON HALL. THE UPPER GARDEN.



HADDON HALL, A.D. 1567-1584 THE DRAWING ROOM.

Photochrom Co.

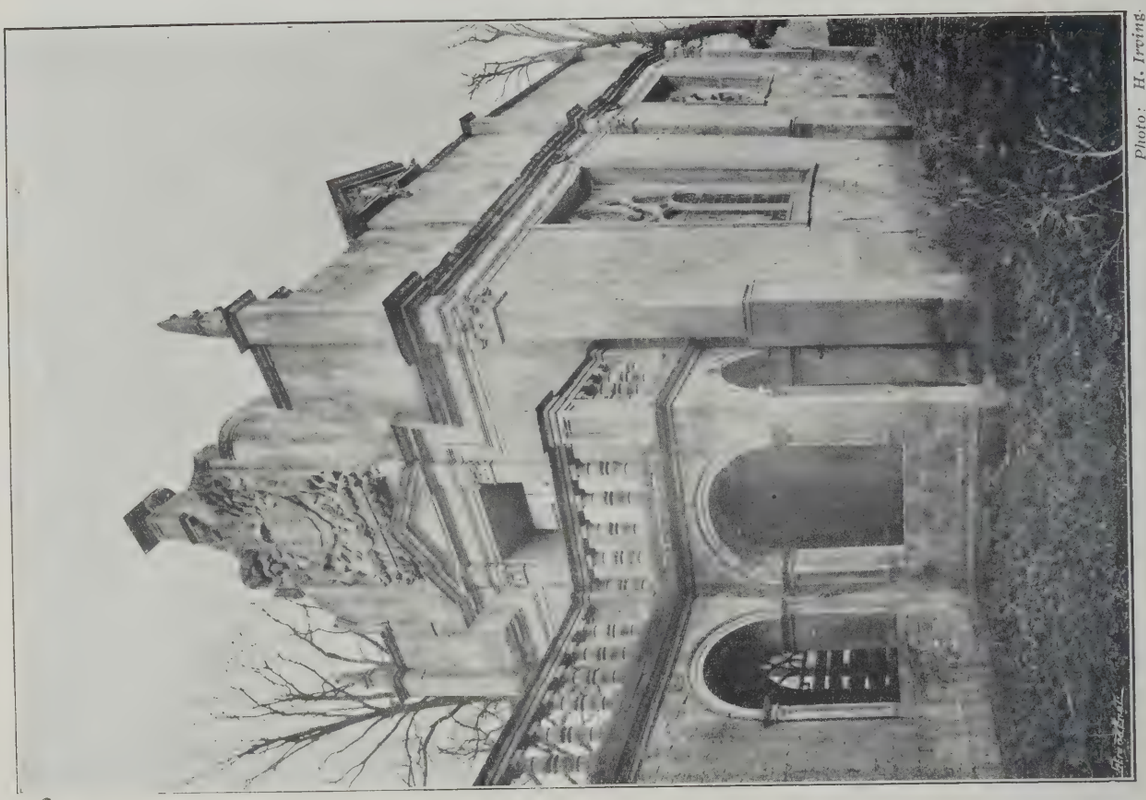
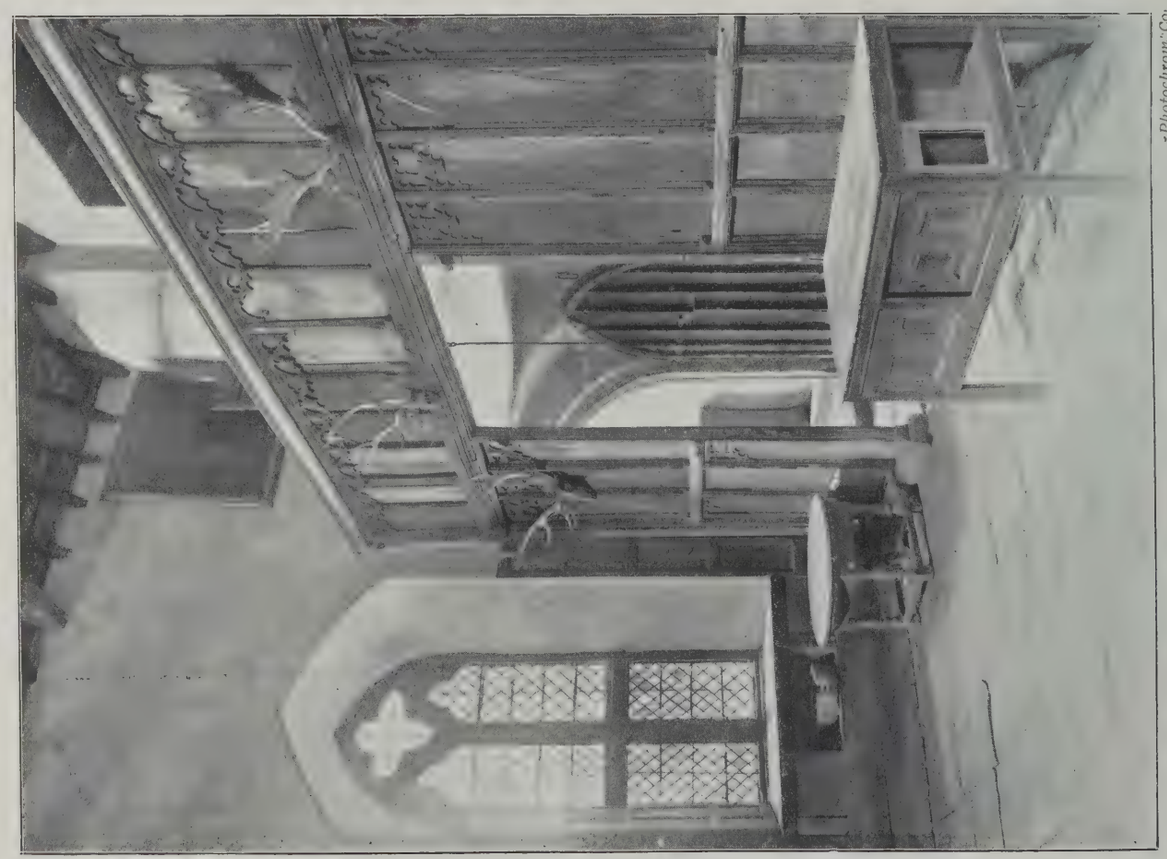


Photo: H. Irving.

BURFORD PRIORY. THE CHAPEL.



Photochrom Co.

HADDON HALL. THE SCREEN IN THE BANQUETING HALL.

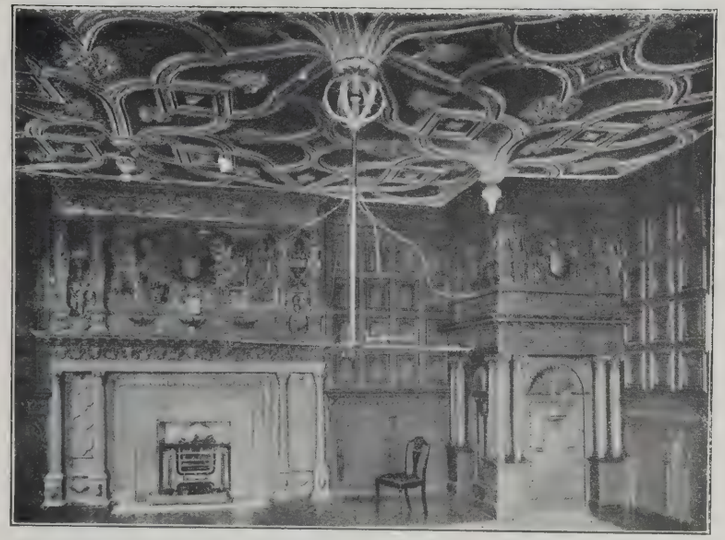


Photochrom

THE LONG GALLERY, HATFIELD HOUSE.



LANHYDROC. THE GATEHOUSE. A.D. 1651.



ROOM IN THE RED LODGE, BRISTOL. A.D. 1590.

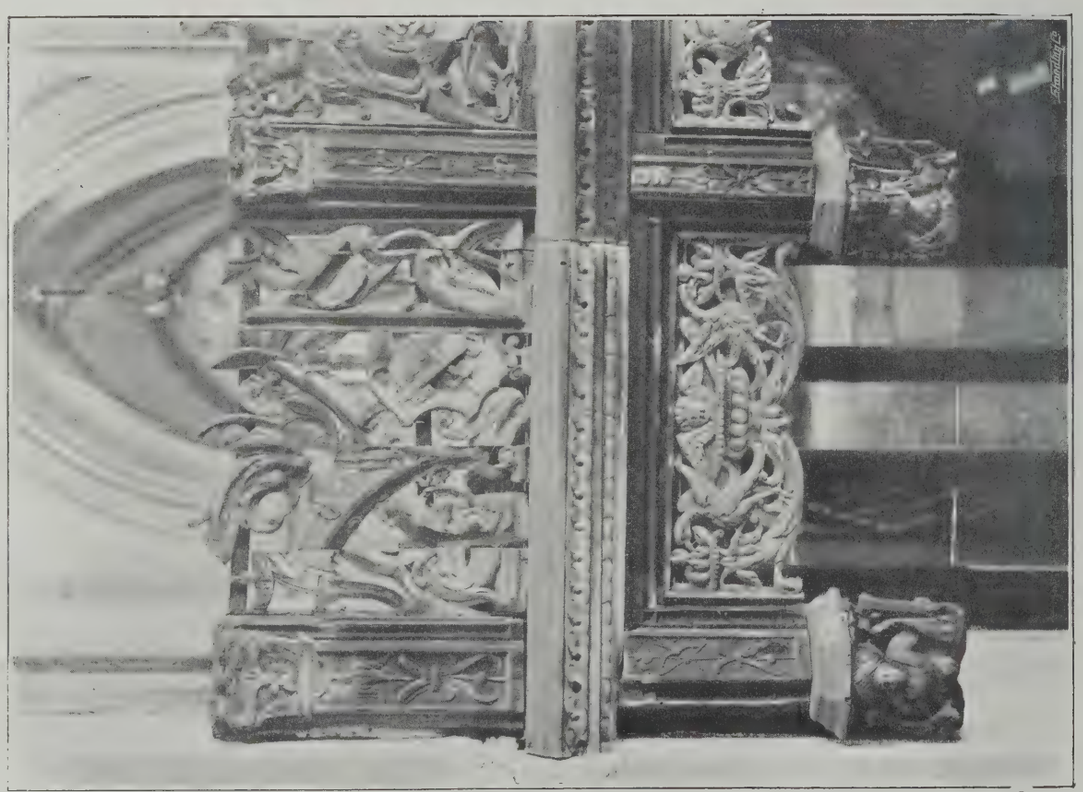


KNOLE HOUSE. THE CARTOON GALLERY. A.D. 1605.

From "A History of Renaissance Architecture in England." By Kind Permission of Mr. B. T. Batsford.



Detail of North End.



Detail of South End.

Photos: Arch. Review Photo Bureau.

THE HOSPITAL OF ST. CROSS, WINCHESTER THE RENAISSANCE SCREEN IN THE CHAPEL, A.D. 1523.



Photo: Arch. Review Photo Bureau.

THE HOSPITAL OF ST. CROSS, WINCHESTER: DETAIL OF THE CENTRE OF THE RENAISSANCE SCREEN IN THE CHAPEL, A.D. 1528.



Photochrom Co.

ABBOTT'S HOSPITAL, GUILDFORD, A.D. 1627.



Photochrom Co.

HATFIELD HOUSE, A.D. 1611.



Photochrom Co.

THE GREAT HALL, HATFIELD HOUSE.



LACOCK ABBEY. BATH. A.D. 1540—1553.



HAMPTON COURT PALACE. GATE OF THE GREAT HALL.

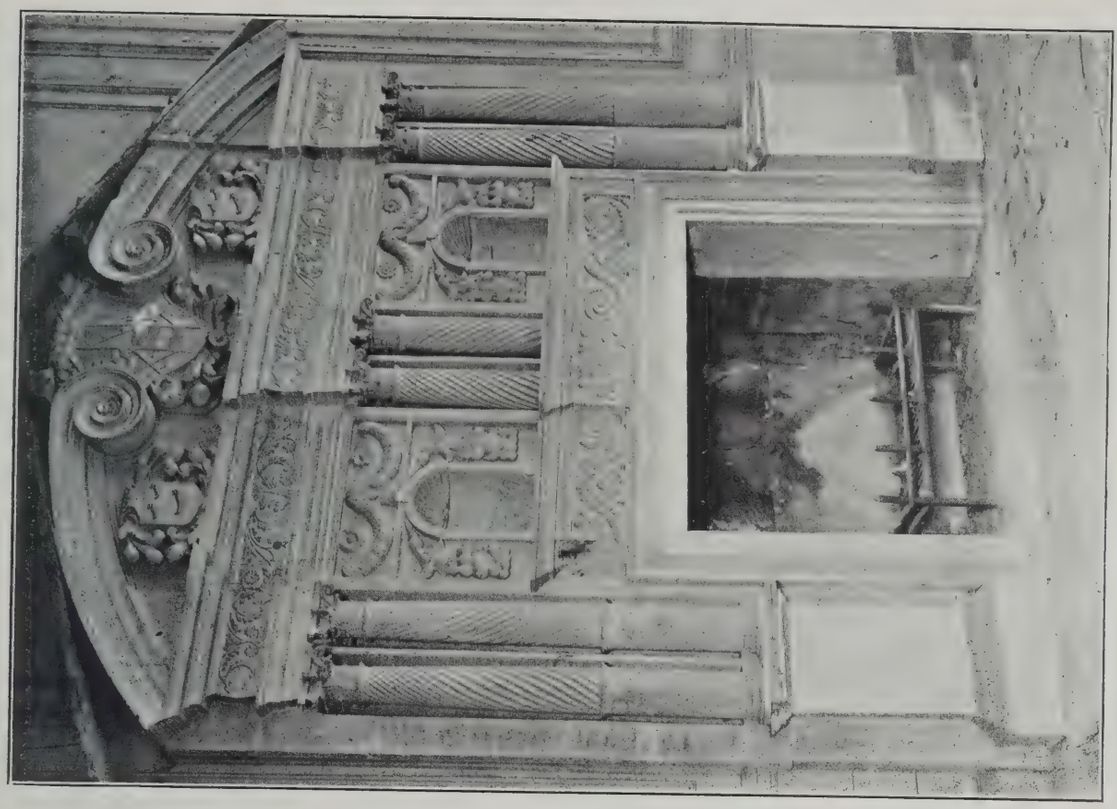
Photo: Darien Co.



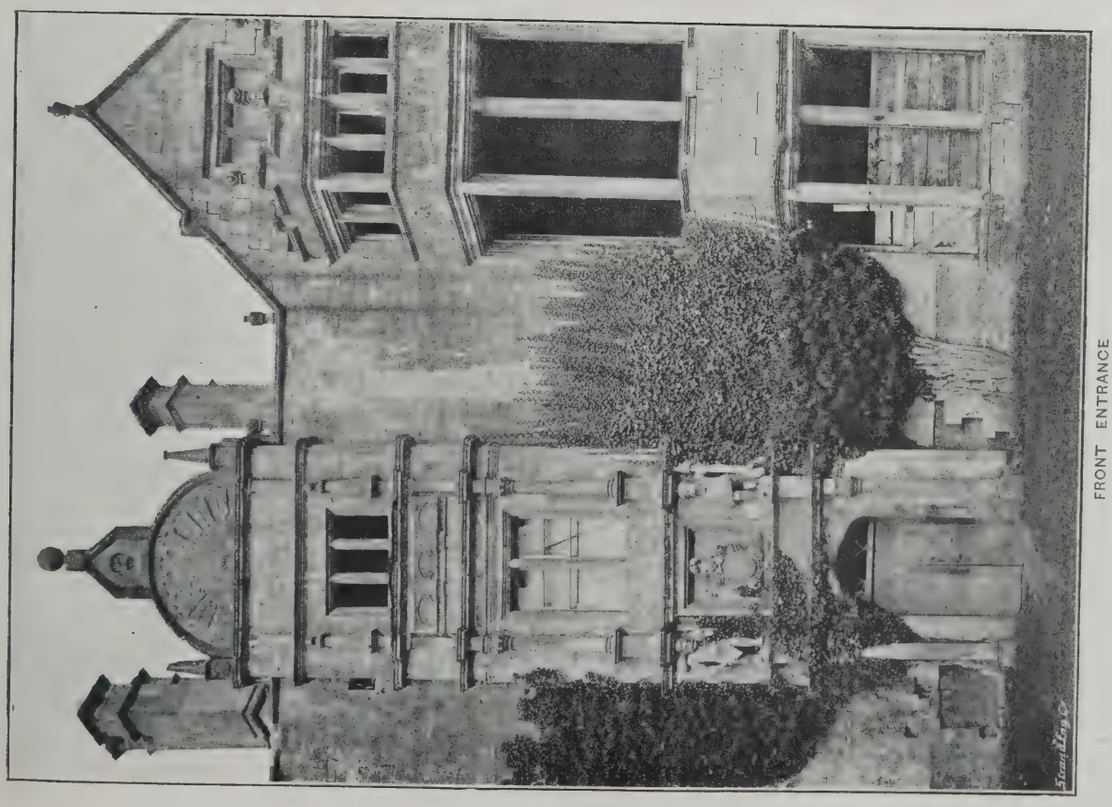


HAMPTON COURT PALACE. THE PRINCIPAL ENTRANCE AND THE GREAT HALL.

Photochrom Co.



CHIMNEY-PIECE IN THE BALL-ROOM. *Photos H. Irvin.*



FRONT ENTRANCE

THE PRIORY, BURFORD.



Photochrom Co.

ST. PAUL'S CATHEDRAL, LONDON: WEST FRONT. SIR CHRISTOPHER WREN, ARCHITECT.

THE LATER RENAISSANCE.

By MERVYN E. MACARTNEY.

The period generally known in England as the Later Renaissance is of special interest to the student of British architecture, for it marks a definite point of departure in style, and we get the first clear indication of our modern house plan. The buildings designed by Inigo Jones are substantially identical with the home of to-day, the only point of difference being the improved accommodation allowed to domestics, the outcome of greater attention to sanitary and hygienic conditions now prevalent. We have the two greatest architects of modern time—Inigo Jones and Christopher Wren. They are no mythical personages, but real actors. The former is a most interesting character; the story of his life (1573-1652), passed in one of the most exciting periods of the nation's existence, is romantic and poetical. The son of a rather unsuccessful merchant in the City of London, he comes into prominence as a diligent student of Italian art, one of the first to make a definite attempt to put on paper the exact proportions of the orders. He spent many years on this work in Italy, and made the acquaintance of some of the master minds there. The exact dates of his visits to Italy are uncertain. He applied himself to a very close study of ruins in Rome, verifying illustrations in his "Palladio," correcting mistakes, and taking notes on buildings. These show that he had studied the writings of Serlio, Vignola, Fontana, and others. That in this study of ancient work he achieved considerable renown is evident by his being appointed architect to Christian IV., King of Denmark, a post he held for a few years. That he was the designer of the Copenhagen Customs House requires more evidence than the mere traditional statement. Though a charming and quaint structure, its clumsy detail and uncertainty of outline point more towards a Teutonic hand than his. Tradition also speaks of Jones having designed such important buildings as the Castle of Fredericksborg and the Rosenberg Palace. Neither of these buildings, probably, is to be ascribed to him, and the truth, in all likelihood, is that Inigo Jones was employed in some subordinate position, such as draughtsman to King Christian.

He was the first British architect who was really a draughtsman. When he returned to England he was engaged in the preparation of many masques—a strange line to our modern ideas, but one that was evidently congenial to him. He collaborated with Ben Jonson at first; then there was a quarrel, and the latter abused his friend in two or three of his verses. His designs were numerous, and were scattered over the whole of the southern part of the kingdom. He began the Greenwich Hospital, also the Palace of Whitehall, only one fragment of which was erected—the Banqueting Hall—which remains to this day. The old Banqueting House had been burned in 1619. Inigo Jones's design for the new hall was finished in the spring, and the first stone laid June 1st same year. The building was completed in 1622, and, sumptuous as it is, it is but a small part in the general and final scheme. However much we may deplore the lack of funds which prevented Charles I. from giving Inigo Jones a free hand, we must be thankful for what we have got. Fragment though it is, the Banqueting Hall is, in the opinion of many, the most perfect building in England, and the bold originality of its design showed that Inigo Jones could produce work rivalling that of the finest Italian architects, and in a style which until then was practically unknown in England. He also built the south portico to the St. Paul's Cathedral which was destroyed. From drawings it does not strike one as successful; but his church of St. Paul's, Covent Garden, has a grandeur that stamps the author as a genius. It is impossible in the limits of this short article to enumerate all his designs, but beyond those mentioned above we may add several domestic buildings—Raynham Park, Norfolk; Colehill, Berkshire; Leinster House, Lincoln's Inn Fields; West Drayton, Berkshire; Wilton Park, Wiltshire. Inigo Jones's only known pupil is John Webb, who married one of his kinswomen, and carried out work evidently under his directions and information, but it lacks the charm of proportion and invention displayed by his teacher. There is much that is attractive that is attributed to Jones that was done by Webb, but we may safely put down Thorpe Hall and Ashdown Park to the latter. Burlington House, Piccadilly, and Gunnersbury House, Ealing, are other specimens of Webb's work, who was, on the whole, a capable if not a very original architect, working in the manner he had learned from Inigo Jones, but without his knowledge.

Christopher Wren was another architectural genius, but the training of the two men was quite different. Jones studied deeply in Italy. It is doubtful if Wren ever went there. He visited Paris, but that appears to be the extent of his travels. The bent of his mind was scientific. He was one of the founders of the Royal Society, a Fellow of All Souls, Oxford, an acknowledged authority on mathematical subjects, and may be regarded as the best example of an English cultured architect. When not yet sixteen years old he was described as one who had "enriched astronomy, gnomics, statics, and mechanics by brilliant inventions," and he subsequently was appointed Professor of Astronomy at Gresham College and Savilian Professor of Astronomy at Oxford. He was, in fact, nearly thirty years old before he turned his full attention to architecture, and though in the end his early career had a good influence upon his designs, yet his first buildings without doubt suffer from the lack of any adequate training. No one can inspect his work at St. Paul's, Greenwich and Chelsea Hospitals, and Hampton Court without being struck by the scholarly refinement of the work. As a draughtsman he was undoubtedly inferior to Inigo Jones, but the consummate ability he showed in constructing St. Paul's shows that he was one of the most daring and yet successful designers that the world has ever seen. It would be impossible to give a complete description of this here. After St. Paul's, his finest achievement was the carrying forward of the Greenwich Hospital scheme. Few compositions can rival, and none can excel it. Hampton Court is another beautiful work. It has a quiet grandeur that marks it out as the palace of a king, and it is far more satisfactory than St. Germains, or Versailles.

Wren's practice was extensive, and includes besides St. Paul's an immense number of London churches, colleges at Oxford and Cambridge, many private houses, and three Royal Hospitals, *i.e.*, houses for injured and decrepit soldiers and sailors. The resourcefulness that he displayed in erecting churches on the sites previously occupied by Gothic churches burnt in the Great Fire, is a study in itself. With assistants he planned some fifty of these. Most of them exist to this day, and together with St. Paul's and Westminster make London the richest capital in the world in ecclesiastical mementoes. To attempt any rigid classification here would be quite impossible. The variety of Wren's churches must always be a source of astonishment to us. Some of the sites upon which he had to work were apparently hopeless, but nothing proved too hard for him, and he almost invariably worked up to the very last inch of his ground. The famous interior of St. Stephen's, Walbrook, is a case in point. By his bold original design, too familiar to need description, Wren has succeeded in producing out of a rectangular room the effects of a church with nave, aisles, and crossing. After all, however, Wren's strong point lay in his exteriors rather than his interiors, and his steeples and the tower and steeple of St. Mary-le-Bow, Cheapside, and St. Bride's, Fleet Street, are perfect examples of his genius. Among the other churches chiefly remarkable may be quoted the names of St. Lawrence, Jewry; St. Magnus, London Bridge; St. Martin's, Ludgate Hill; St. Clement Danes, Strand; and St. Michael, Paternoster Row. Wren saw strange revolutions in taste, from the free style of Charles II. to the plain severe models of the later Renaissance, and like his famous architectural compeer, lived to a great age (1632-1723).

It naturally followed that Wren had pupils and imitators in his steps. The principal successors were Hawksmoor and Gibbs, who were men of intelligence, but lacking those great qualities that distinguished the genius. Hawksmoor produced some fine creations, notably St. Mary's, Woolnoth, now debased by stations of the City and South London Railway. Another well-known church by him is St. George's, Bloomsbury, and besides rebuilding part of the quadrangle at All Souls, Oxford, and designing the new quadrangle at Queen's, he was associated with Vanbrugh at Blenheim as well as at

Castle Howard, though in neither case was he responsible for the design. Gibbs is best known as the architect who designed St. Martin's-in-the-Fields and St. Mary-le-Strand, and to him also we owe the Senate House at Cambridge; Radcliffe Library, Oxford; and St. Bartholomew's Hospital.

After these comes a man who marked out a line of his own. It is curious to note that two of the tritest epitaphs were made on architects. Wren's is well known, "Si monumentum quæris circumspice"; and of Vanbrugh, Dr. Abel spitefully remarked, "Lie heavy on him, earth, for he laid many a heavy weight on thee"—a fairly just quip if one looks at Blenheim and Seaton Delaval. Both of these are almost Brobdingnagian in their proportions. The former oppresses one. It is almost impossible to suppose it inhabited by mortals of ordinary stature. It seems to require vast men and women, and a pomp quite unsuited to modern habit. The curious thing about Vanbrugh's work is that he deliberately aimed at obtaining his grand effects by the almost complete sacrifice of detail. Sir Joshua Reynolds always held him in great esteem as combining originality with skill in grouping masses and understanding the effects of light and shade.

The next phase in British Architecture is a return to severe classic under the guidance of Colin Campbell, Kent, Archer, Ripley, James, and Wood. Wood deserves a special word and mention as the man who has made Bath what it is, having built the Circus, Crescent, Assembly Rooms, Queen's Square, and Parades. Of these men, however, it may be said, generally speaking, that to obtain their effects, they sacrificed a great deal of comfort and light; a mania for symmetry, and an unnatural insistence on this Procrustean idea drove them to strange and unjustifiable contrivances to achieve their object.

They were followed by the two Adams, men of a different type, who worked on model lines. Half architects, half contractors, they achieved a great vogue. Robert, the better known one of the two, carried out Lord Lansdowne's house in Berkeley Square, Sir Watkin Wynne's in St. James's Square, Kedlestone for Lord Scarsdale, Luton Park for the Earl of Bute, and many other houses for distinguished people of the day. Undeniably clever, and also immense believers in their method, they gained a celebrity which is hardly justified. By the introduction of a refined treatment of ornament and the employment of skilled Italian workmen, they designed work which is certainly charming as decoration, but is hardly serious architecture. The ceilings, chimney-pieces, etc., that they produced, are certainly beautiful, but their work is almost entirely interior decoration; not the handling of the more difficult art of architecture, the proper and artistic grouping of constructive building. The Register House at Edinburgh is their most successful effort, and that is marred by a smallness of detail; immeasurably inferior to the treatment it would have received at the hands of Inigo Jones or Wren.

We are now nearing the end of our list of prominent architects, but the work done in the later half of the eighteenth century and first half of the nineteenth is still well worth careful study. Sir William Chambers was throughout his career a very successful architect, building many houses for notabilities of the time, but his great work was Somerset House. His scheme was never carried out in its entirety, but the problems which he was required to deal with he solved with striking success. He took immense pains with all the details of the work, and the result has been a successful building. His other principal achievement was his treatise on "The Decorative Part of Civil Architecture," which remains as a text-book to this day.

Gandon, Elmes, and Cockerell, all classic men, did work that was monumental. St. George's Hall, Liverpool, the Customs House, Dublin, are compositions that place the designers in the front rank. Elmes died young, and his work was completed by Cockerell, but the composition as it stands was his. Cockerell was an architect of rare refinement, and his buildings at Oxford and in London show his intimate knowledge of classical detail.

Gandon was of a more robust type of architect, and his Customs House, Dublin, is a monument of his genius and power of design, being in its way quite as able as his teacher's design for Somerset House.

Dance (the younger), by building Newgate Prison, which was demolished a year or two ago, took rank with Chambers and Gandon as one of the most virile designers in this period, and his treatment of the vast bare wall has always been greatly admired. Of his other works, however, the only one worth particular mention is the hospital of St. Luke's, Old Street, which shows power and self-restraint combined with imagination of a very high order.

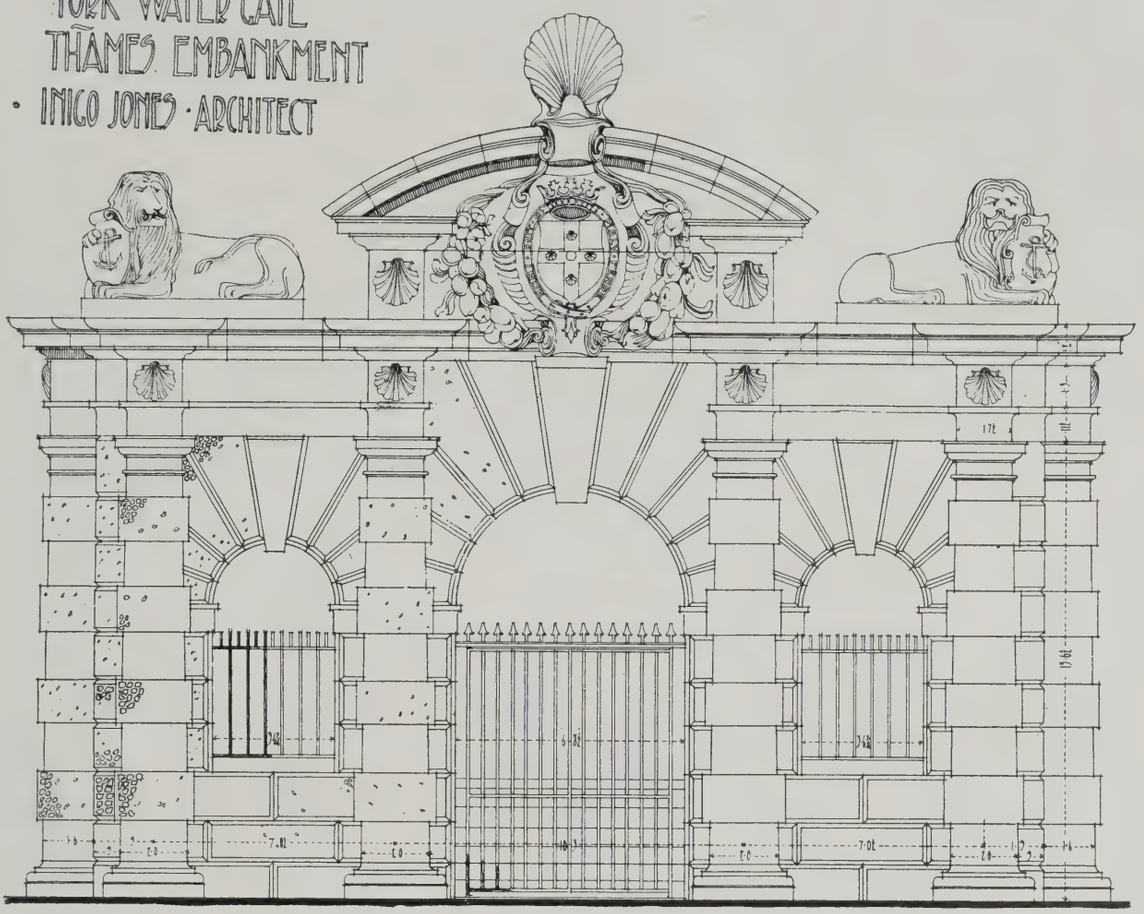
Our chronological review ends with Barry; in spite of the uproar that has raged round his name as the designer of the Houses of Parliament, there is no contesting the fact that it is a classic composition in plan and elevation. The detail is Gothic, and bears the impress of another's hand, that of Pugin. Trentham, Harewood, Bridgewater House, are fairer examples of Barry's powers, but even these are inclined to be heavy and lifeless. His most successful design is the Reform Club.



WATER GATE, YORK STAIRS, LONDON. INIGO JONES, ARCHITECT.

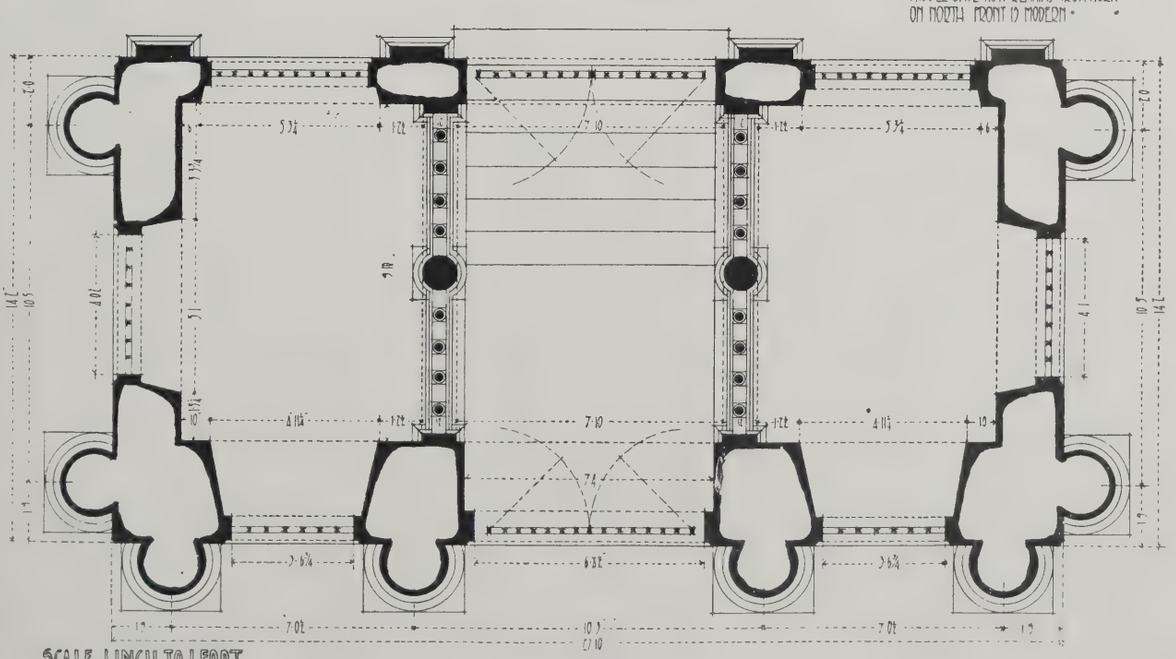
YORK WATER GATE THAMES EMBANKMENT

INIGO JONES · ARCHITECT



· ELEVATION TO RIVER ·

NOTE· IRONWORK SHEWN ON THIS ELEVATION IS OLD WORK · ONLY HALF OF THE MIDDLE GATE NOW REMAINS· IRONWORK ON NORTH FRONT IS MODERN ·

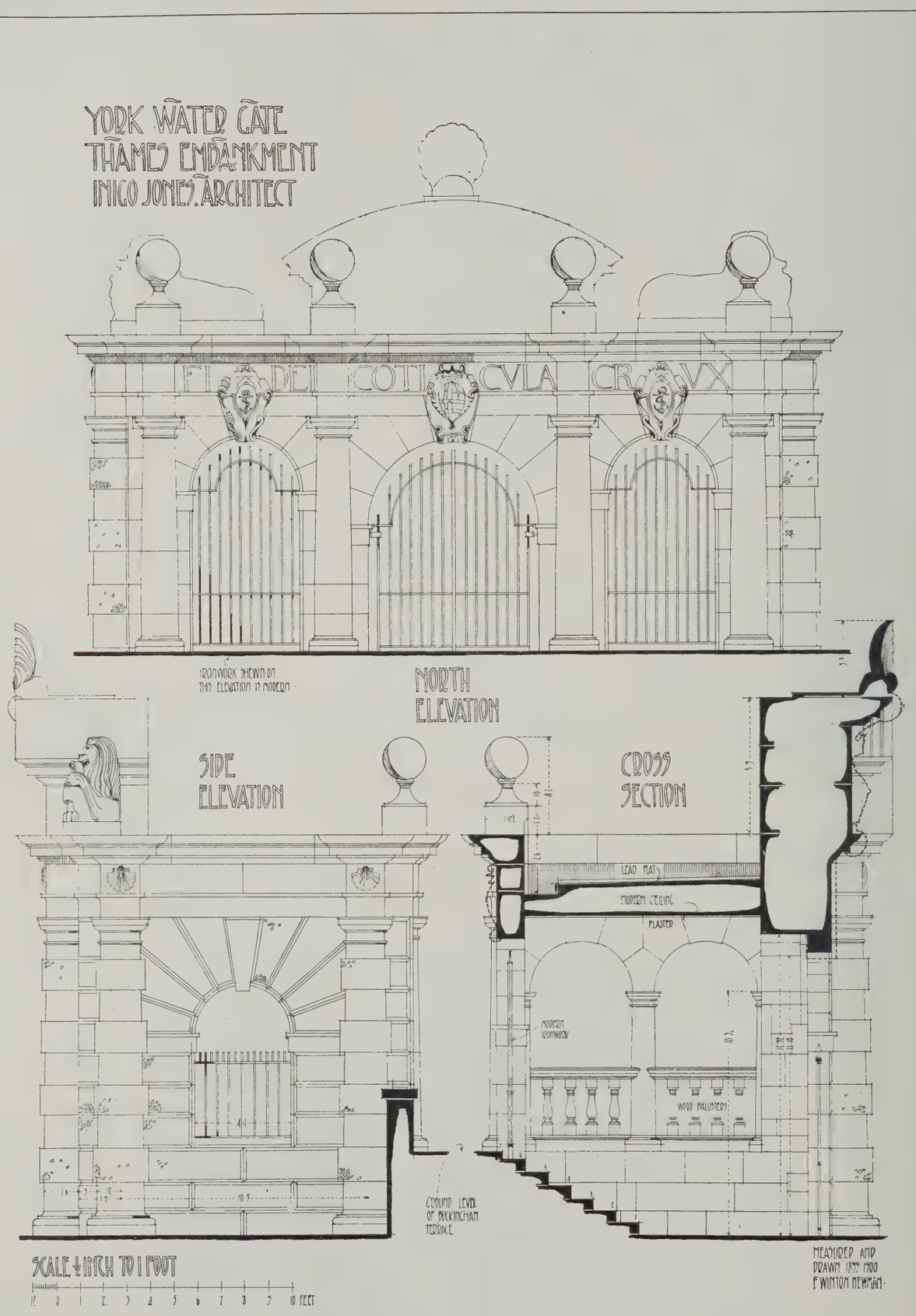


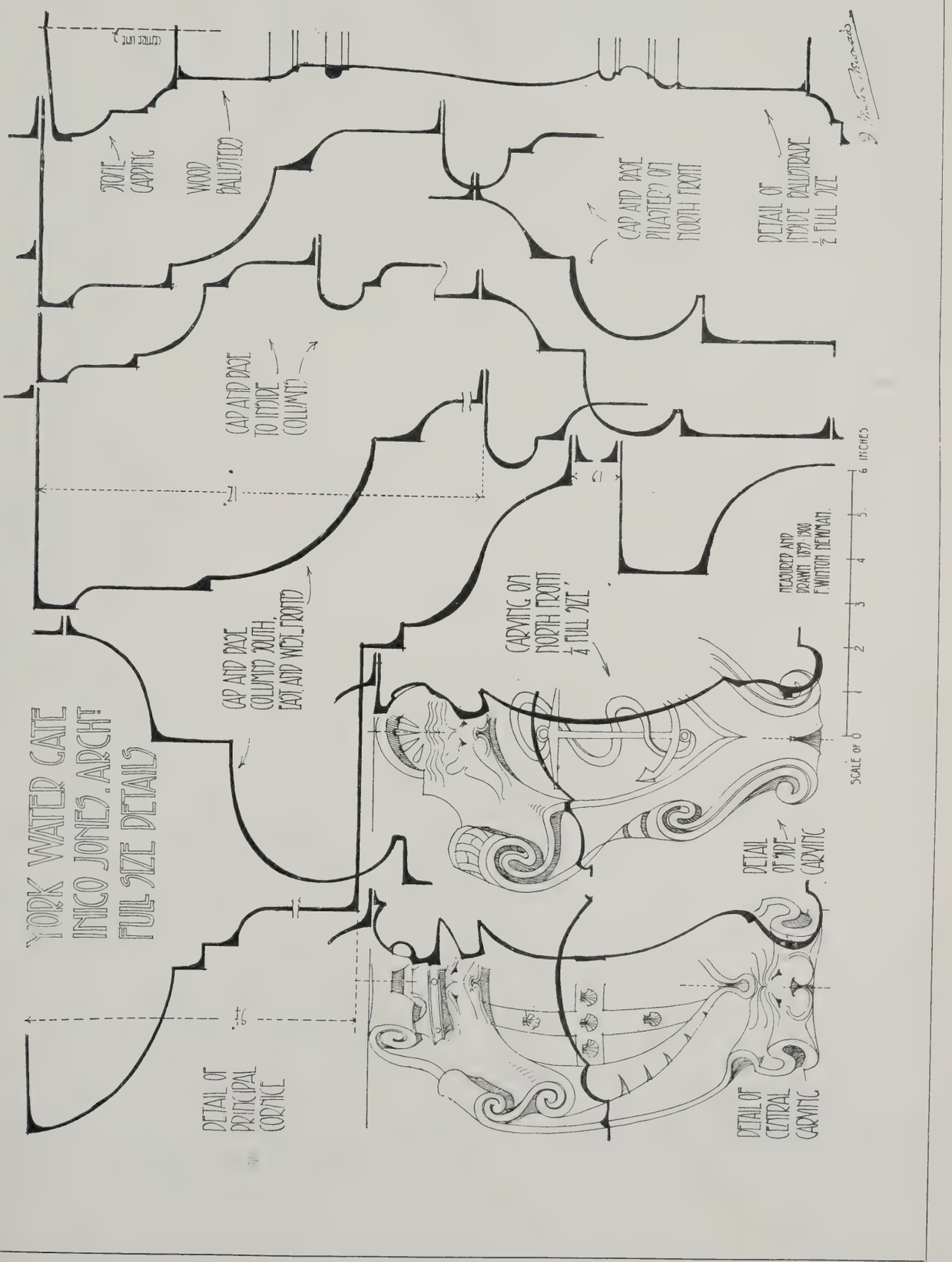
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PLAN

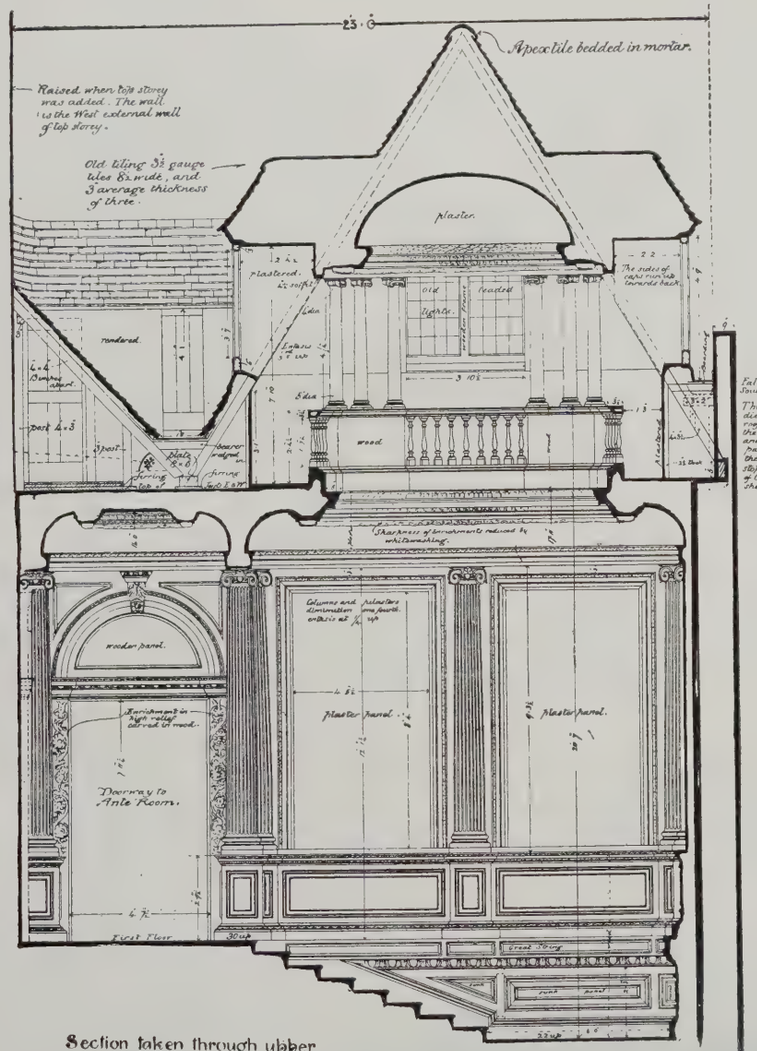
MEASURED AND DRAWN· 1897-1900 F WINTON NEWMAN ·


YORK WATER GATE
THAMES EMBANKMENT
INIGO JONES? ARCHITECT
IRONWORK SHEWN ON THIS ELEVATION IS MODERN
NORTH ELEVATION
SIDE ELEVATION
CROSS SECTION
LEAD MAT
MODERN CEILING
PLASTER
MODERN IRONWORK
WOOD PALISTRES
GROUND LEVEL OF BUCKINGHAM TERRACE
SCALE ½ INCH TO 1 FOOT
0 1 2 3 4 5 6 7 8 9 10 FEET
MEASURED AND DRAWN 1899 1900
F WINTON NEWMAN

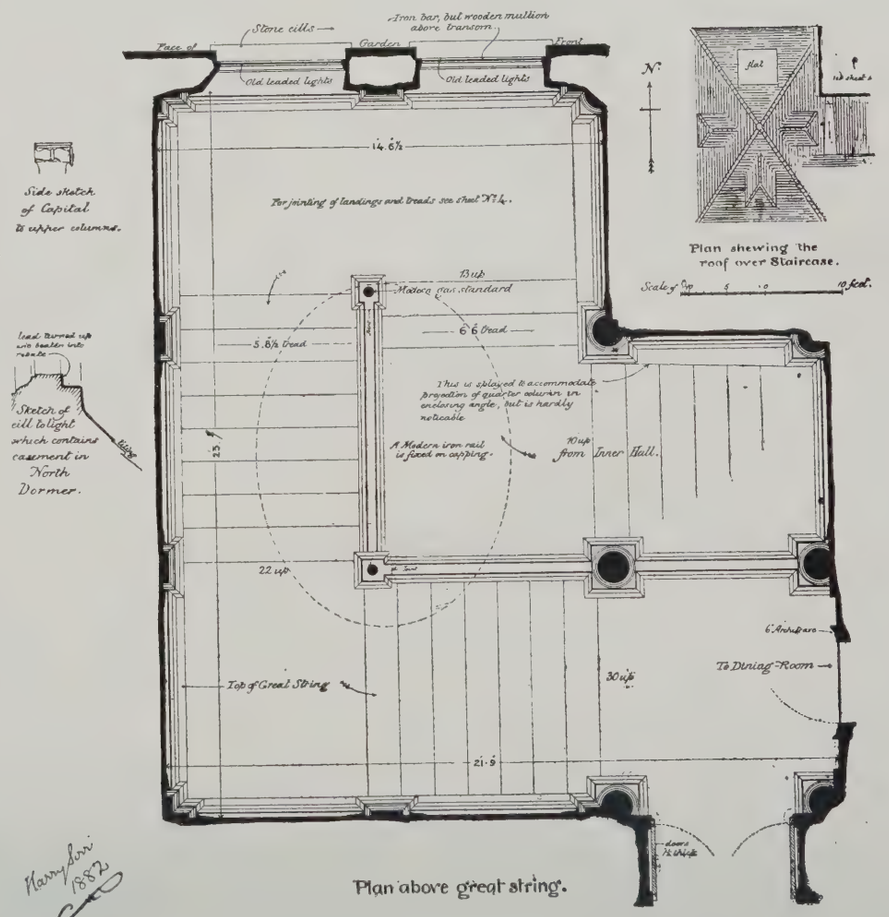

YORK WATER GATE
INIGO JONES. ARCHT
FULL SIZE DETAILS
DETAIL OF PRINCIPAL CORNICE
CAP AND BASE COLUMNS SOUTH, EAST AND WEST FRONTS
CAP AND BASE TO INSIDE COLUMNS
CAPITAL OUTSIDE
WOOD BALUSTERS
CAP AND BASE PILASTERS ON NORTH FRONT
DETAIL OF INSIDE BALUSTRADE ½ FULL SIZE
CARVING ON NORTH FRONT ¼ FULL SIZE
DETAIL OF SIDE CARVING
DETAIL OF CENTRAL CARVING
MEASURED AND DRAWN 1879-1880 F.WINTON NEWMAN.
SCALE OF 0 1 2 3 4 5 6 INCHES

The other walls of Staircase are treated in a similar way to that shewn on the Section, the differences in height being adjusted in the panelling below Great String. On the North wall the two window openings take the place of the plaster panels in Colonnade; and, on the top landing the two Doorways, both of which have the same detail, except that the one leading to Dining Room has a semi-eliptical archivolt Etc:.

The Staircase appears to be mostly in Oak, but all the woodwork is painted white with the exception of the Balustrade and the skirting or wall string.

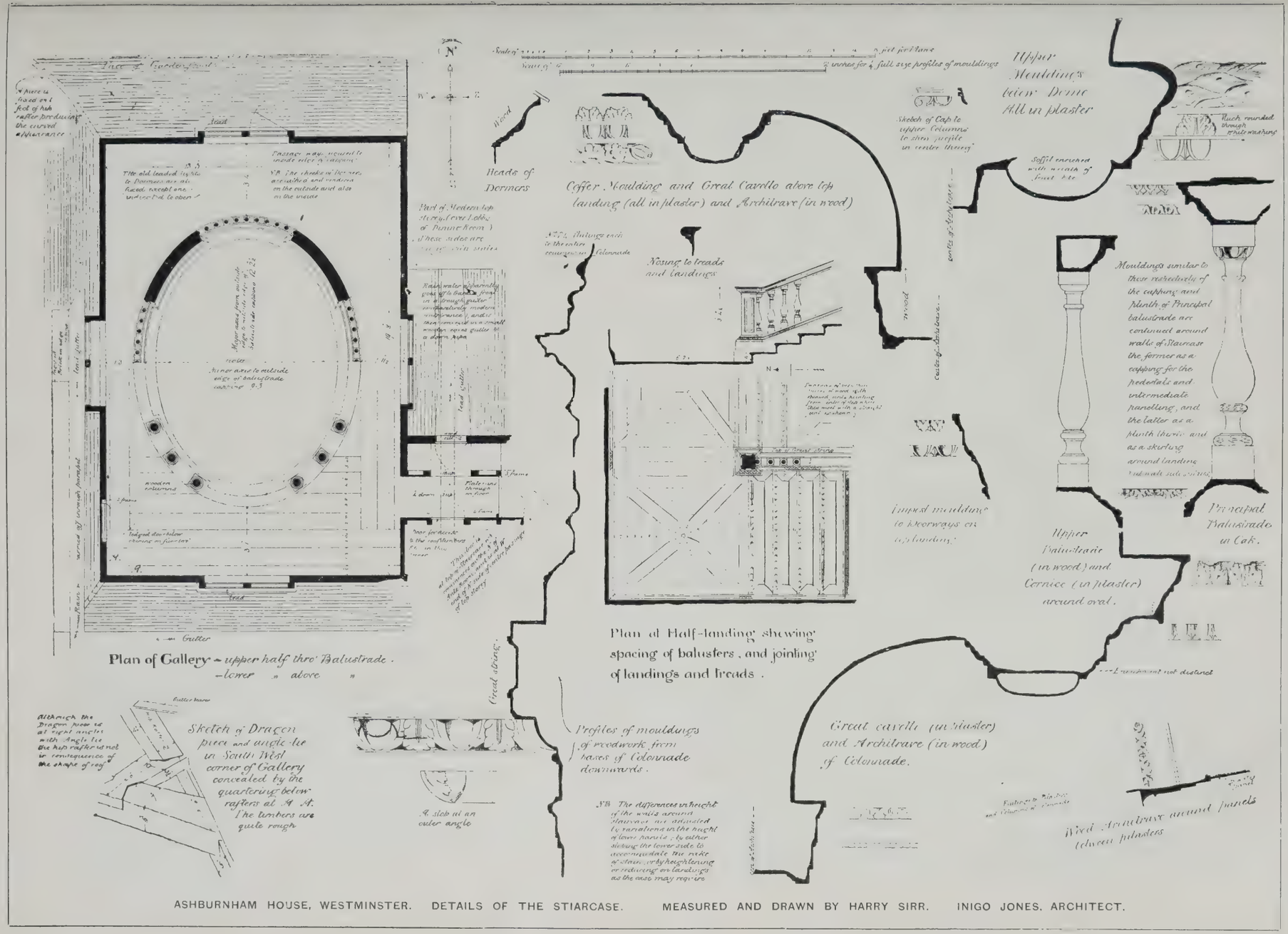


Section taken through upper part of Staircase - East to West - thro' centre thereof. (balustrade removed.)



Plan above great string.

ASHBURNHAM HOUSE, WESTMINSTER. DETAILS OF THE STAIRCASE.
MEASURED AND DRAWN BY HARRY SIRR.
INIGO JONES, ARCHITECT.



ASHBURNHAM HOUSE, WESTMINSTER. DETAILS OF THE STIARCASE. MEASURED AND DRAWN BY HARRY SIRR. INIGO JONES, ARCHITECT.



GROOMBRIDGE PLACE, KENT INIGO JONES, ARCHITECT.

Photochrom Co.



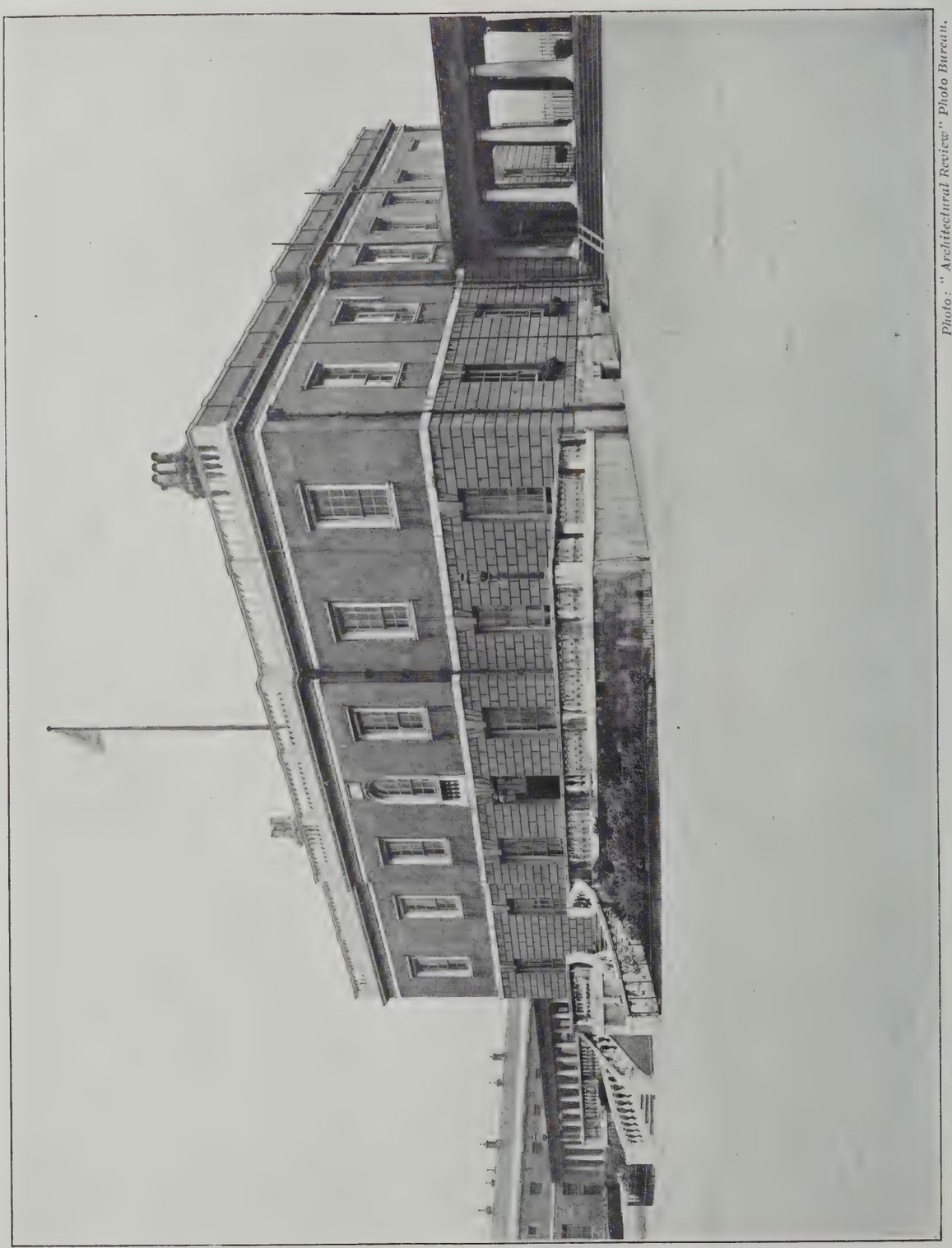
BANQUETING HALL, WHITEHALL. INIGO JONES, ARCHITECT.

Photo: Spooner and Co.



Photochrom Co.

THE PORCH, ST. MARY'S CHURCH, OXFORD.
INIGO JONES, ARCHITECT (ATTRIBUTED.



THE QUEEN'S HOUSE, GREENWICH. INIGO JONES, ARCHITECT.

Photo: "Architectural Review" Photo Bureau.

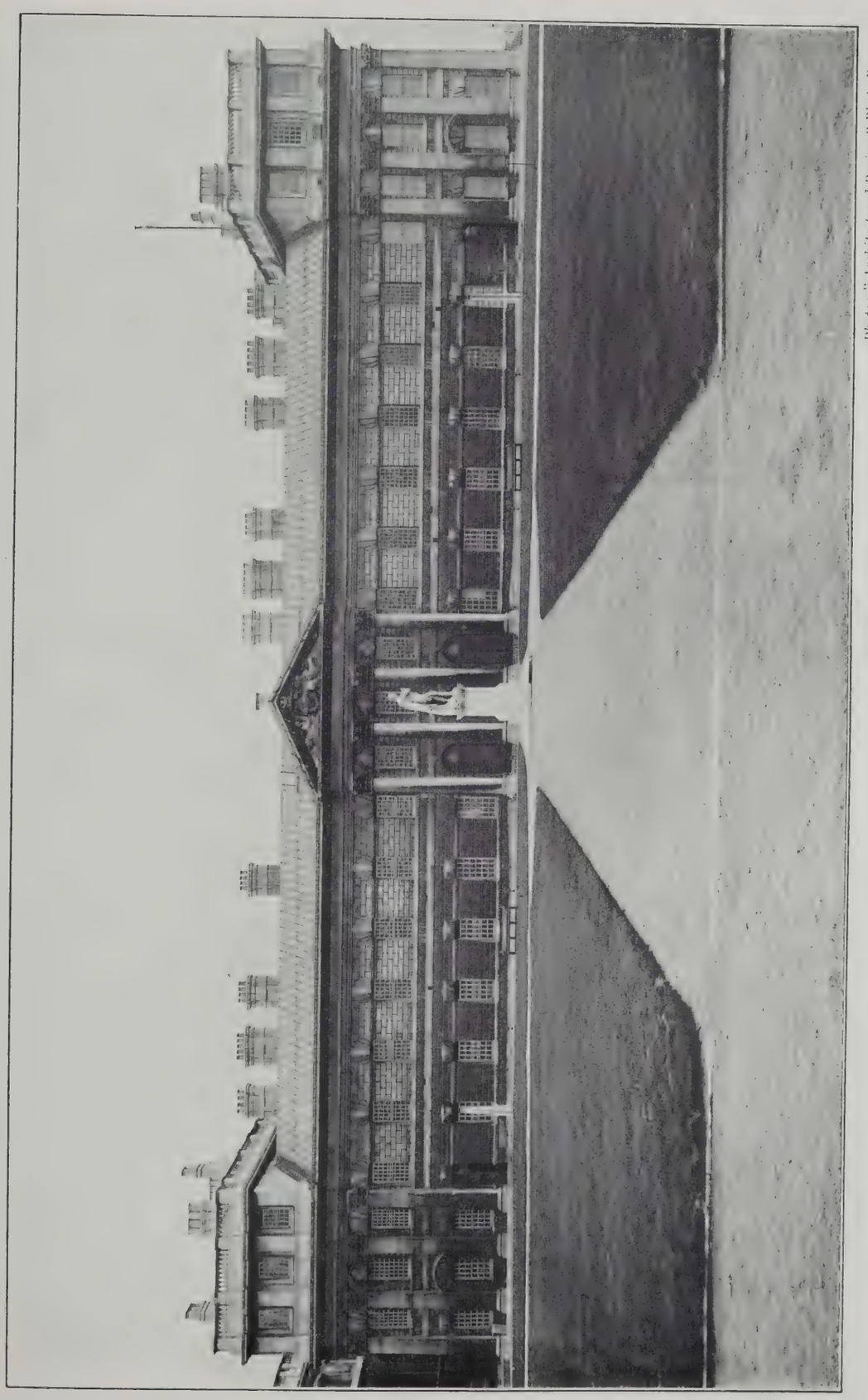


Photo: "Architectural Review" Photo Bureau.

GREENWICH HOSPITAL: QUEEN MARY'S BLOCK.
JOHN WEBB, ARCHITECT (WITH SUPPOSED ASSISTANCE OF INIGO JONES)

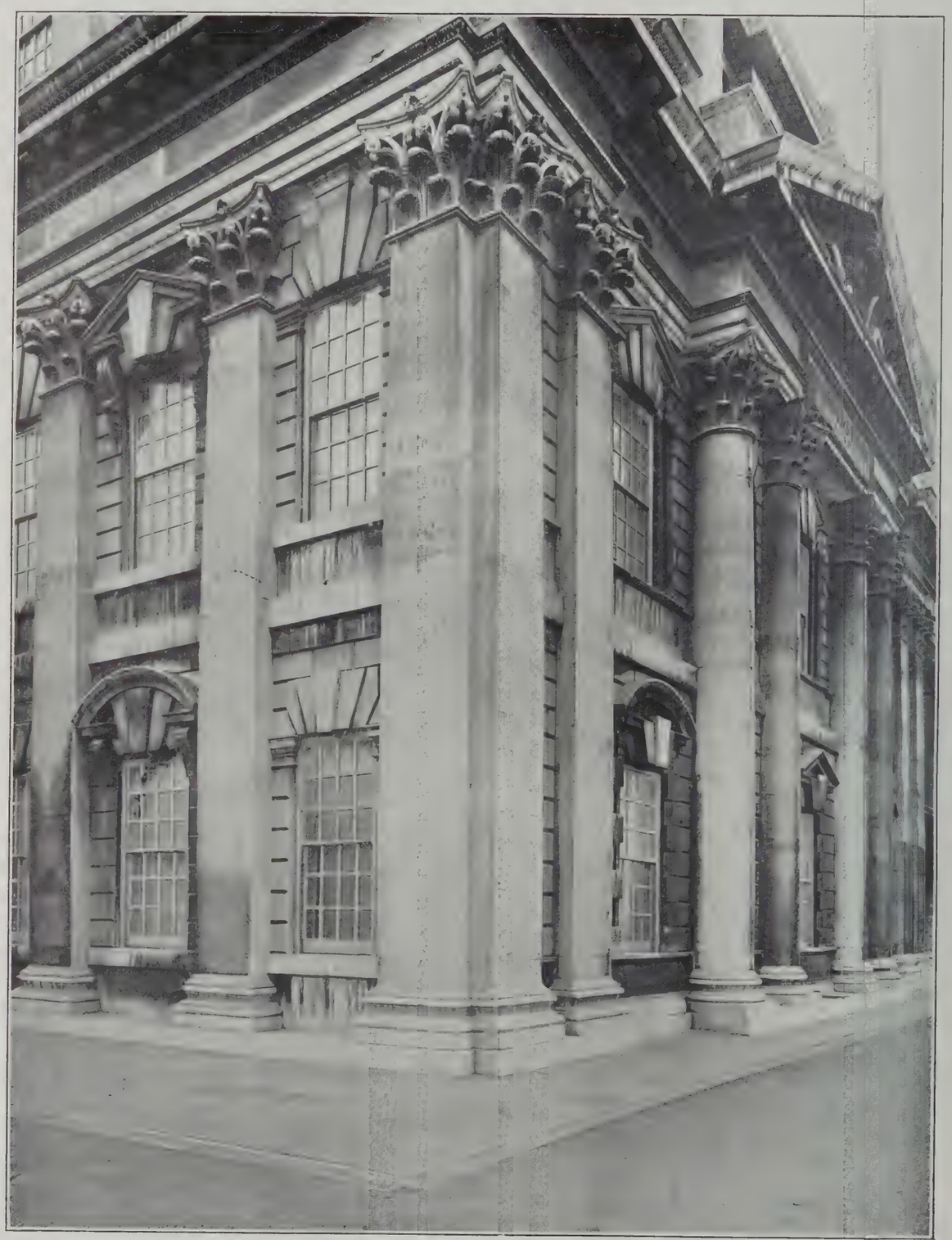


Photo: "Architectural Review" Photo Bureau.

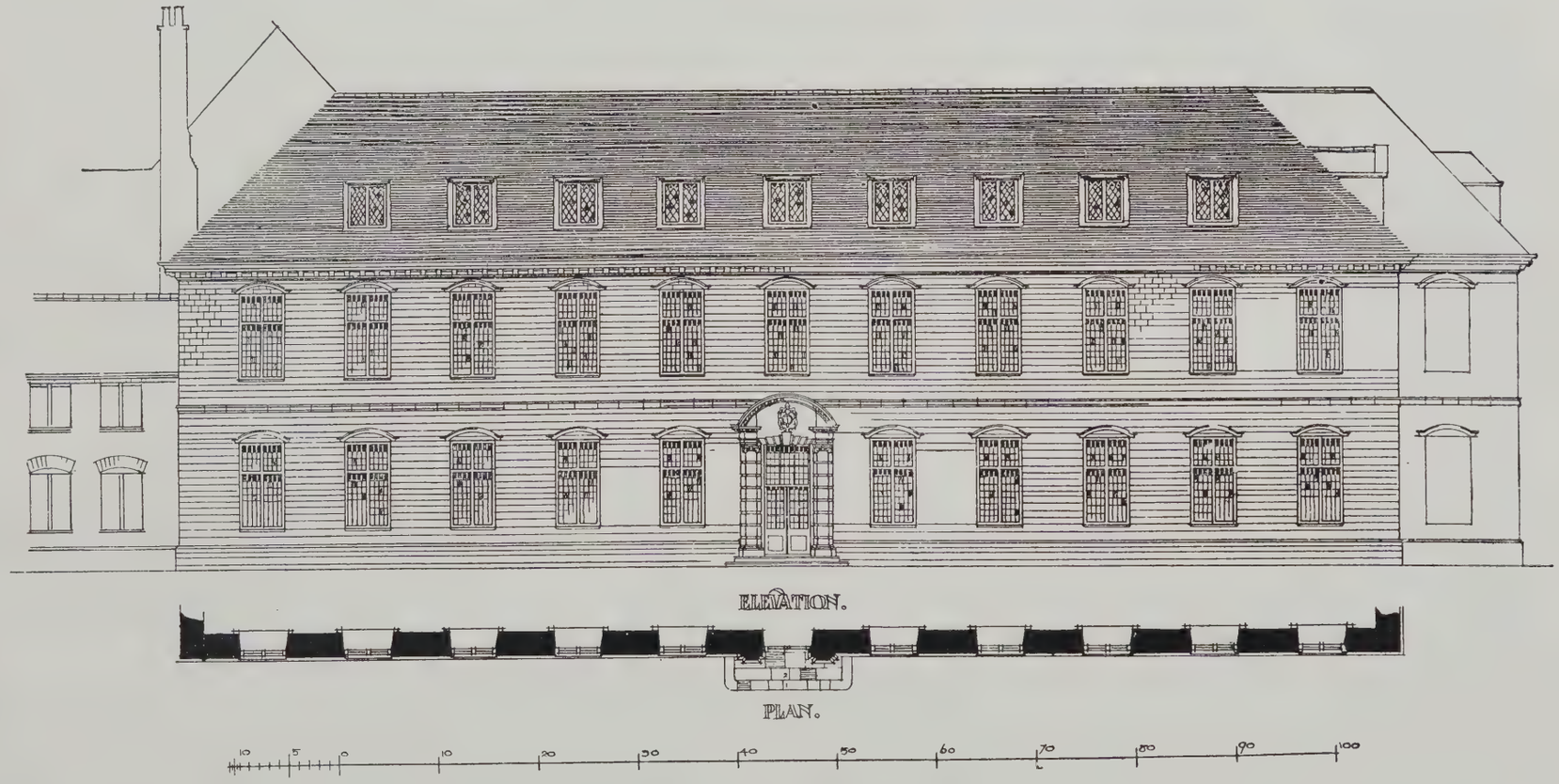
GREENWICH HOSPITAL: QUEEN MARY'S BLOCK. DETAIL.
JOHN WEBB, ARCHITECT (WITH SUPPOSED ASSISTANCE OF INIGO JONES).



Photo: W. J. Vasey.

THE MARKET HOUSE, ABINGDON.

Now attributed to Christopher Kempster, sometime a clerk of the works under Wren at St. Paul's Cathedral.



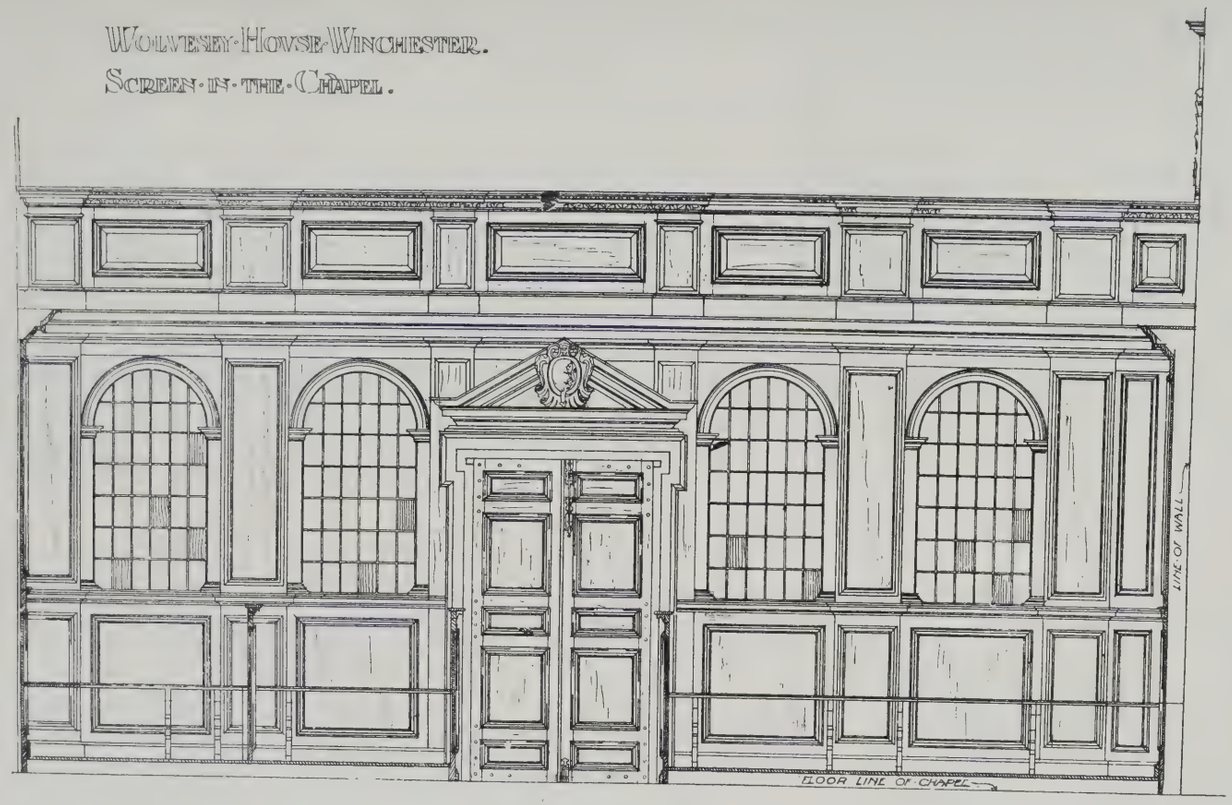
MEASURED & DRAWN
ON THE SPOT BY
L.G. DETMAR. JULY 1902

WOLVESEY HOUSE, WINCHESTER. THE GARDEN FRONT.

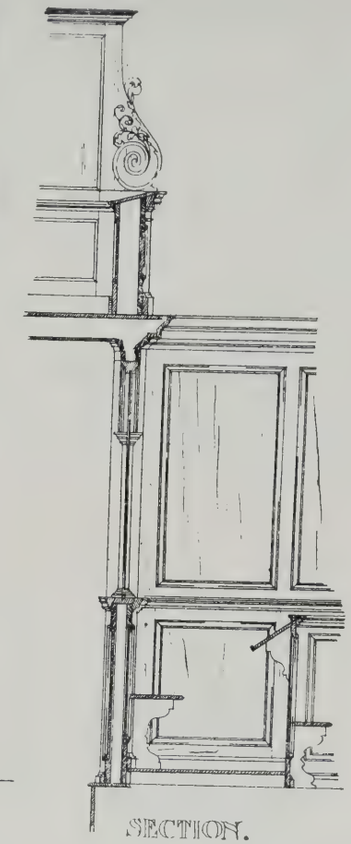
MORLEY, ARCHITECT, 1684.

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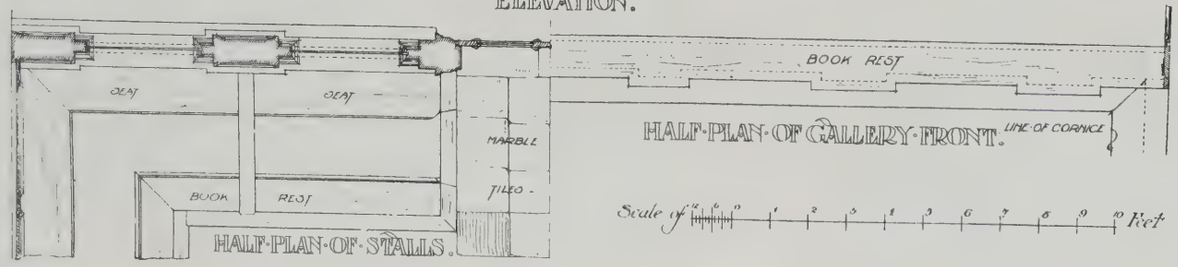
WOLVESEY HOUSE WINCHESTER.
SCREEN IN THE CHAPEL.



ELEVATION.



SECTION.

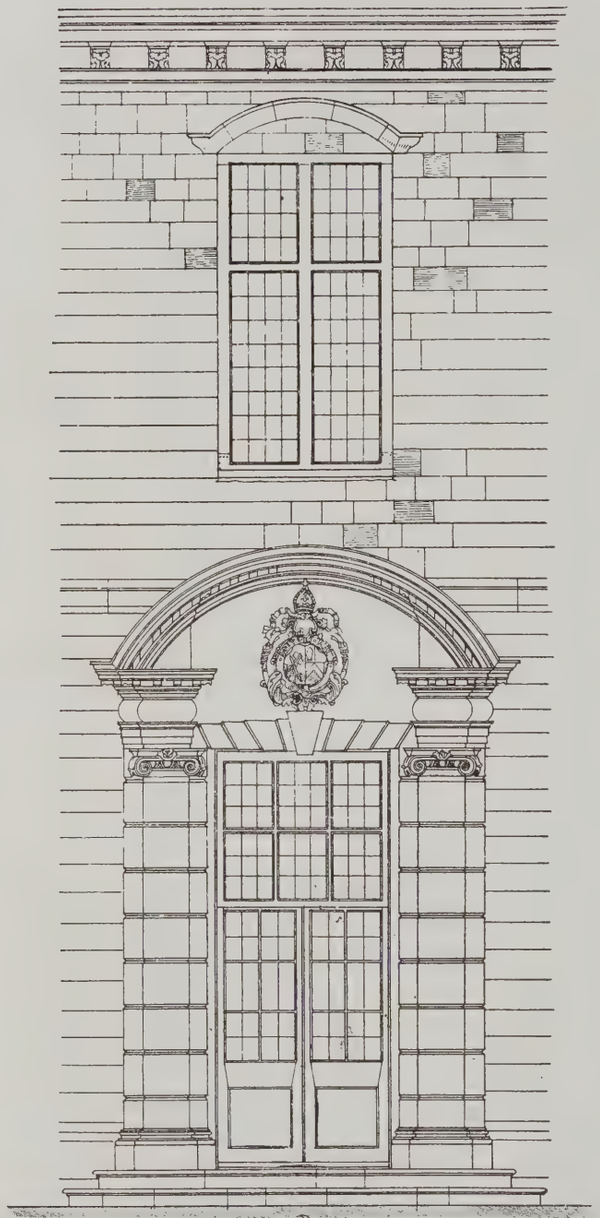


Measured & Drawn on the Spot July 1902 L.G. Dettmar.

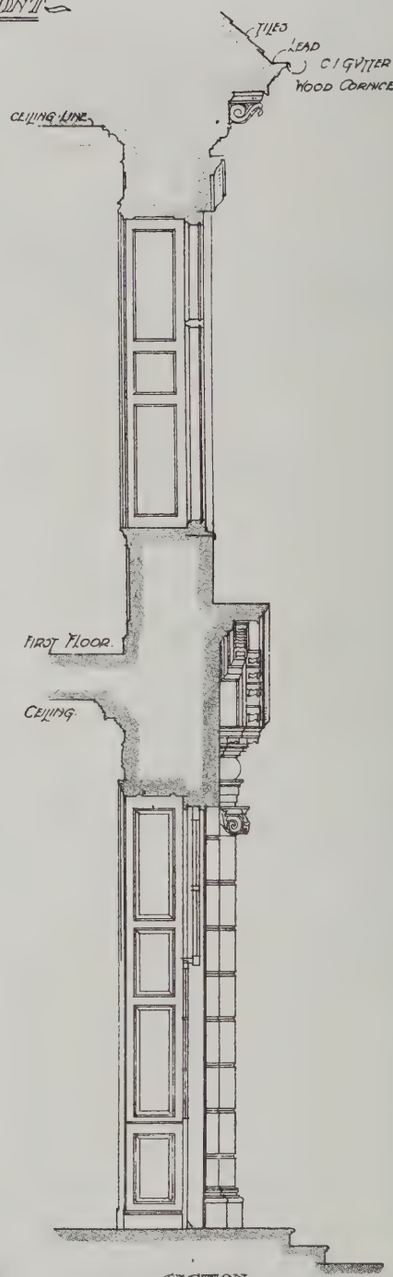
MORLEY, ARCHITECT, 1684.

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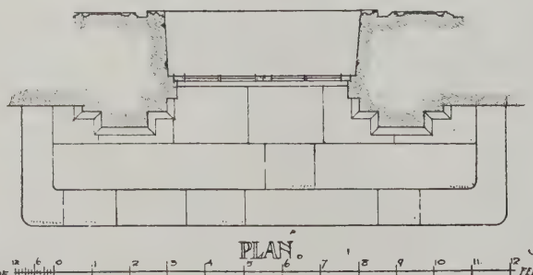
WOLVESEY HOUSE — DETAILS OF SOUTH FRONT



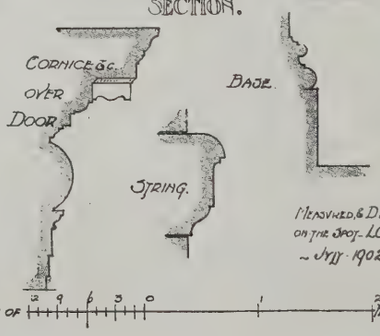
ELEVATION.



SECTION.



PLAN.



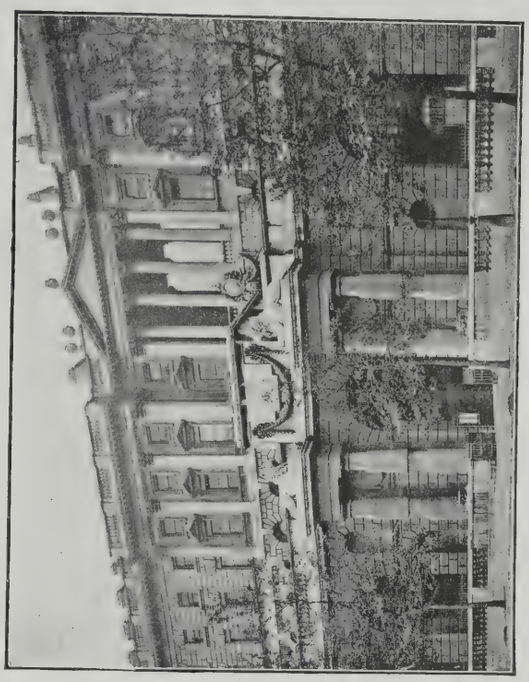
SCALE OF FEET FOR DETAILS

MORLEY, ARCHITECT, 1684.

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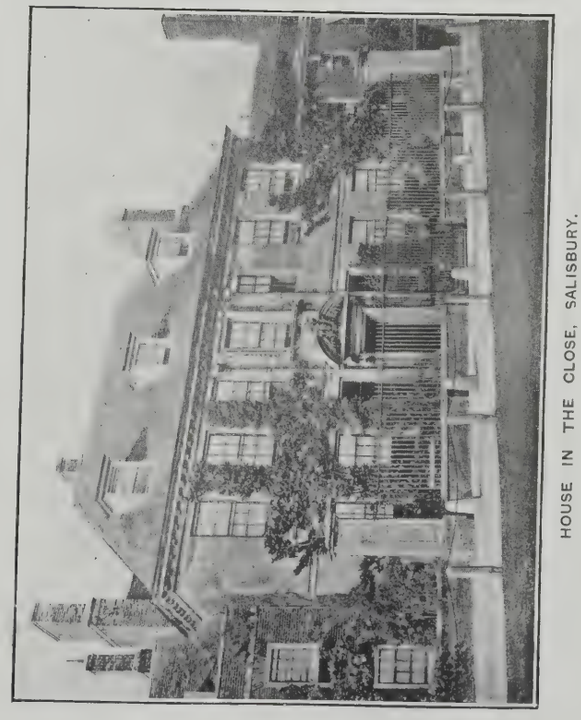
GROOMBRIDGE PLACE: THE PORCH. INIGO JONES, ARCHITECT.



SOMERSET HOUSE, LONDON: THE RIVER FRONT.
SIR WILLIAM CHAMBERS, ARCHITECT.



WILTON HOUSE, WILTSHIRE. INIGO JONES, ARCHITECT.



HOUSE IN THE CLOSE, SALISBURY.

From "Later Renaissance Architecture in England." By kind permission of Mr. B. T. Batsford.





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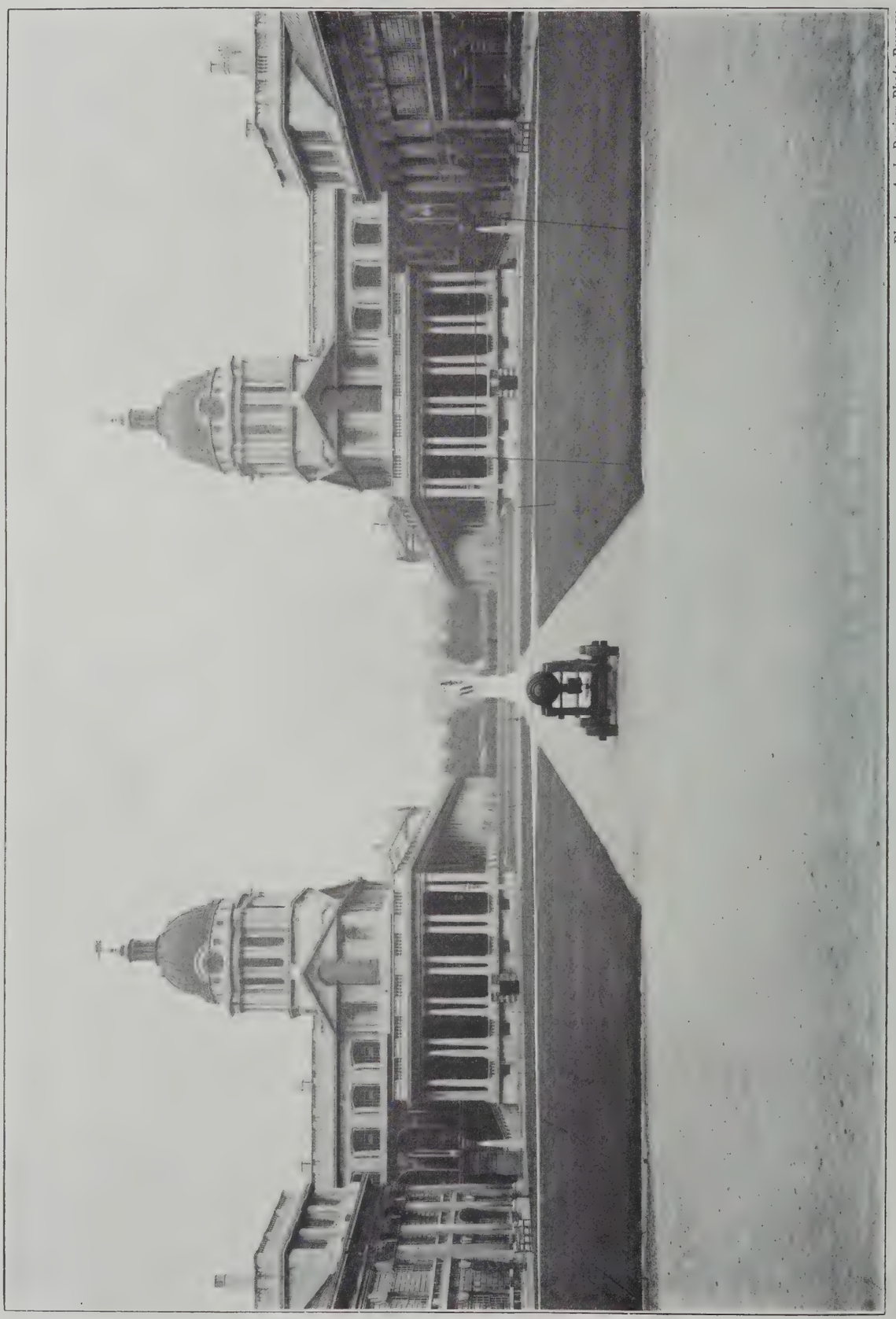
HAMPTON COURT PALACE. THE GARDEN FRONT AND THE FOUNTAIN COURT. SIR CHRISTOPHER WREN, ARCHITECT.



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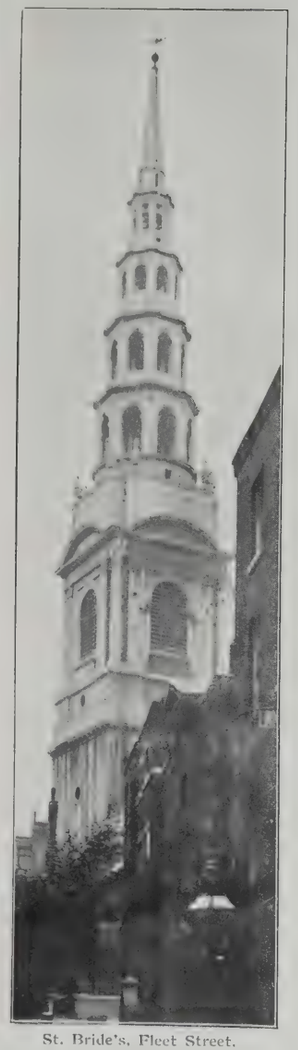
ST. PAUL'S CATHEDRAL, LONDON. THE CHOIR. SIR CHRISTOPHER WREN, ARCHITECT.

(The Reredos is by Bodley and Garner.)



GREENWICH HOSPITAL. THE CUPOLAS AND COLONNADES. SIR CHRISTOPHER WREN, ARCHITECT.

Photo: Arch. Review Photo Bureau.



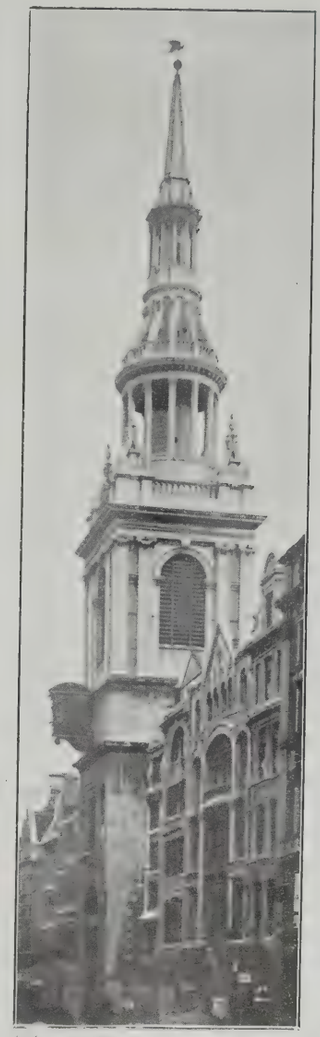
St. Bride's, Fleet Street.
Sir Christopher Wren, Architect.



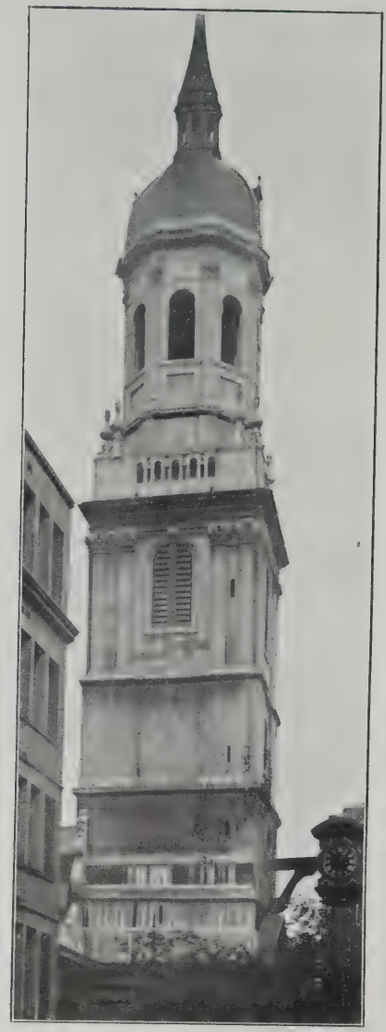
St. Dunstan-in-the-East.
Sir Christopher Wren, Architect.



Christ Church, Spitalfields.
Nicholas Hawksmoor, Architect.

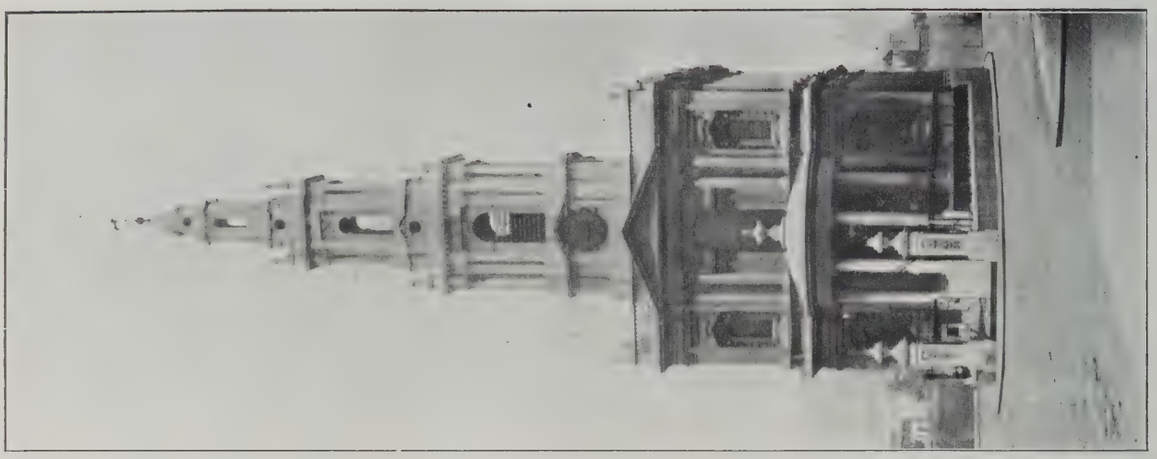


St. Mary-le-Bow.
Sir Christopher Wren, Architect.

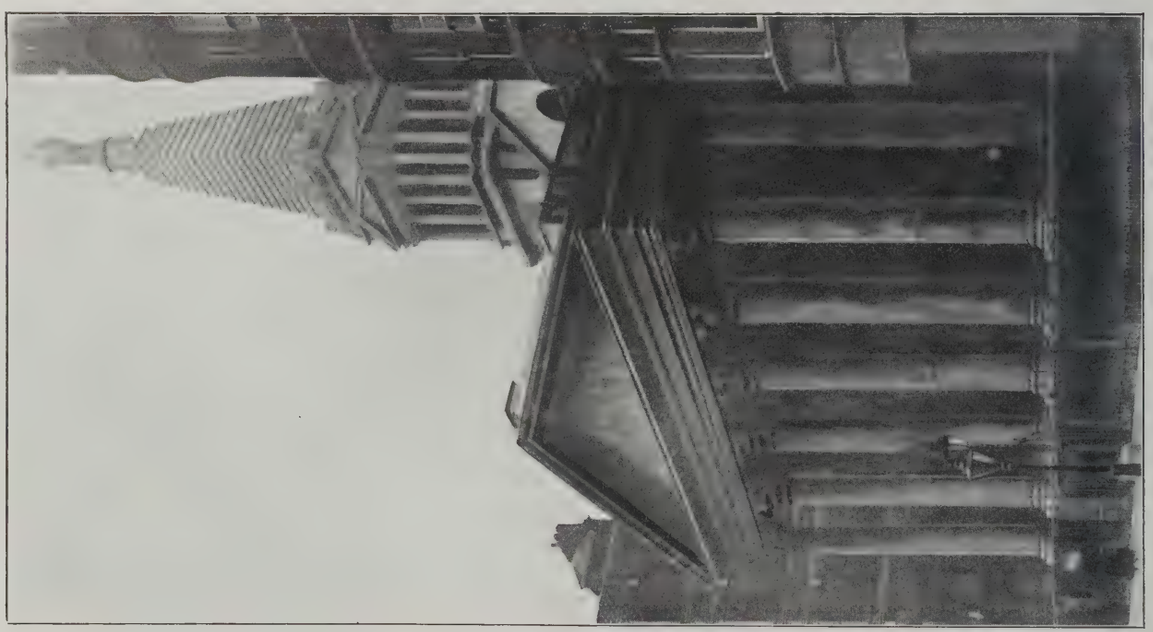


St. Magnus.
Sir Christopher Wren, Architect.

LONDON CITY CHURCH SPIRES.

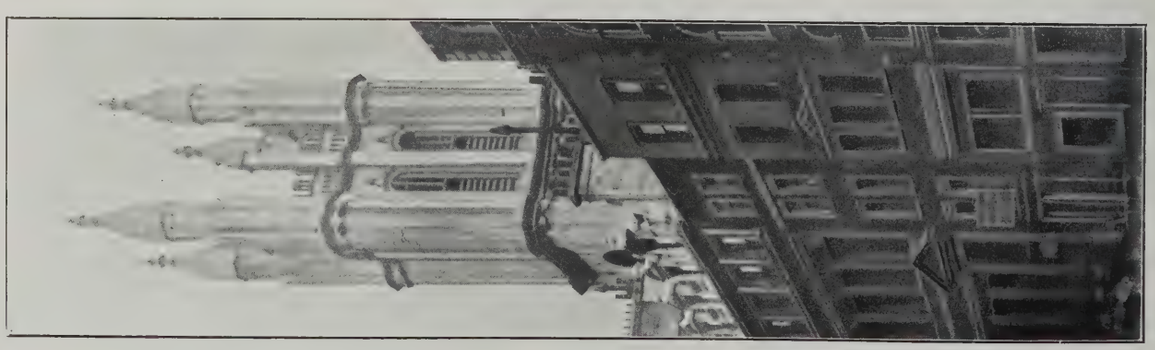


St. Mary-le-Strand. James Gibbs, Architect.



St. George's, Bloomsbury. Nicholas Hawksmoor, Architect.

LONDON CITY CHURCH SPIRES.



St. Michael, Cornhill.
Sir Christopher Wren, Architect.

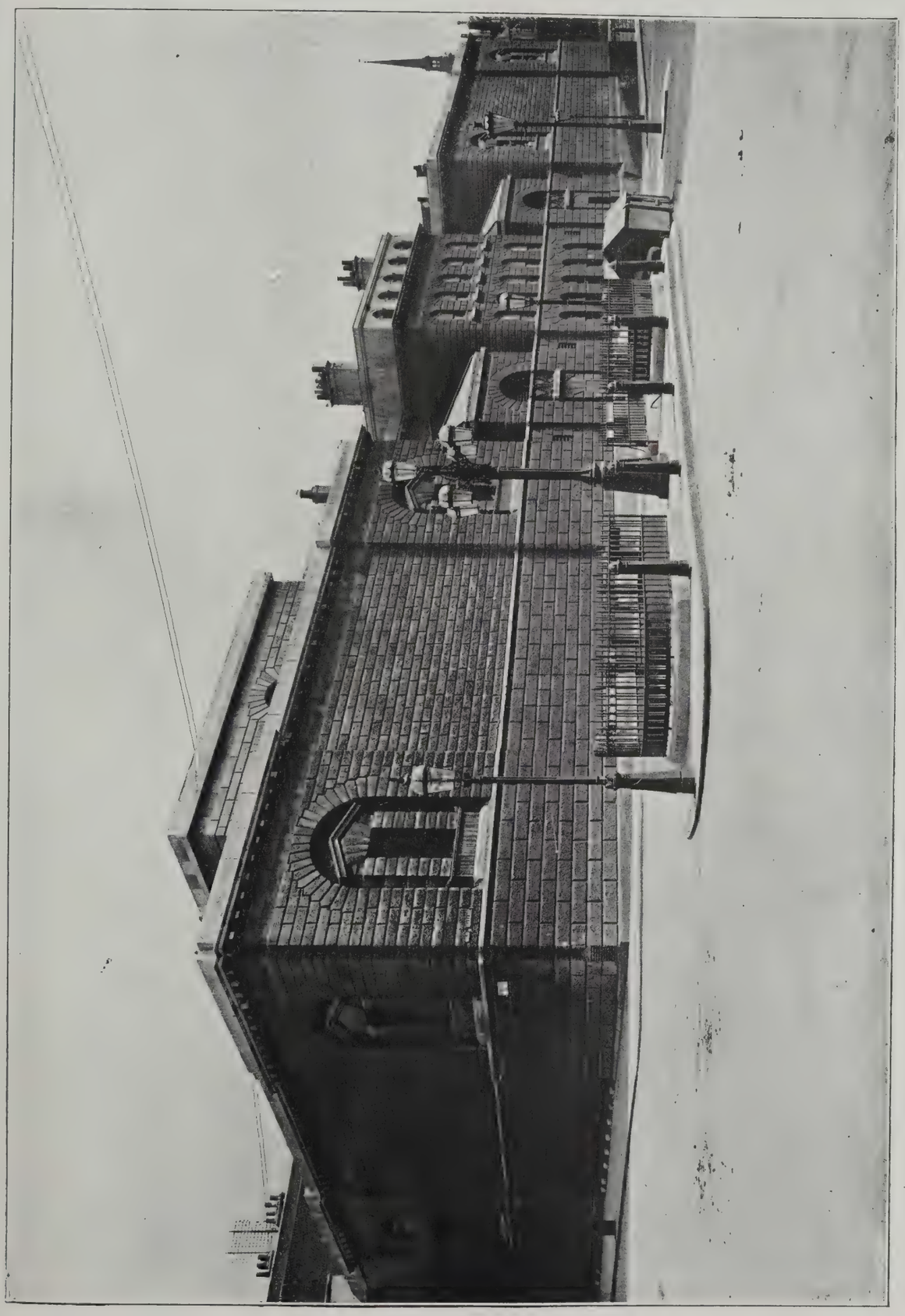


Photo: Arch. Review Photo Bureau.

NEWGATE PRISON, FROM THE CORNER OF NEWGATE STREET AND OLD BAILEY. NOW DEMOLISHED.
GEORGE DANCE, JUNR., ARCHITECT.





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SEATON DELAVAL, NORTHUMBERLAND. SIR JOHN VANBRUGH, ARCHITECT.



BLENHEIM PALACE, WOODSTOCK, OXFORD. SOUTH FRONT; GENERAL VIEW. SIR JOHN VANBRUGH, ARCHITECT.

H. W. Taunt & Co.



Photo: Arch. Review Photo Bureau.

ADELPHI TERRACE, LONDON. THE BROTHERS ADAM, ARCHITECTS.



WATERLOO BRIDGE. JOHN RENNIE, ARCHITECT.



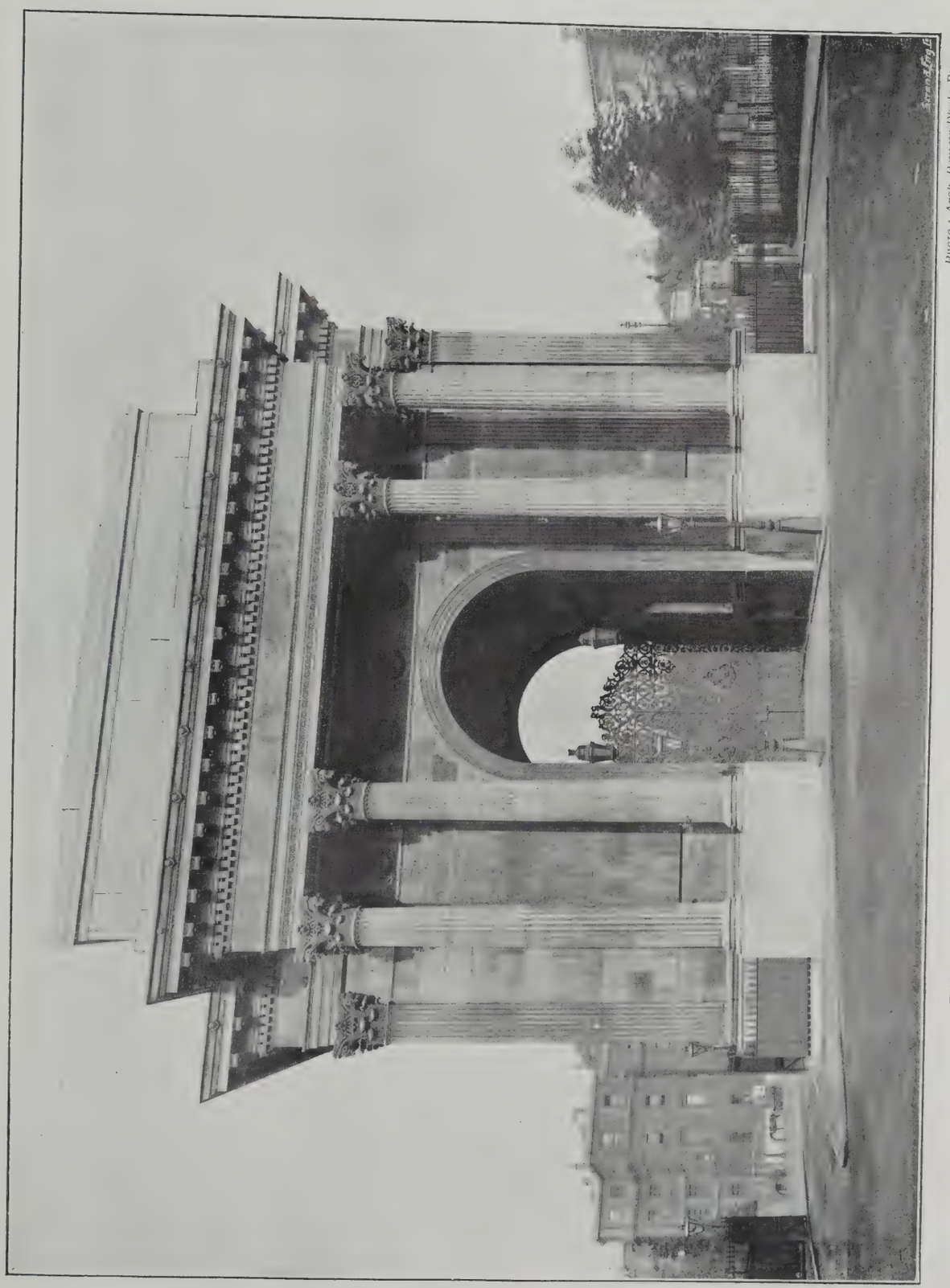
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TEMPLE BAR, AS RE-ERECTED AT THEOBALD'S PARK, HERTFORDSHIRE. SIR CHRISTOPHER WREN, ARCHITECT.



Photo: Arch. Review Photo Bureau.

THE CUSTOMS HOUSE, DUBLIN. JAMES GANDON, ARCHITECT.



THE WELLINGTON ARCH, HYDE PARK CORNER, LONDON. DECIMUS BURTON, ARCHITECT.

Photo : Arch. Review Photo Bureau.

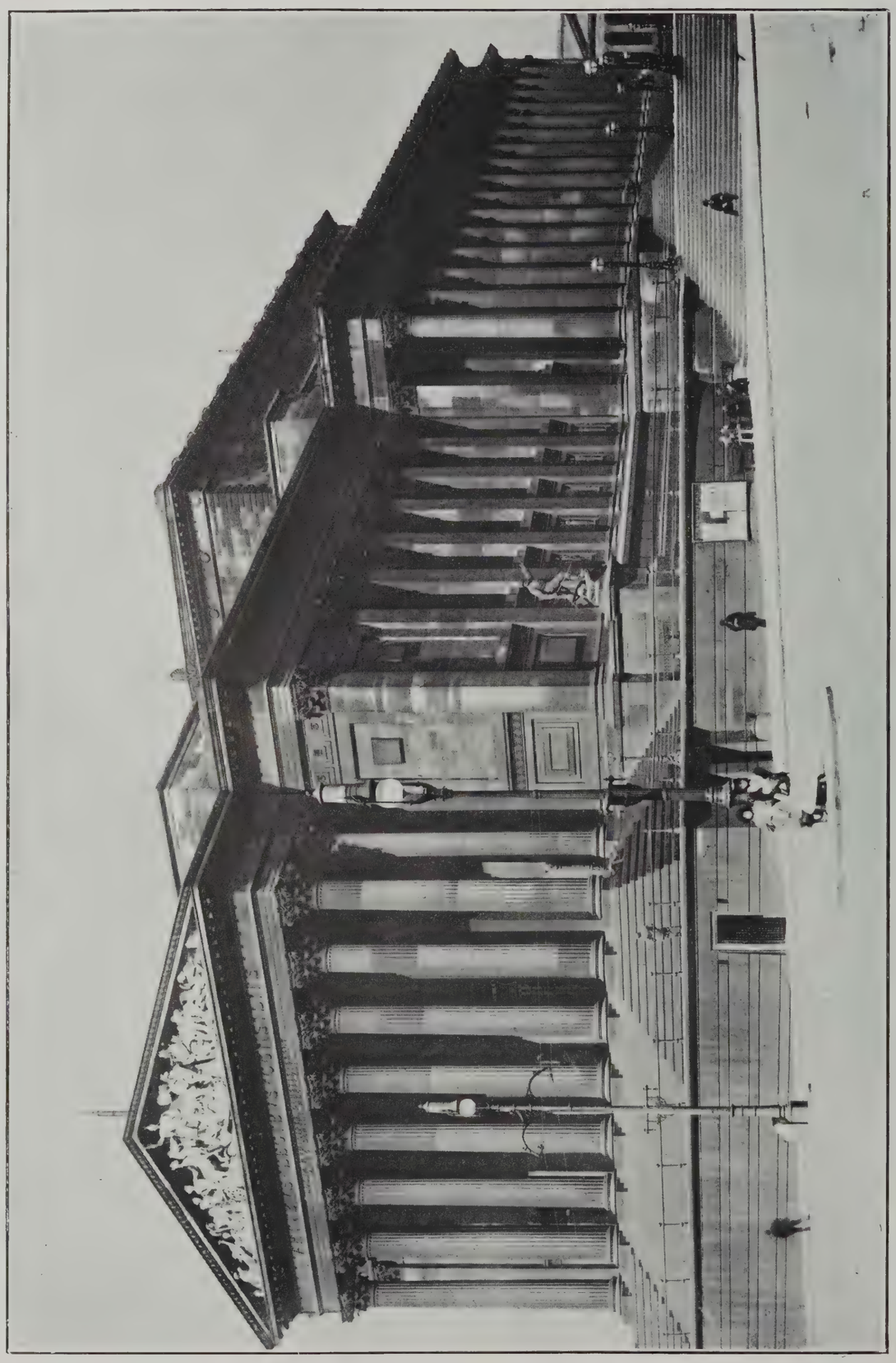


Photo: R. P. Jones.

ST. GEORGE'S HALL, LIVERPOOL, FROM THE SOUTH-EAST. HARVEY LONSDALE ELMES, ARCHITECT.



From a Photo lent by the Sun Insurance Office.

THE SUN INSURANCE OFFICE, THREADNEEDLE STREET, LONDON. BEFORE ALTERATION.

CHARLES ROBERT COCKERELL, R.A., ARCHITECT.



Photo: Annan.

CHURCH IN ST. VINCENT STREET, GLASGOW, FROM THE SOUTH.

ALEXANDER ("GREEK") THOMSON, ARCHITECT.

EVENTS AND PERSONALIA OF THE YEAR AND RECENT IMPORTANT BUILDINGS.

THE ARCHITECTURAL PROFESSION AND ITS WORK IN 1908: A RETROSPECT.

Although, unfortunately, many architects are suffering from the effects of the financial stress which is now more or less affecting all classes of the community, yet the current year has witnessed the completion of numerous important buildings. For instance, among others, Town Halls or municipal buildings have been opened at South Shields (Mr. E. E. Fitch); Chelsea (Mr. L. Stokes); Ilkley (Mr. W. Bakewell); Ossett (Messrs. Hanstock and Sons); Holborn (Messrs. Warwick and Hall); Lambeth (Messrs. Warwick and Hall); Stockport (Sir A. Brumwell Thomas); Hull (Messrs. Russell and Cooper); Wallsend (Messrs. Liddle and Brown). Various ecclesiastical structures have been carried to completion during the present year, including the following churches, viz.:—St. Wilfred, Harrogate (Mr. Temple Moore); St. Hilda, Crofton Park (Messrs. Greenaway and Newberry); St. Luke, Bournemouth (Messrs. Hall and Holland); All Saints, Barry (Mr. Bruce Vaughan); St. Barnabas, Dulwich (Messrs. Oliver, Leeson and Woods); All Saints, Uplands, Gloucestershire (Mr. Temple Moore); All Saints, Hampton-on-Thames (Messrs. Greenaway and Newberry); St. John's, Ayres Road, Trafford, Manchester (Mr. R. B. Preston); Four Oaks, Birmingham (Mr. E. F. Reynolds); St. Luke's, Wimbledon (Mr. Jackson). The coping stone of one of the pinnacles, which completed Mr. Caröe's work of restoration on the Central Tower of Canterbury Cathedral was fixed by the Primate in April; and early in June the dedication took place of the north and south turrets and portal of the west front of Hereford Cathedral; whilst Hexham Abbey has undergone restoration under the direction of Mr. Temple Moore; and the Bell Tower of Chichester Cathedral under Mr. Somers Clarke.

Many new school buildings, of various types, have been opened, including the Municipal College, Portsmouth (Mr. G. E. Smith); Sir John Cass School, Aldgate (Mr. A. W. Cooksey); Okenrod New Council School, Rochdale (Messrs. Sykes and Evans); New Elementary School, Bedminster, Bristol (Mr. Dare Bryan); Edinburgh College of Art (Mr. J. M. Peddie); St. Alban's Grammar School new buildings (Mr. P. C. Blow); Halton Bank Schools, Pendleton (Mr. J. H. Woodhouse); Ruthneston Public School, Aberdeen (Mr. J. A. O. Allan); Council School, Kingsbridge, Glamorgan (Mr. W. T. Nash); Council School, Alma Road, Bournemouth (Mr. F. Lacey); County Schools for Girls, Richmond (Messrs. Garvis and Richards); Hemingford Council School, Birkenhead (Mr. J. T. Rees); High School for Girls, St. Alban's (Mr. A. L. Champneys); New Council School, New Brighton (Messrs. Edmunds and Kirby); Engineering Laboratories, Heriot-Watt College, Edinburgh; additions to Haileybury College (Messrs. J. W. Simpson and Ayrton).

Among the completed hospitals, infirmaries, and other works of a like nature are the following, viz.:—Colony for Epileptics, King's Heath, Birmingham (Messrs. Whitwell and Son); Cardiff Mental Hospital, Whitechurch (Messrs. Oatley and Skinner); Dingwall Sanatorium (Messrs. Ross and MacBeth); Dispensary, Cape Hill, Smethwick; Infirmary and Nurses' Home, Selly Oak, Birmingham (Messrs. Whitwell and Son); Maternity Hospital, Glasgow (Mr. R. A. Bryden); Fylde Union New Workhouse (Messrs. Heywood and Harrison); the New Royal Infirmary, Manchester (Messrs. Hall and Brooke); the Booth Hall Workhouse and Infirmary (Messrs. Worthington and Son).

Public libraries have been opened at Hackney (Mr. H. A. Crouch); Belfast (Messrs. Watt and Tulloch); Southwark (Mr. Claude Batley); Reading, Islington Central and Branch Libraries (Mr. H. T. Hare); and a Library and Memorial Hall have been erected at Eton in memory of old Etonians killed in the South African war (Messrs. Hall and Greenslade).

Among the commercial and other buildings of a semi-public nature erected during the year are the following, viz.:—The Imperial Buildings, Rotherham (Mr. J. Platt); Refuge Assurance Co.'s Buildings, Oxford Street, Manchester (Mr. Paul Waterhouse); the Royal Insurance Co.'s building in Piccadilly (Mr. J. Belcher); the "Morning Post" offices (Messrs. Mewes and Davis); the New St. James' Hall, Great Portland Street, London (Messrs. Joseph and Smithem); Public Sea-water Baths at Seacombe; the New Waldorf Hotel in the Strand (Messrs. Marshall, Mackenzie and Son); a new Post Office at Birkenhead (Mr. W. Potts); Hornby Street Artisans' Dwellings, Liverpool; new premises for the British Medical Association, Agar Street, Strand (Messrs. Adams and Holden); new Post Office, Warrington (Messrs. Parkinson and Sons); the Hippodrome Palace of Varieties, Middlesbrough (Mr. G. F. Ward); tenement houses, Flaxman Terrace, St. Pancras (Messrs. Joseph and Smithem); residential flats at Albert Gate (Messrs. Hart and Waterhouse).

Having thus enumerated scome of the more important of the public buildings of the year, it may be of interest to briefly review the actions of the Royal Institute of British Architects during the past twelve months. In this connection it is a pleasure to state that there has been a very satisfactory increase in the membership of this the leading architectural society, which now includes 906 Fellows, 1,288 Associates, and 45 Hon. Associates within its ranks. Early in the year Mr. W. J. Locke, who had so ably carried out the secretarial duties of the Institute for the past eleven years, was compelled —to the great regret of all who knew him—to tender his resignation, and Mr. Ian MacAlister was duly appointed to fill the vacancy thus created. At the annual general meting held in May, it was announced that the Royal gold medal had been awarded to the well-known French architect, M. Honoré Daumet, in recognition of his work as an architect, and of his services in connection with the cause of architectural education. It was also stated that the revision of the Institute form of contract was contemplated, and that the following questions were under the consideration of committees appointed to report thereon to the Council, viz.: (1) The desirability of inserting some additional provision in the Institute form of contract in the event of the bankruptcy of the contractor; (2) the possible liability of a building owner under the Workmen's Compensation Act; (3) the L.C.C. General Powers Bill, 1908; (4) the question of professional advertising.

Notice was also given of some intended alterations in the intermediate and final examinations, under which, for the former, instead of papers on (1) classic ornament, (2) mouldings and ornament, (3) the orders, and (4) history of architecture, two papers for the future will be set on the following subjects, viz.:—(1) The general history of architecture, and (2) the purpose of architectural features in relation to the buildings in which they occur. In the final examination the papers on "Mouldings, Features and Ornament" will be re-modelled, and in the future the candidate must show his knowedge of the principles of architecture, their theory and application, not only by drawings but by an illustrated thesis upon the subject.

The very successful eighth International Congress of Architects was held in Vienna (May 18th—24th), under the auspices of the Austrian Committee and the leading architectural societies of that



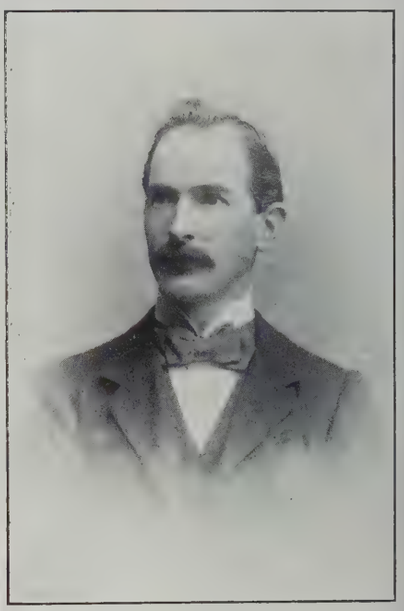
MR. G. IAN MACALISTER, B.A., OXON.
Secretary of the Royal Institute of British Architects.
Mr. Macalister is receiving many Congratulations on his approaching marriage in January.



Mr. Leonard Aloysius Scott Stokes,

Vice-President.

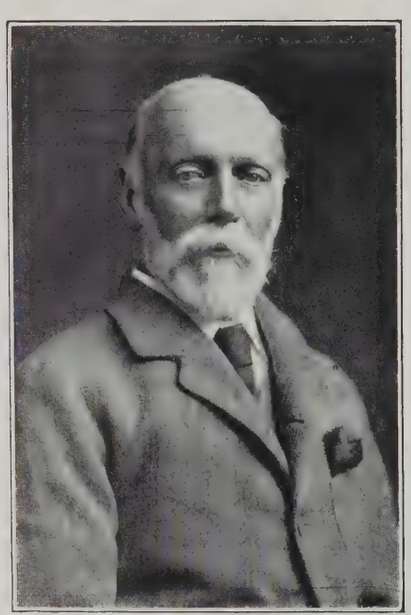
Born in Southport. Came to London in 1871, and was articled to S. J. Nicholl in 1874, and later spent some time with James Gandy, quantity surveyor. Pugin student, 1880. Has worked under G. E. Street, R.A., Thomas Collcutt, and Bodley and Garner. Is architect of many churches and domestic buildings, and his modern Gothic work is greatly appreciated. Has lately designed several telephone exchanges.



Mr. James Glen Sivewright Gibson,

Vice-President.

Born in Arbroath, Forfarshire. Came to London and entered the office of Mr. Wallace. There met Mr. S. B. Russell, whom he later joined in a long and famous partnership, since dissolved. Mr. Gibson's practice has been mainly in public buildings, and the firm of Gibson and Russell became famous in the annals of competitions. Among Mr. Gibson's recent works is Caxton House, Westminster.



Mr. Edwin Thomas Hall,

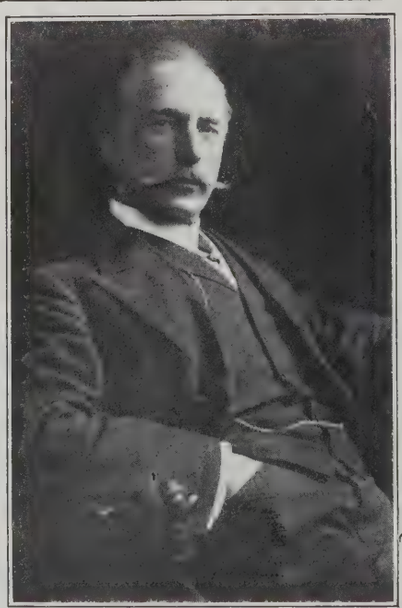
Vice-President.

Born Suffolk, 1851. Educated, South Kensington School of Arts; office of late J. Fogerty. Commenced practice, 1876. Professional work, churches, mission halls, mansions, public buildings, hospitals, including St. Ermin's Hotel, Westminster; head offices of the Metropolitan Asylums Board, Victoria Embankment; National Board, Victoria Embankment; Sanatorium, Frimley; New Royal Infirmary, Manchester, in conjunction with a Manchester colleague.

Mr. John William Simpson,

Vice-President.

Born 1858. The family have been practising architects for three generations. Educated at private schools. Articled to his father; admitted student of Royal Academy, 1878; passed first compulsory examination held for admisisson to R.I.B.A., 1882; membre de Comite, Permanent des Congress Internationaux des Architectes; architect of Roedean School, Brighton; and numerous private houses, studios, etc., throughout the country.



Mr. Ernest George,

President.

Born London, June 13th, 1839. Educated Brighton, Reading. R.A. gold medal for architecture, 1859; Queen's gold medal of the Royal Institute of British Architects, 1896. Articled to S. Hewitt; entered Royal Academy as student; began practice with T. Vaughan; at Vaughan's death was joined by Harold Peto, and on Peto's retirement by A. B. Yeates. Professional work: Stoodleigh Court, Devon; Rousdon, Devon; Motcombe, Dorset; Batsford, Gloucester; Edgeworth Manor, Gloucester; Monk Fryston, Yorks; Poles, Herts.; North Mymms, Herts; Buchan Hill, Sussex; Dunley Hill, Surrey; Welbeck Abbey; Eynsham Hall, Oxon.; Sedgwick Park, Sussex; Ruckley Grange, Salop; Busbridge Park, Surrey; Crathorne Hall, Yorks; Shiplake Court; Harrington Gardens; Mount Street; Collingham Gardens, S. Kensington; houses in Cadogan Square and Berkeley Square; Albemarle Hotel and Ossington, Newark; Church of St. Andrew, Streatham; St. Pancras, Rousdon, Devon; the churches of Samaden and Tarasp, in the Engadine; villa at Antibes, France. Publications: as an etcher—"Etchings on the Mosel," "Etchings on the Loire"; in Belgium; in Venice.



Photographs:—Mr. Ernest George and Mr Leonard Stokes, by Russell & Sons, London. Mr. J. W. Simpson by Histed, London. Mr. E. T. Hall by Lafayette, Ltd., Manchester and Mr. J. S. Gibson by Lowden & Son, Dundee.



SIR A. BRUMWELL THOMAS, F.R.I B.A.
Vice-President of the Architectural Association.



Photo: G. C. Beresford.
MR. WALTER CAVE, F.R.I.B.A.
President of the Architectural Association.

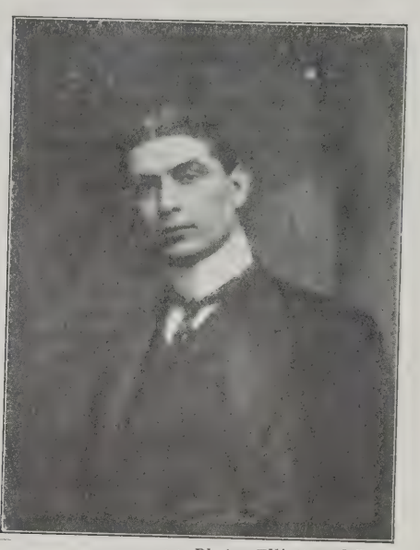


Photo: Elliott and Fry.
MR. HENRY TANNER.
Vice-President of the Architectural Association.



Photo: Whiteleys.
MR. D. G. DRIVER.
Secretary of the Architectural Association.

city, and its proceedings were duly reported in our columns. In July, through the influence of the R.I.B.A., the beautiful series of drawings executed by Mon. Jean Hulot, illustrating his conjectural restoration of the ancient provincial citadel of Selinus on the south-west coast of Sicily, were lent by the French Government for public exhibition at the gallery of the Royal Society of Painters in Water Colours. Among the competitions of the year, that for the proposed London County Hall, won by Mr. R. Knott, naturally overshadows all others. We have already drawn attention to the architectural poorness of the successful design, and to the numerous defects evinced in its planning, and no more need now be said on the subject. We must, however, reiterate our conviction that the London County Council is about to perpetrate one of the greatest of its many architectural blunders by the sanction it has given to the construction of a mean, insignificant, and entirely inadequate embankment roadway on the south side of the Thames. Other competitions include those for public baths at Castleton, Rochdale (won by Messrs. Wallis and Bowden); schools at Ellesmere Port, near Birkenhead (Messrs. Beacon and Horsburg); a cottage hospital at Hoylake (Messrs. Grayson and Ould); town hall at Radcliffe (Messrs. Gillow and Holt); a public hall and institute at Ainsdell, Lancashire (Mr. G. H. Willoughby); new schools at Eccles (Mr. H. Lord); libraries at Cradley Heath and Old Hill, Rowley Regis (Messrs. Wills and Anderson); new secondary schools for Market Drayton (Mr. J. Holt); new Liddle School and School of Art, Tiverton (Mr. W. H. Ashford); intermediate school for boys, Cardiff (Messrs. Teather and Wilson); Dudley Workhouse extension (Messrs. Nicol and Nicol); Abbey Road Schools, Oldbury (Mr. W. F. Edwards); new Council schools, Nantwich (Mr. H. Brown); secondary school, Brigouse (Messrs. Sutcliffe and Sutcliffe); technical institute, Colchester (Messrs. Jques and Newman); Free Library, Port Ellesmere (Messrs. Sproat and Warwick); Grammar School, Malton (Mr. W. H. Brierley); Free Library, Llangollen (Messrs. Teather and Wilson); isolation hospital, Salisbury (Mr. J. H. Goodman); secondary schools, Bromley, Kent (Mr. Burke Downing); workmen's dwellings, Chelsea (Messrs. Wills and Anderson); and the Glamorgan County Hall, Cardiff (Messrs. Harris and Moodie); the mention of the last-named competition recalls the undoubted fact that, had it been generally known that the President of the R.I.B.A. would refuse to nominate a suitable assessor for this competition, many architects would have been saved a considerable amount of labour and expense. As a matter of fact, the Institute's policy with regard to the conduct of architectural competitions is going from bad to worse. Time was when the legitimate grievances of competing architects were well safeguarded by the vigilance and energy of the Competitions Reform Society, for which the present competitions committee of the R.I.B.A. has proved anything but an efficient substitute.

THE ARCHITECTURAL ASSOCIATION IN 1908.

The principal work of this, the most active of our Architectural Societies, has been the extinction of the building debt occasioned by the Association's removal to its present quarters in Tufton Street. Another matter, which is of more social interest, is the development of the Athletic Club under the aegis of the President, himself well-known in the athletic world. The Athletic Club now embraces cricket, hockey, Association football, Rugby football, rifle, rowing, and swimming sections.

The Architectural Association School continues to progress, and affords a thoroughly good training. The general opinion of the Association officials with regard to the number of young men taking up the profession of architecture is, that there are no more entering the profession now than there were some years ago. The class of men they are at present training should prove an acquisition to the profession of architecture. The overcrowding of the profession, which is so apparent at the present time, is attributed to the general depression in the building trade; and consequently to a shortage of work amongst architects, many of whom have been obliged to dispense with the services of assistants for whom they have no work to do. The general register of assistants which the Architectural Association has kept open heretofore will probably have to be restricted to the use of their own members and pupils, as during the past year they have found the number of assistants want-

ing employment has risen to enormous proportions, and the inclusion of outsiders acted detrimentally to the interests of their members. Moreover a large proportion of these outsiders could not produce work which was really satisfactory, and the Association scarcely cares to take the responsibility of recommending them. It is the contention of those who are interested in the Architectural Association School that many of the assistants who are out of employment at the present time are not really fitted for the profession of architecture, and that they have been displaced by better and more highly trained men. We put forward this explanation in view of the articles we have recently published on the depression in architecture."

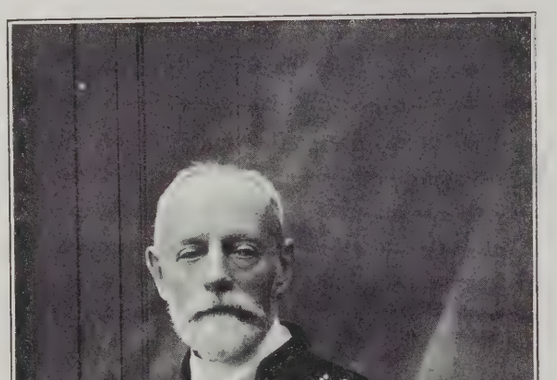
The Architectural Association play this year was a great success, and we learn that there is another play in preparation which will be produced towards the end of March next year. The Musical Society is flourishing exceedingly, and undertook the musical programme both at the play, and at the recent conversazione.

ROYAL INSTITUTE OF ARCHITECTS OF IRELAND IN 1908.

The Royal Institute of the Architects of Ireland holds the distinction of being the oldest architectural society in the United Kingdom, with the single exception of the Royal Institute of British Architects, which claims seniority by two years only.

The past session has been a particularly strenuous one for its council and members. New premises have been acquired for the purpose of providing adequate accommodation for the growing needs of the Institute. Its financial condition has been greatly improved, as the result of steps which have been taken by the council during the past year.

After very careful consideration, and consultation with the Architectural Association of Ireland, it has been decided to form a class of students in the Institute, admission to which will be by a qualifying examination, in order to afford an incentive for systematic and diligent study on the part of the architectural student.



M. HONORÉ DAUMET, ROYAL GOLD MEDALLIST, 1908.

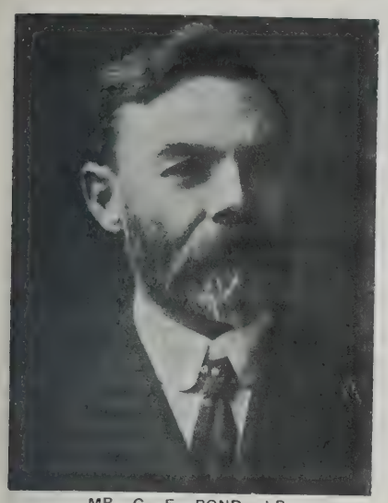
His Majesty the King has confirmed the Institute the continued use of the term "Royal," a title which the Institute has enjoyed since the late Queen became its patron near 68 years ago. Steps have also been taken to incorporate the Institute under the Companies' Acts, and a new constitution has been drawn up and the by-laws completely revised.



MR. FREDERICK BATCHELOR, A.R.H.A., F.R.I.B.A.
President of the Royal Institute of Ireland.

THE SOCIETY OF ARCHITECTS IN 1908.

During the session expiring October 1908, 88 members, 2 hon. members, and 85 students were added to the register while three had been transferred to the retired list. Allowing for deaths, removals, and resignations, the total membership now stands at 975, an increase over last year of 132. The Society sustained a severe loss in the death of the President, Mr. A. Frank Vallance, F.R.I.B.A., who passed away on East Eve, after a few weeks' illness. His death deprived the Society of one of its most energetic and earnest supporters. Mr. E. J. Hamilton, of Brighton, past president, filled the vacancy for the remainder of the session. The Society's official journal has been reproduced in a new and improved form. The half-yearly examinations to qualify for membership were held in Manchester and London during October and April. The examination for the architectural scholarship, 1908, was held in London, Manchester, Edinburgh and Johannesburg in May, the winners being Mr. J. R. Leathart, of London, Mr. William B. Walton, of Blackpool won the travelling studentship competition, the subject set being a library on the open access system. The council is gratified to see the increasing use of the Society's library, for which a new catalogue has been published at a cost of 6d. In support of the principle of registration, an agreement has been come to with the Incorporated Association of Municipal County Engineers. Mr. L. Atherley-Jones, K.C., M.P., the hon.



MR. G. E. BOND, I.P.
President of the Society of Architects.

nember in charge of the Society's Bill in Parliament, was unfortunate in the ballot for private members' Bills, and it was herefore impossible to make any further progress with it during the present session of Parliament. The council opposed he London County Council General Powers Bill. The late Mr. R. F. Valance and the hon. secretary, Mr. Ellis Marsland, represented the Society at the ighth International Congress of Architects at Vienna in May. The gold medal f the Society was presented to Mr. A. . Pridmore, the immediate past president of the Society. The council has iven active support to the Architects' Benevolent Society, and also has subcribed to the committee for the survey f London. Visits were paid during the ear to the works of the Associated Portand Cement Manufacturers, at Swanscombe, Messrs. Walkers, Parker and Co.'s ead works at Lambeth, and the new Selridge Store building in Oxford Street. The lease of the Society's present preises having nearly expired, the council s in negotiation for permanent premises n Bloomsbury. The Society of Architects Masonic Lodge, which was formed year ago, has now become firmly stablished.

THE ABERDEEN SOCIETY OF ARCHITECTS IN 1908.

The work of the Society this session has en comparatively light. Owing to the revailing dullness in the architectural rofession, the business generally has been confined to work of a routine nature. mongst other matters, a course of lectres has, in co-operation with the Aberen Architectural Association, been instited for the benefit of architects' pupils nd apprentices, and a series of competions in drawing and design has also en started in connection with the architctural classes at Gray's Art School, izes being awarded by the Society to e winners of the competitions. An "at ome" was held at the beginning of the ssion in conjunction with the Associaon in the Art School, which was attended a large number of architects and their sistants, pupils and friends, when the I.B.A. prize drawings for the year were hibited, along with a selection of drawgs and engravings kindly lent by the oyal Institute.

The council of the Society have also is year revised the carpenter work mode

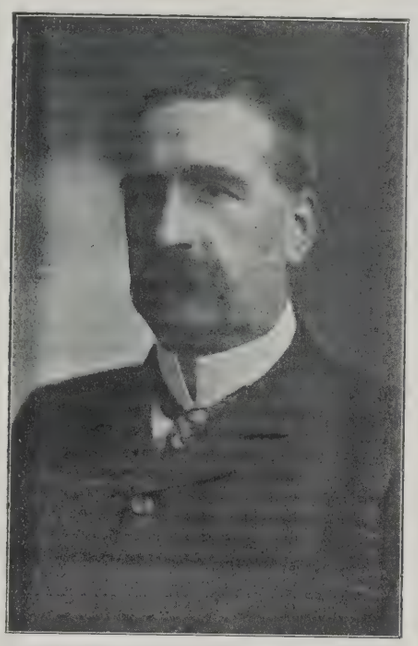


Photo: Morgan.
MR. JOHN RUST.
President of the Aberdeen Society of Architects.

of measurement for schedules of quantities, and have, in co-operation with the Aberdeen Master Carpenters' Association, amended and brought it up-to-date.

THE BIRMINGHAM ARCHITECTURAL ASSOCIATION IN 1908.

The Society has found a new home in the Exchange Buildings, in conjunction with the Photographic Society. The new rooms possess accommodation which has long been needed, and it is hoped that the extra spaciousness of the new quarters will induce more members to attend the general meetings and listen to the papers read. Among the interesting papers was that on "Competitions," by Mr. Herbert Wills, and Mr. Dixon's lecture on "Mediæval Sculpture in France." The meeting following was devoted to papers on two deceased architects, one a former president of the Association, and both for many years eminent members of the profession in Birmingham. Mr. Bidlake gave a lecture on "Towers and Spires"; Mr. Bulkeley Cresswell one on "The Architect's Client," which was of a humorous character. Among other interesting papers was that of Mr. Reynolds, on "Comparisons of Eastern and Western Architecture," on "Domed Churches," by Professor Beresford Pite, and on "Old Cottages and Manor Houses," by Mr. Jones. The work of the council during the past session presents a few points of general interest. Considerable progress has been made in the all-important matter of architectural education, and the council hopes shortly to present a complete scheme before the Society. For the coming session the Society have arranged a number of promising papers. Mr. A. S. Dixon lectures on "Early Roman Churches" on January 22nd; Mr. J. A. Gotch lectures on February 5th on the "Elizabethan House," and Mr. C. H. Holden will probably provoke discussion by his paper on "Aboriginality of Architecture," which is to be given on March 5th. A fund has been established for the increase of the library.



Photo: Lambert.
MR. MOWBRAY A. GREEN, F.R.I.B.A.
President of the Bristol Society of Architects.

CARDIFF, SOUTH WALES, AND MONMOUTHSHIRE ARCHITECTS' SOCIETY IN 1908.

The membership of the above Society for the year ending December 31st, 1908, comprises 35 members and 15 Associates. Competitions in design were held during the season 1907-8, and members of the council attended at intervals and inspected and criticised the works submitted therein, and as a result of the competitions prizes were awarded to Messrs. H. Norman Edwards and D. F. Ingleton. The Council of the Society during the past year has taken action in several matters of interest to the profession, both locally and generally.



MR .H TEATHER, F.R.I.B.A.
President of the Cardiff, South Wales and Monmouthshire Society of Architects.

Local preliminary and intermediate examinations for the Royal Institute of British Architects were held in Cardiff by the Society in June and November.

An exhibition of the R.I.B.A. prize drawings was held at the rooms of the Society from July 6th to 10th inclusive, and an exhibition of students' drawings sent down by the Society of Architects was also held in the same rooms from June 18th to 24th inclusive.

Both exhibitions were well attended by the members and Associates of the Society.

DEVON AND EXETER ARCHITECTURAL SOCIETY IN 1908.

This Society, founded in 1887, was allied to the Royal Institute of British Architects in the year 1891, and consists of about 90 members, divided into three classes, embracing the counties of Devon and Cornwall, with Exeter as its centre. The president for the present year is Mr. James Crocker, F.R.I.B.A., of Exeter, and the vice-president, Mr. W. H. May, M.S.A., of Plymouth, who with a council of twelve, form the governing body. The hon. secretary is Mr. Allan J. Pinn, A.R.I.B.A., of Exeter. The objects of the Society are, amongst other things, the general advancement of architecture and the various arts and sciences connected therewith. There is a small but useful and increasing library, and a prize is annually offered to students for measured drawings. The work of the year includes five papers, as follows:—"Reinforced Concrete," by Mr. Charles Cole, M.S.A.; "Some Notes on the Life and Works of Sir Charles Barry, R.A., F.R.S., by Mr. James Crocker, F.R.I.B.A.; "Some Modern Applications of the Orders," by Mr. C. J. Tait, F.R.I.B.A.; "Some Peculiarities in the Construction of Hollow Walls," by Mr. T. A. Andrews;

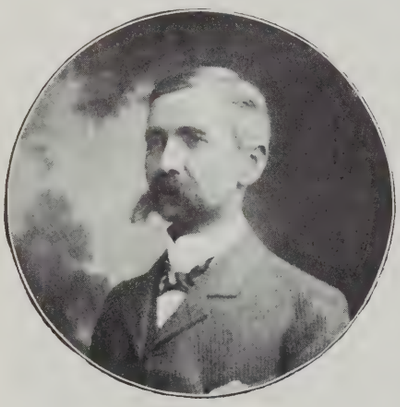


Photo: H. T. Jessop.

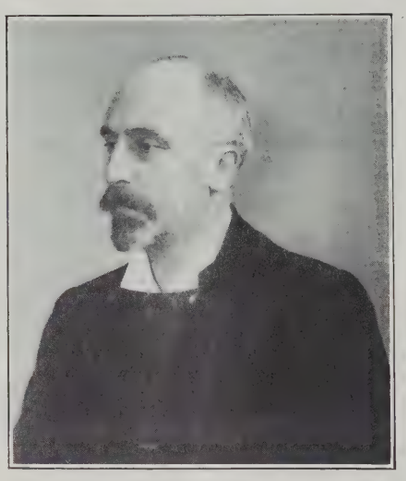
MR. JAMES CROCKER, F.R.I.B.A.
President of the Devon and Exeter Architectural Society.

"Hospital Planning and Construction," by Mr. J. C. Southcombe.

Many matters of professional importance have been discussed and dealt with from time to time, and the rules of the Society are at present under revision.

THE EDINBURGH ARCHITECTURAL ASSOCIATION IN 1908.

The inauguration of this, the jubilee session, was marked by two events of considerable importance in the history of the Association. The first of these was the architectural exhibition held during the summer months of 1907. This exhibition comprised works extending over a period of 60 or 70 years, collected from all parts of Scotland. This was the second exhibition promoted by the Association, an earlier one having been held 25 years ago. Another event in the 1907-8 session was the visit of the Royal Institute of British Architects to Edinburgh in July last year, when the annual meetings took place. The visit commenced with a reception by the Lord



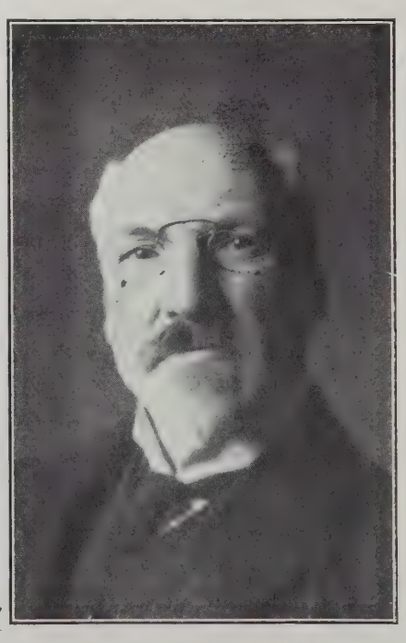
MR. JOHN T. MACLAREN.
President of the Dundee Institute of Architects.

Provost and magistrates in the City Chambers on the evening of July 4th. The annual dinner of the Institute took place on the Friday evening, and on Friday and Saturday a number of visits were made in Edinburgh and district under the auspices of the Association. A visit was paid by the Institute to the Architectural Exhibition.

The session's work comprise 16 meetings and visits. The address at the opening meeting was delivered by the Right Hon. Lord Kingsburgh, K.C.B., L.L.B., the subject being "Incongruities and Disfigurements." This address was published in booklet form and circulated throughout Scotland, copies being sent to the Corporations of the principal towns and to various Associations.

The session closed with the annual excursion on July 4th, 1908, to Holy Island, where Lisdisfarne Priory, St. Mary's Church, and Lindisfarne Castle were visited.

A golf club in connection with the Association was inaugurated, three outings being held during the session. In addition to performing the usual routine business, the council published the report of a special committee upon the condition of the Chapel Royal, Holyrood. The Associate section had a successful session during which 12 meetings and visits took place, and the usual studentship design competitions were held.



MR. JOHN WATSON, F.R.I.B.A.
President of the Edinburgh Architectural Association.

THE GLASGOW INSTITUTE OF ARCHITECTS IN 1908.

During the past year the Institute, as usual, took charge of the local examinations of the Royal Institute of British Architects.

The subject of international competitions was brought before the Institute by the R.I.B.A. The various articles for the regulation of these competitions were approved, but it was suggested that a larger representation of the country promoting the competition should be allowed.

The provisions of the Town Planning Bill were considered. These were approved of generally, but the Institute thought that the benefits the Bill is likely to confer would be increased and the danger of maladministration lessened by the inclusion of clauses providing for (1) the creation of locally-appointed committees of experts to whom the town planning schemes should be referred, and whole suggestions should be submitted to the Local Government Board; (2) specific permission for the Royal Institute of British Architects to appear before and make representations as "persons affected" at inquiries held by the Local Government Board before the approval of town planning schemes. The Institute has appointed a committee to co-operate with the R.I.B.A. Committee in the matter.



Photo: Warnenke

MR. GEORGE BELL, F.R.I.B.A.
President of the Glasgow Institute of Architects.

The Institute has agreed to co-operate with the R.I.B.A. in the compilation of a measured record of buildings in the United Kingdom suitable for study, and especially in the case of those of which no adequate record exists.

An exhibition of the competitive designs submitted by architects in Glasgow and neighbourhood (in whose number all the premiated designs were included) for the



Photo: Grun and Swan
MR. T. E. ECCLES, F.R.I.B.A.
President of the Liverpool Architectural Society.

Perth City Hall, was held in the Institute rooms in April last, and was well attended by architects and others. The Institute has decided to hold from time to time exhibitions of designs, submitted by members and others in competition, of sufficient importance, where either no public exhibition of the designs generally has been held by the promoters or the exhibition is too far from Glasgow to be readily accessible.

A circular has been issued to all architects in the province of the Institute calling their attention to the new constitution of the Institute, which now embodies a wider class of members as a result of its amalgamation with the Glasgow Architectural Association, and asking them to bring the question of their joining the associate section of the Institute before their apprentices and assistants. As the result of this amalgamation, the membership of the Institute now amounts to 225, of whom 85 are Fellows, 79 Associate members, 22 Student members, and 39 Lay members. In the first category are included nearly all within the district possessing the necessary standing and qualifications.

The Associate section continues as formerly to hold regular meetings in the rooms of the Institute, for the delivery of lectures, etc., and an interesting syllabus of papers and visits to works of interest is in course of being carried out.



MR. PERCY ROBINSON, F.R.I.B.A.
President of the Leeds and Yorkshire Architectural Society.

LIVERPOOL ARCHITECTURAL SOCIETY IN 1908.

It is now the 61st session of this Society. The present membership consists of 56 Fellows, 69 Associates, and 23 students, presided over by Mr. T. E. Eccles, F.R.I.B.A. The papers to be read are as follows:—

January 4th, 1909.—Paper by Thos. H. Mawson, Hon. A.R.I.B.A., "The Peace Palace at The Hague," with special reference to the park and gardens. (Illustrated by lantern slides and drawings.)

January 18th.—Second members' meeting. Paper by T. Faulkner Shepheard, "Competitions."

February 1st.—Fifth ordinary meeting. Paper by Mervyn E. Macartney, F.R.I.B.A., "The Three Churches of St. Paul." (Illustrated by lantern slides and drawings.)

February 15th.—Third members' meeting. Paper by T. T. Rees, F.R.I.B.A., "The Liability of Architects to Clients and Public."

March 1st.—Sixth ordinary meeting. Paper by E. Guy Dawber, F.R.I.B.A., "Materials and their value in relation to Domestic Architecture." (Illustrated by lantern slides.)

April 5th.—Annual general meeting.

The meetings, ordinary and members, are held respectively on the first and third Mondays of the month, the attendance averaging about 45. The students' prizes offered for competition by the Society have consisted of a travelling studentship, value £30, subscribed by members of the Society, and two prizes of £3 and £2 each for design, and two prizes of similar amounts for measured work. The improved financial state of the Society has enabled the council to slightly increase the expenditure upon the library, and to make a donation to the Architects' Benevolent Society.

MANCHESTER SOCIETY OF ARCHITECTS IN 1908.

The total membership is now 257, consisting of 109 Fellows, 89 Associates, and 59 students. Among the forthcoming papers is one on "The Architect's Use of Photography," by Mr. J. R. Wigfull, on January 9th, and "The Grand Manner in Architecture," by Professor C. H. Reilly, on February 13th. During the summer the summer the Society paid visits to the Co-operative Insurance offices, the telephone exchange, the Stockport Town Hall, the Royal Infirmary, the Christian Science Church, Hulme Hall, and the G.P.O. sorting office, the last being constructed entirely in reinforced concrete. During the year some 23 volumes have been added to the library. The club nights during the year have been well attended. The work of the council during the past session presents few points of general interest.



Photo: Lafayette, Manchester.
MR. PAUL OGDEN, F.R.I.B.A.
President of the Manchester Society of Architects.

THE NORTHERN ARCHITECTURAL SOCIETY IN 1908.

This Society now numbers 253 members, made up of 84 full members, 86 Associates, and 83 students. During the year excursions have been made to Sunderland, to the new church at Roker, and the pier works, to the municipal buildings at South Shields, the County Hall at Northallerton, and to the Abbey Church at Hexham. Papers read during the year were by Mr. de Coleville (in the unavoidable absence of Mr. Moritz Kahn) on "Reinforced Concrete"; by Mr. Joseph Oswald, on "The Glory that was Greece"; on November 11th the president's address, and on December 2nd a paper by Mr. C. C. Hodges on "Norman Architecture in the Northern Counties of England." The council regret the general depression in the building and allied trades and the small prospect of immediate improvement. They have felt it their duty to the ratepayers, broadly, and to the profession, personally, to strongly protest against the institution of the large, costly, and permanent architectural staff set up by the Newcastle Cor-

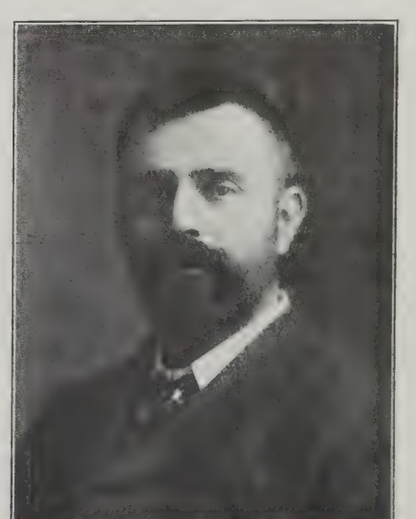


Photo: J. F. Forde.
MR. GEO. T. BROWN, F.R.I.B.A.
President of the Northern Architectural Association.

poration, knowing that if public work was placed in ordinary competition the ratepayers and the art of architecture would be benefited; that with the employment of private firms the cost would cease on the completion of the work, whereas the cost of a permanent staff never ceases, and architects who are all ratepayers are contributing to funds, the effect of which is causing their unemployment.

THE NOTTINGHAM ARCHITECTURAL SOCIETY IN 1908.

This Society had on March 21st two hon. members, 39 members, and 41 Associates. The annual dinner took place at the George Hotel on Monday, February

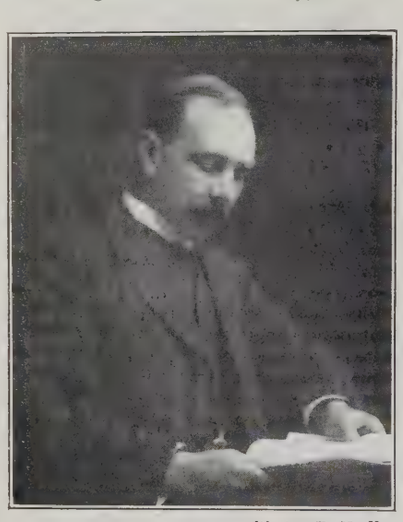


Photo: E. Hadley.
MR. A. ERNEST HEAZELL, F.R.I.B.A.
President of the Nottingham Architectural Society.

24th. An exhibition of the R.I.B.A. prize drawings was, by kind permission of Mr. G. H. Wallace, the curator, held at the council museum. The council regrets that the attendance at the general meetings has been particularly poor. It is to be hoped that more interest will be taken in the papers read on future occasions.

THE SHEFFIELD SOCIETY OF ARCHITECTS & SURVEYORS IN 1908.

Perhaps the three subjects which have most interested the members of this Society during the past year are: Building by-laws, architectural education, and the appointment of an official architect for the city.

After no less than seven years' deliberation on the part of a sub-committee, the City Council proposed to formally make new building by laws. These were of the usual cast-iron type, and contained many requirements most unsuitable for universal application in an area, which, in spite of the efforts of speculative property owners and builders, is still largely open country. From time to time this Society has made suggestions to the framers of the by-laws, mainly with a view to the elimination of fads, and the desirability of the inclusion of modern and up-to-date methods of construction, especially in regard to timber sizes and the use of reinforced concrete, but the final result is yet to be seen.

The year has seen the opening of a Department of Architecture at the local University. The movement has received a fair and growing measure of support, and the Department gives promise of exercising a decided influence on the training of young men entering the profession. For a period of three years the Society has guaranteed the University against loss on the Department, which shows that the members of the profession in this district have the courage of their convictions.

With respect to the third and last item mentioned above, the Society made a strong protest against the whole of the public work of the city being placed nominally in the hands of one man, however eminent and capable he might be. While recognising that certain classes of work must be carried out by officials, it was urged that to carry out all public work of whatsoever nature, in this manner, was not conducive to variety or freshness of design. Such an argument made no appeal to the City Council as a whole; "economy" was the cry, as if an official, of necessity, must carry out a building at less cost than a private practitioner, even when the latter's 5 per cent. is included. So the official architect has been appointed, and architects in private practice are urged to console themselves with the statement that a saving in the rates will be effected in which they, as ratepayers, will benefit indirectly, even if they lose a good slice of the work which enabled them to pay the said rates.

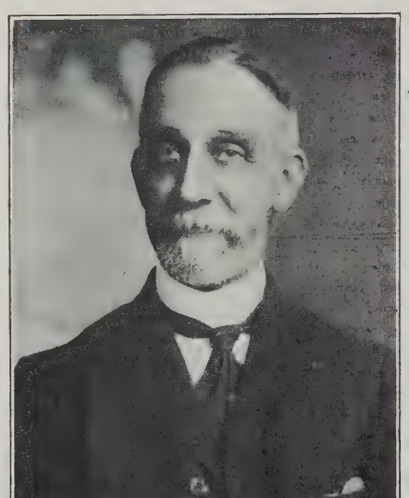


Photo: Thwaites.
MR. THOMAS MONKMAN.
President of the York and Yorkshire Architectural Society.

THE QUANTITY SURVEYORS' ASSOCIATION IN 1908.

The main work upon which this Association has been engaged is the consideration of the question of "uniformity of measurement." Encouraged by the immense success which has attended the labours of the Engineering Standards Committee, the Council considers that the time has now arrived when some attempt should be made to evolve a standard system of measuring and classifying the principal items which occur in nearly every bill of quantities. The formation of several provincial Associations, each of which adopts methods which vary considerably one from another, and all from



MR. ARNOLD E. HARRIS, J.P., F.S.I,
President of the Quantity Surveyors' Association,

the London system, renders this work imperative, and that no uniform system of measurement has hitherto been in existence is a fact which is deplored at every meeting of an architectural society, or at any meeting of an Association allied to the National Federation of Building Trades Employers, at which the question of quantities is under discussion.

Recognising that the appointment of a separate committee to deal with the question of standardising the measurements of each particular trade (a somewhat similar course to the one adopted by the Engineering Standards Committee referred to above), is rather a difficult undertaking for so young an Association, the Council has elected one committee, which is for the present dealing with one of the minor trades. This committee is now engaged in collecting evidence upon the method of measuring adopted in this trade in various provincial centres, and in interviewing delegates from representative bodies interested therein, and as a result of its labours it is believed that a uniform system, acceptable to all those whose interests are affected, will be evolved. Another important matter which the Council has had under consideration for the past twelve months is the terms of contract into which a quantity surveyor is generally required to enter when employed direct by a public authority. Some few of the more important public bodies, the London County Council and the Asylums Board, for instance, which have many building works on hand, and are in the habit of frequently employing a quantity surveyor, possess recognised forms of contract which have been in operation for some years past, but, with these exceptions, for each separate appointment a special contract has to be prepared.

This document is, more often than not, drawn up by the clerk to the authority, who is utterly unacquainted with the intricate and complicated nature of the quantity surveyor's work, and it as a rule contains some stringent clauses which operate rather more favourably to the employer than to the surveyor. The Council, recognising that the cost of the greater part of the building and engineering work which is undertaken by public authorities is met by loans sanctioned by the Local Government Board, deemed it expedient to approach that department on this question, and as a result of their representations the Council hopes that the agree-

ment upon which it is believed the Local Government Board will insist, will contain clauses under which the quantity surveyor's interests are safeguarded.

The Association is to be congratulated upon a considerable increase of membership, during the past year many leading members of the profession who had hitherto refrained from joining having now done so; the fact that the support of some of those who were originally opposed to its formation has now been secured is a striking testimony to the useful work the Association is doing for the profession. Any applicant for admission as a member must in the future pass either the Association's examination or have passed some examination which the Council shall consider equivalent.

OBITUARY, 1908.

Mr. J. B. Colson, F.R.I.B.A., architectural surveyor to the Dean and Chapter of Winchester Cathedral, died on January 21st, in his 55th year.

Mr. E. W. Mountford, F.R.I.B.A., died in London on February 6th. He was born at Shipston-on-Stour, Worcestershire, in 1855. Mr. Mountford held a foremost place among the profession as a designer of municipal buildings. He won the Sheffield Town Hall competition in 1890. His chief work is the new Central Criminal Court. He left estate valued at £23,239.

Sir James Knowles, M.C.V.O., died at Brighton in February. Some of his work included the Thatched House Club Building, Kensington (now pulled down), and the gardens in Leicester Square. He was the founder and editor of the "Nineteenth Century."

Mr. D. R. Dale, F.R.I.B.A., of London, E.C., died on February 29th, aged 71.

Mr. W. O. Callender, founder of the firm which is now the Val de Travers Asphalte Co., Ltd., and of Messrs. Callender's Cable and Construction Co., Ltd., died recently at Bournemouth, in his 81st year. He was a pioneer in the development of asphalt for roadways.

Mr. S. P. Rees, A.R.I.B.A., of London, E.C., died in March.

Mr. John Leslie died on March 18th at his residence in Knowsley, Liverpool. He was 82 years of age, and was for 35 years architect and surveyor to the Earl of Dudley.

Mr. Ernest Carritt, A.R.I.B.A., F.S.I., died in London on April 16th.

Mr. G. Gard Pye, a past vice-president of the Society of Architects, died on Easter Sunday, aged 59.

Mr. J. J. Stevenson, F.S.A., F.R.I.B.A., died in London in May, aged 77. He designed many large houses in the West-End, commencing with the Red House, on Bayswater Hill. His work at Cambridge included the new buildings at Christ's College, and the University Laboratory. Mr. Stevenson was the author of "House Architecture."

Mr. Herbert Davis, F.R.I.B.A., a past president of the York and Yorkshire Architectural Society, died on May 13th. He was 37 years of age.

Mr. A. E. Gough, A.R.I.B.A., of the firm of Giles, Gough, and Trollope, died from apoplexy, aged 66.

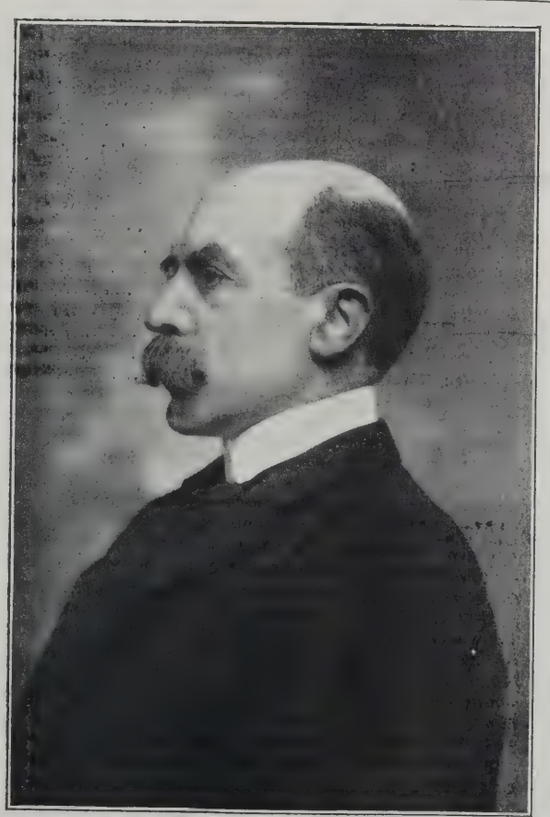


Photo: Elliott & Fry.

THE LATE E. W. MOUNTFORD, F.R.I.B.A.



THE LATE H. H. STANNUS, F.R.I.B.A.

Mr. F. H. Oldham, F.R.I.B.A., architect, of Manchester, died on June 30th. He was twice president of the Manchester Architectural Association before its amalgamation with the Manchester Society of Architects.

Mr. Alfred Darbyshire, F.S.A., F.R.I.B.A., died on July 5th, at his residence, Chatham House, Flixton, in his 70th year. His reputation is chiefly that of a theatrical architect.

Mr. R. Clifton Davy, architect, of Maidenhead, died in May, aged 57. He carried out many buildings in the town. His chief successes, however, were achieved in domestic work.

Mr. H. H. Stannus, F.R.I.B.A., A.R.C.A., died at Hindhead, Surrey, in August. He wrote the life of the eminent sculptor, Alfred Stevens. He was an active and a distinguished member of the R.I.B.A.

Mr. Leonard Judge, architect, died suddenly on August 26th, aged 26.

Mr. Leslie Green, F.R.I.B.A., died at Mundesley-on-Sea on August 31st, at the age of 34.

Mr. John William Lotherington Whitfield, architect of Hull, died suddenly on August 22nd. He was 53 years of age.

Mr. Edward Hodkinson, architect, of Chester, died on September 14th. He designed many notable buildings. He was a well-known member of the Chester and North Wales Archæological Society.

Mr. Thomas Winn, architect, of Leeds, died in October at Headingley.

Mr. Francis Adams Sprules, A.R.I.B.A., of Sheffield, died on Scawfell on October 15th. He was 27 years of age.

Mr. Lewis Henry Isaacs, F.R.I.B.A., of Bayswater and Gray' Inn, died suddenly on October 17th, at the age of 78. He designed a great many buildings in London, including the King Lud Tavern and Holborn Viaduct Hotel and station.

Mr. Edward Taylor, architect, of Bootham and York, died suddenly. He designed a large number of Wesleyan chapels in the York district. He was 78 years of age.

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS AND ITS WORK IN 1908.

Origin.

The National Federation owes its origin to the need that was felt by the Trade for some better means of resisting Trades Union demands. Its existence was of course only made possible by the previous growth of local Associations of Employers in various parts of the country.

The rise of Building Trade Employers' Associations dates from and was consequent upon the rise of Trades Unionism. They were a purely defensive measure intended to protect their members from the often tyrannical restrictions which the early Trades Unions sought to impose on Employers of labour, and to curb the tendency they exhibited to resort to strike methods on the slightest or on no provocation. At first, like the Unions they were purely local bodies, generally confined to specific trades, because it was at that time customary in many parts of the country to let contracts to each branch separately, there bing no general contractor employed.

The workmen soon began forming alliances or federations of the various branches of the Building Trade in large industrial centres, and this was followed by the formation of the National Federations of Trades Unions having head-quarters mostly in London, and exercising control over each branch trade throughout the country.

The employers now found themselves faced by a very effective instrument of coercion in these federated trades unions; acting from the centre and having a common policy, the unions had only isolated local Associations of Employers to overawe or coerce, and it was their policy to allow their local branches to constantly formulate demands for higher wages, or more favourable conditions of labour, and if a strike resulted, the local men had the financial support of their fellows throughout the country, provided they had acted with the consent of their central committee.

The employer thus fought under great disadvantages, it was easy for the unions to denude a strike centre of the labour and draft it off to other localities; indeed, they used to thus denude a district in anticipation of a strike. Non-union men also were difficult to get, and very often unsatisfactory when obtained, and easily induced by the men's pickets to go away again.

Employers in other districts rendered practically no assistance worthy of the name but on the contrary would often come into the strike area, and carry out work under the eyes of their fellows who were fighting the men; the Employers local Associations were only supported by a few of the more farseeing employers, and these suffered severely in strikes by their foremen setting up as masters and capturing their late employer's clients, or by outside employers in the locality giving way to the men's demands in order to take advantage of the situation to their own profit.

Under these circumstances strikes were often long and bitter struggles lasting months, and leaving behind them an aftermath of enmity between masters and men, and between fellow employers.

Indeed, after such a struggle it was a usual thing for employers to pass their fellow employers in the street without a word or sign of recognition, and it was often hard to say whether an employer held in greater detestation the delegates of the workmen, who had triumphed over him, or the fellow employer who had treacherously betrayed the interests of his class.

As it is obvious that even trades unions cost money to run and maintain, it follows that it was in large industrial centres where funds were obtainable that the unions took root and flourished, and accordingly it was in these localities that employers first began to grapple with the new order of things which had arisen; they first tried to form strong local Associations, but with very unequal success; during labour troubles the membership would augment rapidly, but during peaceful times it quickly fell away again; employers saw no use in their Association except when a labour war was on.

Formation.

The first successful attempt at an improved and extended organisation was the formation by the leading local Associations in the country of a National Association of Master Builders, due to the initiative of the following cities and towns, representatives from which attended the preliminary meeting held at the Great Western Hotel, Birmingham, on December 18th, 1877, viz.:—

London, Liverpool, Manchester, Birmingham, Leeds, Bristol, Wolverhampton, Bradford and Leicester.

Among present members of Council, the following attended the first meeting, viz.:—Mr. John Bowen (Birmingham) and Mr. W. Nicholson (Leeds).

Among those present on that occasion the following subsequently became well-known for their active advocacy of National action:—Messrs. Stanley G. Bird, of London; Ed. Hughes, of Liverpool; J. S. Neill, of Manchester, shortly succeeded by his son, Mr. R. Neill; W. Southern, of Manchester; W. Sapcote, of Birmingham; W. H. G. Cowlin, of Bristol; W. Tomkinson, junr., of Liverpool.

From a statement by the Chairman at that meeting it appears that this attempt at organisation emanated from Manchester, but Colonel Bird, in his address to the meeting, referred to an attempt to



MR. ERNEST J. BROWN, Senior Vice-President.



MR. S. SMETHURST, J.P., Junior Vice-President.



MR. A. G. WHITE, National Secretary.

promote a National Association made some years previously which had met with but a lukewarm reception, the struggles of the past few years had, however, revived the idea and roused the spirit which resulted in this meeting.

Referring to the masons' strike then existing in London, he mentioned that the migration of operatives six months prior to the strike was so great that when the strike began the supply of labour was below the demand for it. He also referred to the question of the need for apprentices; and for the establishment of provident societies in London which should offer inducements to workmen to discontinue Union Societies.

First National Association of Builders.

The preliminary meeting decided that it was desirable to form a National Association of Builders; rules were drafted, and at a general meeting held at Crewe on January 23rd, 1878, the Association was formally constituted and the rules adopted, nineteen towns being represented.

The principle adopted was direct affiliation of local Associations to the central body, and as a bluff to the Trades Unions it had certainly some effect; but the scale of contribution was too small to make the central body really efficient, and there was not sufficiently constant intercourse between it and the local Associations to maintain that livel interest in one another which is the life-blood of such organisations.

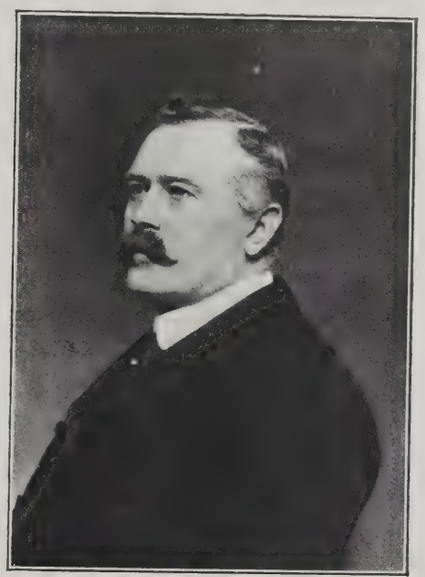
Its Work.

Nevertheless, this first attempt brought leading men together from different parts of the kingdom. It lead to interchanges of ideas, and fostered the growth of an ideal. Men began to suggest many directions in which work for the benefit of the whole industry might be undertaken. A beginning, for instance, was made with the advocacy of a National Form of Conditions of Building Contract, a most important and urgently needed reform, because at that time architects were a law unto themselves in the matter of the conditions and forms of contract to which they compelled builders to subscribe, and gross injustice was frequently perpetrated in this way. A Mutual Insurance Company was formed to protect employers against the extravagant rates demanded by the tariff insurance companies as premiums for workmen's compensation risks. This and other good work of a similar kind was all very well, but the organisation was primarily intended to fight, if necessary, a national fight against aggressive Trades Unions, and as such was not a success.

The Beginning of Federation.

Meanwhile, the Lancashire building trade employers had taken what proved to be a step of the first importance by forming a County Federation of all the principal local Associations in Lancashire, some 20 to 30 in number. They adopted the federal system of local autonomy for local Associations, with limited powers conferred upon the federal body which could only act federally; representation was according to the number of members in each Association. The federal body consisted of an exective council, composed of the representatives sent up on the above basis by the local Associations, and this Council met quarterly, or oftener if required. For practical convenience an Administrative Committee of some dozen members was formed from the executive council, and exercised delegated powers during the periods between the quarterly meetings of the executive. The Administrative Committee met once a month, or oftener if required. Most important step of all, a secretary (Mr. Tomlison) was appointed, who proved to be a man of great executive and organising ability, and by his grasp of the principles of federalism and his businesslike methods, rapidly brought this new model of organisation into a condition of efficiency such as had not previously been dreamed of.

The frequent and regular meetings, the promptness of action, the proper management of finance, a fair apportionment of expenses among the Associations so that each contributed according to membership, a useful insurance scheme on economic lines, a federation form of contract and sub-contract, and much voluntary missionary effort by earnest men, who spared neither time or money in travelling about and advocating the new scheme. All these things produced such a growth of membership, such improved relations between employers themselves, and such a powerful effect upon the Trades Unions that there is small wonder that when the National Association realised, as it had to do after the plasterers' strike, that it must re-organise, it was towards the Lancashire system that all eyes were turned.



MR. JAMES CARMICHAEL,
President of the Institute of Builders.

The Northern Centre.

Lancashire, not content with well-doing within her own borders, had annexed Cheshire, and Yorkshire had established a sister federation, likewise the North Eastern Counties, and negotiations were on foot to form a Northern Centre combining these three organisations on federal lines, where a national re-organisation scheme was also brought forward.

A National Federation Scheme.

After considerable discussion, a national scheme of federal organisation was adopted, which in principle obtains yet, but which has successively been elaborated into the constitutions and rules under which the Federation now acts.

It may be of interest to refer to the objects of the Federation, and indicate briefly how these are being carried out.

The Objects of the Federation: How Carried Out.

A careful supervision is exercised by the County Federations over proposed new rules and working agreements, and a general policy followed.

By agreements with the leading trades, disputes are submitted to conciliatory methods before resorting to a strike or lock-out. Where questions of principle are involved which have to be tested in the law courts, the Federation grants financial assistance. When all other methods fail, the Federation may order a partial or total lock-out. It is satisfactory to record that since the plasterers' dispute in 1899 methods of conciliation have sufficed to settle such disputes as have from time to time arisen.

The federation of local associations into centres has been dealt with.

Co-operation with other Associations has taken place from time to time, while a permanent affiliation to the Employers' Parliamentary Council, a body representing various industries, enables the Federation to keep in touch with Parliamentary questions affecting industry, and to make its wishes known to Ministers or members of the House.

The watching of legislative measures likely to affect the building trade is acted upon as a Federation, as well as through the Employers' Parliamentary Council. Members of Parliament are interviewed, both in the House of Commons and through their constituencies, and through them opposition is offered to legislative measures or amendments moved, while the Government departments, such as the Post Office, Board of Trade, Home Office and the like invite the Federation to supply representatives on Departmental Committees of Enquiry, or afford opportunities for members of the Federation to tender evidence upon matters relating to the building industry.

A reserve fund is in process of creation. It is subscribed to by the Federations on basis proportional to wages paid, and is invested through trustees and all interest compounded.

The formation of new Associations is actively pursued by the various County Federations, assisted by the National secretary wherever and whenever opportunity serves.

A long series of negotiations carried on first by the old National Association of Builders and afterwards by the kindred Builders' Institute has resulted at length in an agreed form of contract issued by the R.I.B.A. in agreement with the Builders' Institute and this Federation.

The Federation, through its local Associations and by direct representation, is pressing for the adoption of this form of contract by public bodies and others.

Generally, the Federation never hesitates to take up any question which appears, in the interests of its members, to demand attention. In particular, allusion may here be made to the recently-concluded agreement by which THE BUILDERS' JOURNAL has become the official journal of the Federation. In its pages matters of interest to the industry may be discussed and opinions tested, information disseminated, and facilities afforded for builders to bring before the architectural profession their qualifications for undertaking important work; also for producers of every kind of material required in building to advertise.

To illustrate the activities of the National Federation, the following summary of the more important work of the past eighteen months is given.

Summary of Work.

During 1908 the following subjects have required the attention of the Federation:

The Conciliation Boards have been active in dealing with the numerous demands for alterations in working rules, advances of wages or shortening of the hours of labour.

The Federation took active steps with reference to some objectionable clauses in the Government Bill affecting insurance under the Employers' Liability Act, and as a result secured an important amendment which met the objections.

Evidence was tendered by Federation representatives before the Departmental Committee of the Board of Trade on fair wages clauses in Government contracts.

Members of the Federation served on the Departmental Committee for Prevention of Accidents in the Building Trade. Careful consideration was given to the proposed regulations and representations made where judged necessary.

Negotiations were concluded by which THE BUILDERS' JOURNAL becomes the official journal of the Federation.

Assistance given in protesting against the Miners' Eight Hours Bill. Amendments suggested in regard to the Sweated Industries Bill.

Generally, each measure which was likely to affect the building trade has had consideration, and where necessary action has been taken.

Organised efforts to extend the Federation have continued in various parts, and conferences of secretaries were held for a similar object. Two general meetings of the Federation have been held; also numerous committee meetings.

Conclusion.

Finally, it should be said that the National Federation does not seek, and never has sought, to impose arbitrary conditions on either workmen, architects or clients; it exists simply to defend its members against attack, to elevate the status of the members of the building trade, and to enable the industry to be carried on efficiently for the public good.

As to future possibilities, these are obviously with the Federation. The continual increase of facilities for rapid intercourse in this country is making our island a very small place, so far as regards time and distance. This, in its turn, extends the area over which each local employer can, may, or must extend his operations, and the more he so extends, the less his own local Association is able to help him, and the more he has to look to the County or National Federation for any assistance he may need.

As regards legislation, too, the future is full of presage of Socialistic reforms, which are likely to bear hardly on industries of every kind and will demand the most unceasing vigilance if disaster is to be avoided. It is to the extent and strength of combination that employers will have to trust to defend the interests of this great industry, and in the Federation, with its democratic and representative constitution, and its power of expansion, will be found the best weapon.

REINFORCED CONCRETE WORK IN 1908.

During the past twelve months reinforced concrete as a system of construction for modern buildings may safely be said to have leapt into first favour. Architects and engineers have become generally convinced of the economy and the lasting quality, as also of the fire resistance of reinforced concrete construction, and seem to look to it before almost any other method where economy is a first consideration. The objections on æsthetic grounds that were raised against steel-frame construction seem to have been less vehement against reinforced concrete, and the R.I.B.A. and other professional societies have encouraged students to attempt to solve the problem of giving reinforced concrete a satisfactory æsthetic form. All the Government Departments, with the exception of the Local Govenment Board seem now convinced of its advantages, and the feature of the past pear has been its adoption for the large extension to the General Post Office and branch district post offices in London, all of which are complete reinforced concrete frame buildings.

An increasing number of buildings, as also of engineering structures in steel and concrete, have been undertaken, and this great alteration in building methods has made it incumbent upon the local authorities to make some provision in their by-laws for steel frame and reinforced concrete frame structures. The London County Council has, for instance, decided to seek powers from Parliament next session to get an alteration of the present Building Act so as to permit of the adoption of this most economical and lasting construction, while Liverpool has already obtained Parliamentary sanction to its new bye-laws for steel-frame and reinforced-con crete construction. Manchester and Sheffield also have Bills for the same purpose before Parliament. The fact that the by-laws of this country were framed years ago in such a manner as to prevent the adoption of improved methods which were bound to arise in course of time by the growth of scientific knowledge and the changing conditions, has not only been a great drag upon the progress of reinforced-concrete and steel-frame construction, but has shown the very great cost to which the community may be put by hard and fast regulations that admit of no loophole for amendment without seeking Parliamentary sanction. It is to be hoped that the experience thus obtained will induce the framers of subsequent building by-laws to obtain as wide powers as possible for subsequent amendment, and to frame and interpret their regulations in a liberal spirit, so as to foster rather than hinder the improvement in efficiency and economy in building operations.

Another outstanding feature of the past year has been the establishment of a new technical society to deal with the now vastly important subject of concrete plain and reinforced, namely the Concrete Institute. We include portraits of the chief officers of this Society, which has started under the most favourable auspices, having the Earl of Plymouth for President, and Sir Henry Tanner, Sir William Preece for Vice-Presidents, and an extremely strong Council of Architects, engineers, chemists, concrete specialists and others. The membership is already large for such an infant society. It is very surprising that such an institution was never projected before, for the cement industry has for many years been a great one, and has been growing rapidly. It looks as if the Concrete Institute will become one of the largest and most important of architectural and engineering societies. It has been called into being because older professional societies have proved themselves unable to appreciate the importance of the subject of concrete, or have not been able to devote sufficient time and attention to its consideration. Efforts in all directions seem to be becoming more and more specialized, and the subject of concrete is no exception. As it has been neglected for so long there is an immense amount of work to be done, and existing professional societies could not legitimately claim to be competent to deal with it. The Concrete Institute has a wide province quite distinct from any other society, and the specialist attention it will devote to the consideration of one of the most important branches of construction will be of the greatest service to the architectural and engineering professions. There have been many societies established in late years without sufficient reason, and no real necessity, merely duplicating the work of other older societies. This is to be much deplored. But the Concrete Institute does not belong to that category, and the fact is proved if in no other way by the large number of members of the Institution of Civil Engineers who have joined as members of the new Society. Architects are becoming enthusiastic in the use and appreciation of concrete in its many forms and are also coming to the support of the Concrete Institute, the labours of which will probably do more to bring the material into its due prominence than any other agency.

Commencing with a round table conference of some dozen professional men interested in the subject, at the instigation of Mr. Moritz Kahn, and further obtaining the co-operation of the leading members of the industries concerned, the pioneers of the movement started the Institute with one hundred founders and the body now counts a membership of three hundred and fifty at the close of the year.

The Institute has held its first two General Meetings, at which interesting papers were read and discussed. It has formed some of its more important Standing Committees and should be doing regular work in the new year.

An enormous amount of enquiry and research are required both in concrete and reinforced concrete, so that it has a wide field for its activities, and it is also to be hoped that the Concrete Institute will also undertake extensive research work in due course.

THE Concrete Institute, 1908.

PRINCIPAL OFFICERS.



SIR WILLIAM H. PREECE, K.C.B. LL.D., R.S., J.P., Vice-President.



SIR HENRY TANNER, I.S.O., F.R.I.B.A., F.S.I. Vice-President.



THE EARL OF PLYMOUTH, C.B., President.



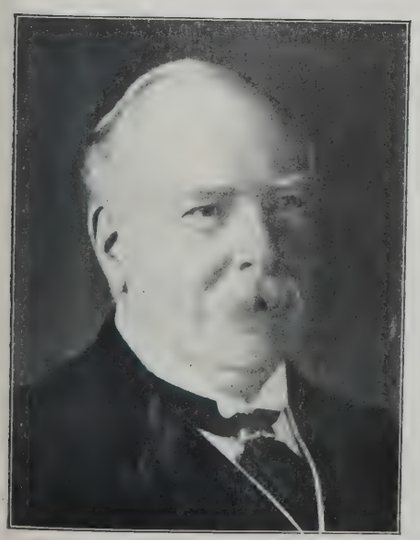
MR. E. P. WELLS, J.P. Hon. Treasurer.



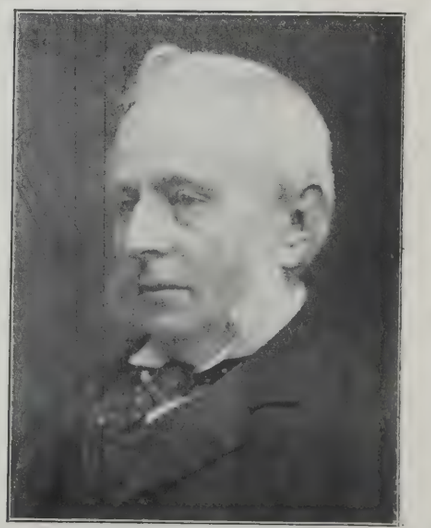
MR. EDWIN O. SACHS, F.R.S. EDIN., A.Inst.M.E., Chairman of the Executive.



MR. A. E. COLLINS, M.Inst.C.E., Hon. Secretary.



SIR WILLIAM MATHER, LL.D., J.P., Vice-President.



SIR DOUGLAS FOX, J.P., M.Inst.C.E. Vice-President.

Photographs: The Earl of Plymouth, Sir W. H. Preece, Sir William Mather, and Sir Douglas Fox, by Elliott and Fry, London. Sir Henry Tanner, by Lavender, Bromley. Mr. E. P. Wells, by A. Percival, London; and Mr. A. E. Collins, by A. E. Coe and Son, Norwich.

With the professional public it will no doubt help to popularize new methods of building, especially of reinforced concrete.

The past year has been noteworthy for the large and important buildings in which reinforced concrete has been made a distinguishing feature of the construction. For instance, in addition to the General Post Office Extension (of which Sir Henry Tanner, I.S.O., F.R.I.B.A., is the architect), and the Western District Post Office, the following may be singled out as buildings in the first rank: Wesleyan Memorial Hall, Westminster, New Record Office for the Bank of England (A. C. Blomfield, architect), New Telegraph Stores, Birmingham for H.M. Office of Works; Borough Polytechnic Institute; St. Charles Chapel, Notting Hill, London; Selfridge Stores, London (the most complete and up-to-date frame building in England); Extension of Caxton House, Westminster; Union of London and Smith's Bank, Hull; Bournemouth Gas Works, Poole; Dundee Generating Station; New Works for the British Aluminium Co., Ltd.; Second Tobacco Warehouse for Bristol Corporation; Rhyl Pavilion; Norwich Union Building, Piccadilly; The Royal Liver Building, Liverpool. Expanded metal figures in a number of important buildings.

The Wesleyan Memorial Hall—a monumental building—is being built very largely of reinforced concrete, including a large dome. We may also mention that the floors of the new extension to the British Museum will be constructed of reinforced concrete. The permanence and the fire-resisting character of such construction fits in especially for the construction of such buildings. It provides the best construction for such purposes at a cost that is less than other rival forms of construction, and even below that of ordinary methods that are not so efficient. Small wonder is it then that the application of reinforced concrete is advancing by leaps and bounds. We illustrate in this annual review a few of the more important buildings in which reinforced concrete has been largely used. There are a multitude of smaller works that we have no space to deal with. The variety and importance of the system of construction becomes manifest from a casual inspection of such a collection, even if we omit to recall the fact that the building trade has been very slack during the past year.

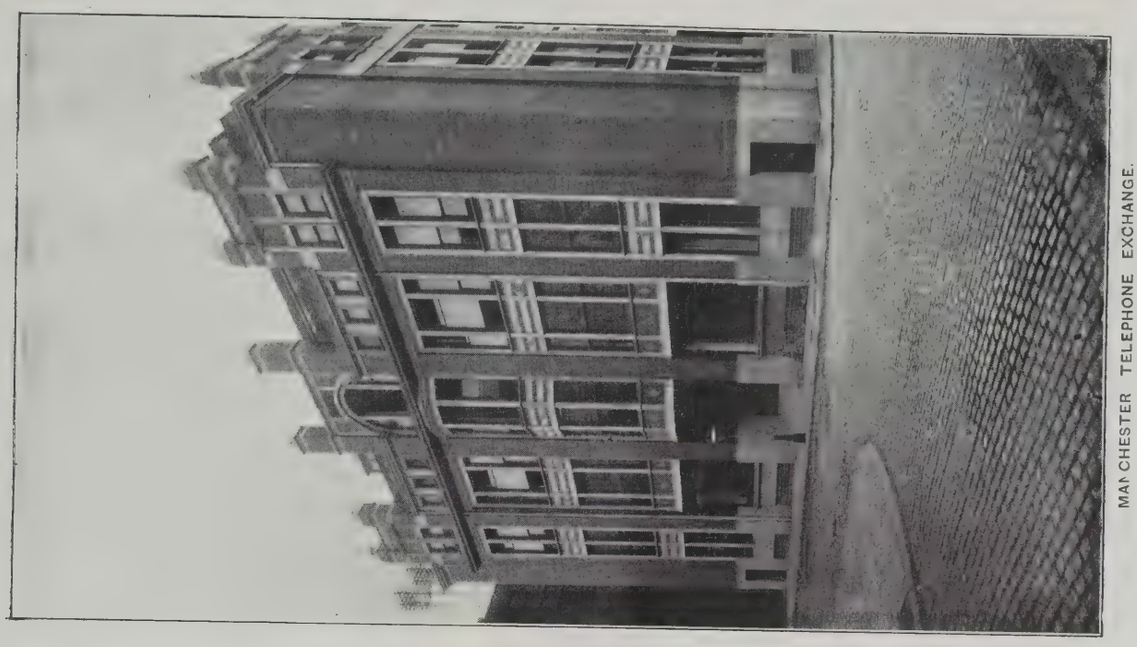
N.B.—We are asked to draw attention to the announcement of the Patent Indented Steel Bar Co., Ltd., on page lvii. Owing to an oversight in drawing up the particulars, the firm's address—Queen Anne's Chambers, Westminster, S.W., has been omitted from the page.



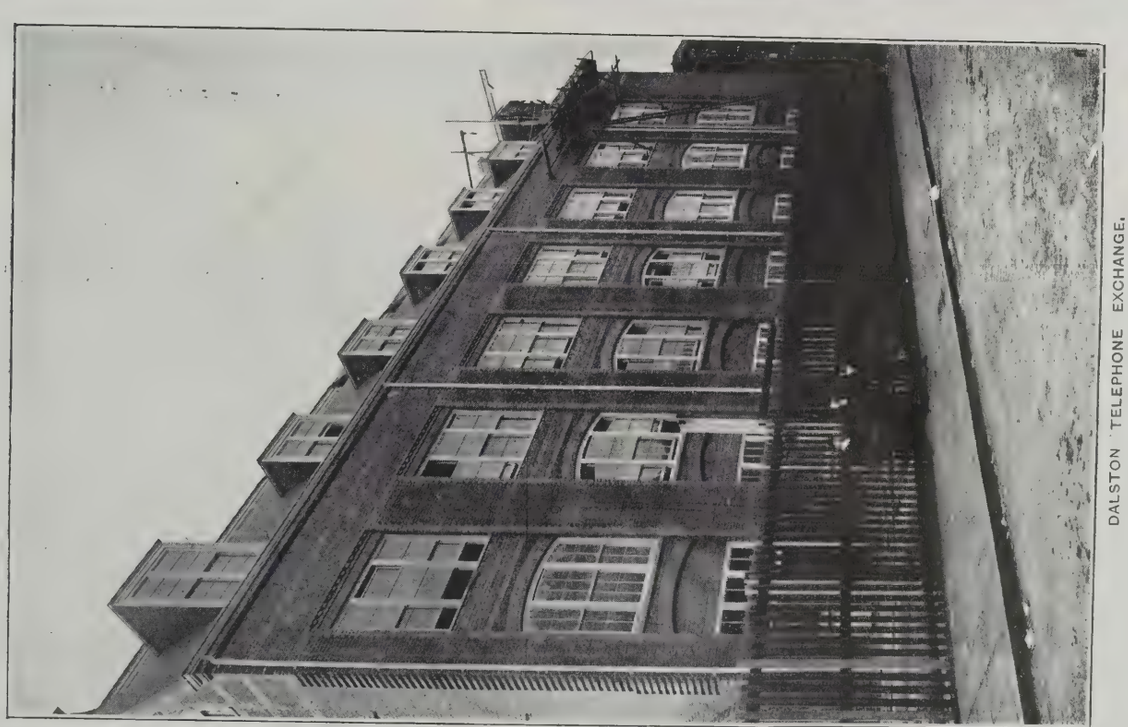
BONDED WAREHOUSE, WASHINGTON STREET, GLASGOW
Columbian Reinforced Concrete Construction.



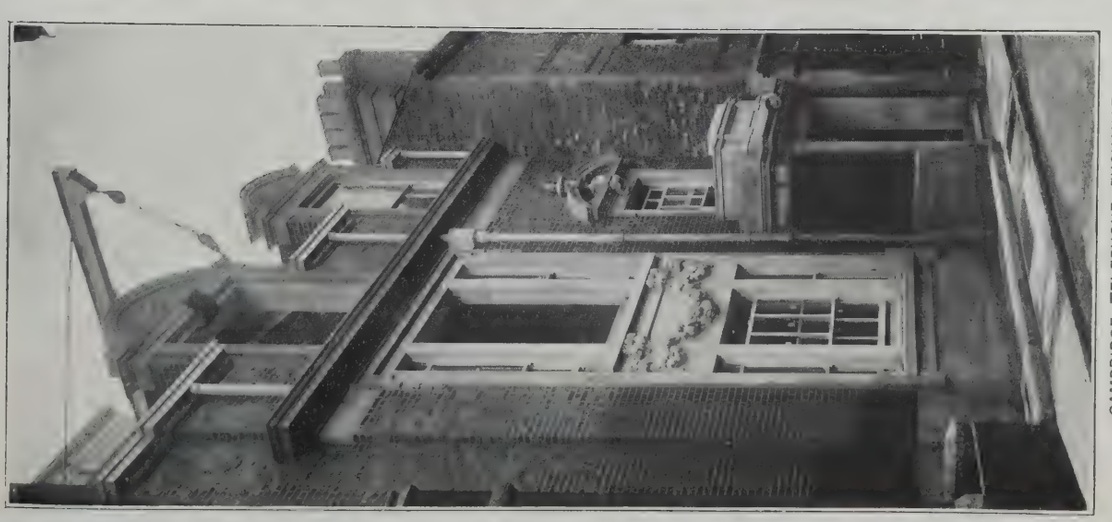
VIEW OF A FLOOR OF WAREHOUSE, WASHINGTON STREET, GLASGOW.
Columbian Reinforced Concrete Construction.



MANCHESTER TELEPHONE EXCHANGE.



DALSTON TELEPHONE EXCHANGE.
United Kingdom Fireproof Floors.



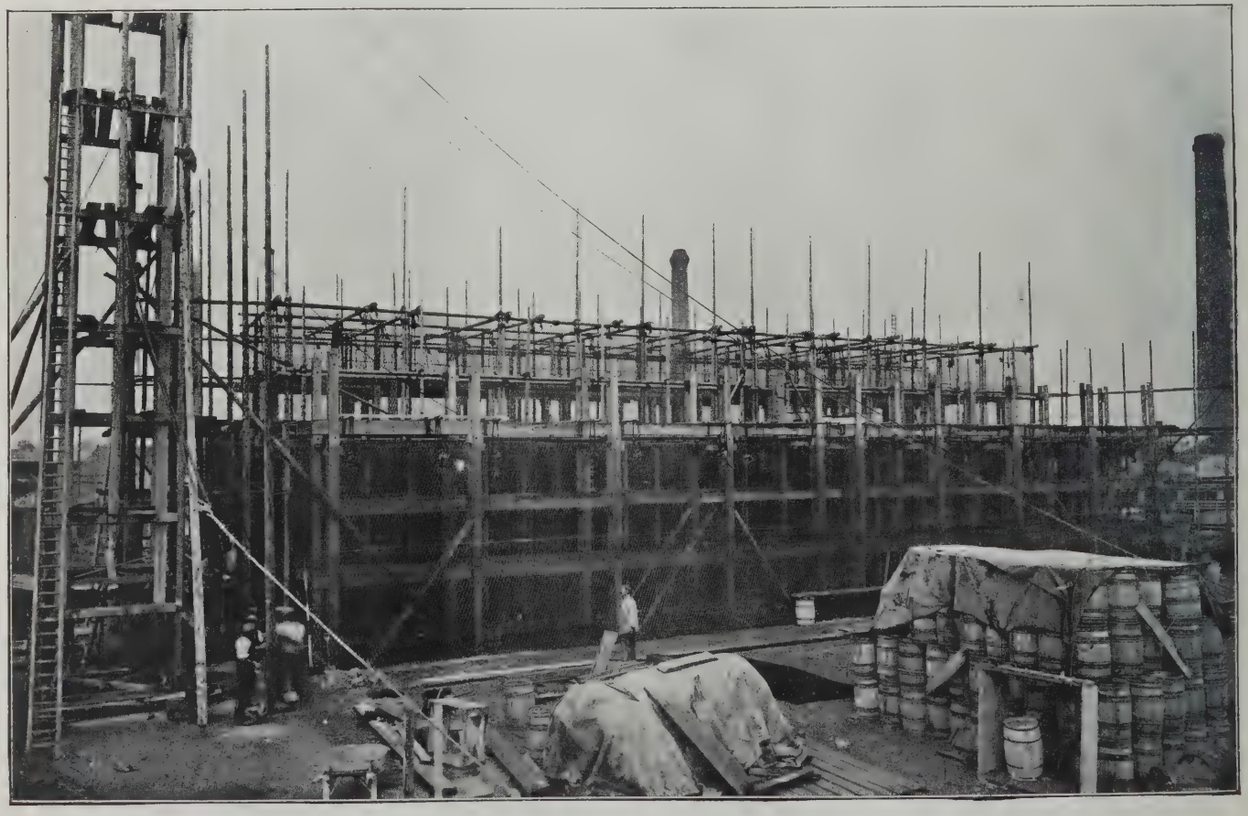
CAMBRIDGE TELEPHONE EXCHANGE.



HOLBORN TUBE STATION SUPERSTRUCTURE, LONDON.
Expanded Steel-Concrete Flooring Throughout.
Waring and White (1906), Ltd., Contracto



SCOTTISH PROVIDENT INSTITUTION BUILDING, GLASGOW.
Expanded Steel-Concrete Flooring Throughout, by Stuart's Granolithic Co., Ltd. Peddie and Washington Browne, Architects.



EXPANDED STEEL-CONCRETE CEMENT STORE. VIEW SHEWING BIN WALLS IN COURSE OF CONSTRUCTION
The Wouldham Cement Co., Limtd., West Thurrock, Essex.
(For other Illustrations of Reinforced Concrete Buildings see p. 187.)

THE CHOIR, DOWNSIDE ABBEY, Near BATH.

The history of the community of St. Gregory's at Downside in Somersetshire dates from the year 1814, when the monks acquired the estate of Mount Pleasant, Downside, with some 66 acres of land. To the existing house was added, in 1823, a Gothic block of classrooms and cells from the designs of the late Mr. H. E. Goodrich of Bath. In 1853 Mr. Charles Hansom designed a large school block which was added; but it became necessary in 1870 to consider new plans for a monastery with a church on a fitting scale; a block to comprise new kitchens, a new refectory, and new dormitory for the school. These additions were embodied in a plan prepared by Messrs. Dunn and Hansom, and the work was forthwith put in hand. The transepts of the new church were opened in July, 1881, and in 1888, the Lady Chapel was finished, to be succeeded by the rapid completion of the Chapels.

The addition of a choir and presbytery to the abbey was commenced in July, 1902, the design being that of the late Mr. Thomas Garner, who, in 1900, succeeded the late Mr. Edward Hansom as architect to the community. Messrs. Dunn and Hansom's work embraces the existing transepts, the tower, and the eastern chevet of chapels. Many modifications of detail were made in the course of construction, all tending to make the building more ornate or decorated in style, instead of the sterner Early English originally contemplated. Mr. Garner altered the plan of the choir prepared by the late Mr. Edward Hansom, providing a bold square end in place of the apse, and as the foundations of the apse were actually completed he used them to support the columns of the feretory, thus partly preserving the former scheme, and joining his square-ended choir to the curved line of chapels already built, so that no change of plan can be perceived. The style of the new choir is typical of the transition from Decorated to Perpendicular. Mr. Garner's design increased the thickness of the walls, lengthened the clerestory windows, and simplified the vaulting. Basing his treatment on a precedent at St. Albans Abbey he introduced a single light at either side of the central east window, thus enhancing the effect of space and loftiness.

The portion of the church thus gradually completed from the eastern bay of the nave to the end of the Lady Chapel measures externally 230ft.; the breadth across the transepts and tower is 125ft. In the interior the transepts are 83ft. long, 68ft. high, and 25ft. wide; the choir from the chancel arch to the columns behind the altar measures 95ft. long and 28ft. wide, and rises from 68ft. to 70ft. by the middle of the third bay. The building is constructed of Bath stone (supplied by the Bath Stone Firms, Ltd.) both internally and externally.

The Rev. Dom. F. P. Whiteside, Bursar at the college, was the builder. The tiles were supplied by Craven Dunnill and Co., Ltd., and J. Crispin and Sons, Ltd., carried out the heating. W. Bainbridge Reynolds fitted the door furniture, hinges, and latches, also large hinges to the screens.



DOWNSIDE ABBEY: FROM THE SOUTH-EAST, SHOWING THE NEW CHOIR. THE LATE THOMAS GARNER, ARCHITECT.



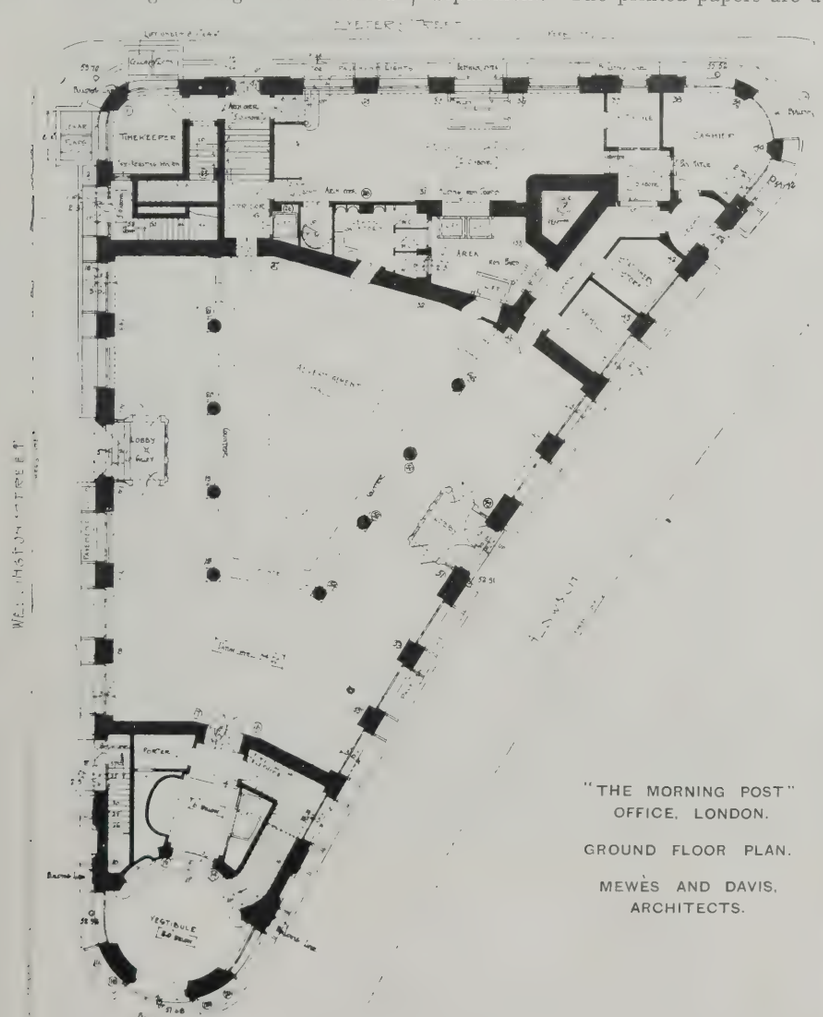
GENERAL VIEW OF THE CHOIR, DOWNSIDE ABBEY, LOOKING EAST. THE LATE THOMAS GARNER, ARCHITECT.

"THE MORNING POST" OFFICE, LONDON.

The problem in planning this building was a difficult one, the site being triangular, which allowed lighting from three streets, but necessitated having a central lighting well within the building, the only other light and ventilation being obtained from an enclosed area, around which on the various floors the lavatories are grouped, thereby keeping the whole of the plumbing work out of sight. Other difficulties were many, as the building, being of the "warehouse class," and coming under the Factory and Workshops Act, the basement had to be isolated from the other portion of the building, having its own entrance and escape exit from and to Wellington Street, internal communications from all floors, however, being allowed by an unenclosed lift in the enclosed area. The basement is used for printing and paper storage, and the sub-basement, about thirty feet below the pavement level, for the foundation to the printing machines, and the boiler-house, etc. A large lift recessed within the building in Exeter Street communicates with the paper stores.

The building being steel-framed throughout, it was thought desirable to form special grillages to carry the walls supporting the printing machines, and to so cantilever the same that no vibration can be transmitted to the steel columns which carry the building. The basement walls, which were formed in concrete, vary from eight feet to twelve feet in thickness according to their height; the backs of the walls are covered with asphalt, which is carried under all the floors and grillages and over the vaults, thereby making the basement impervious to damp, and a sump, connected to the drainage system, was made to relieve the horizontal asphalt from any water pressure.

The main entrance to the offices was desired from the Strand, and this corner of the site, being a rounded angle, a circular vestibule was formed there, giving easy access to the advertisement hall, which chiefly occupies the ground floor, and to the main staircase and the office lift. The portion of the ground floor facing Exeter Street is used by the cashier and the publishing department. The printed papers are delivered to this floor from the printing-room in the basement by two unenclosed lifts in the enclosed area. The advertisement hall, which has an entrance both from Aldwych and Wellington Street, as well as from the Strand, has been simply treated in Austrian oak panelling, slightly waxed polished. The columns are in "stuc plaster" imitating marble; inside them are steel stanchions encased with concrete. The pedestals are marble, as also the floor.



"THE MORNING POST" OFFICE, LONDON.

GROUND FLOOR PLAN.

MEWES AND DAVIS, ARCHITECTS.

The main staircase on the right of the vestibule, leading to the letting offices, bridges over the principal entrance corridor to the advertisement hall, which has other public entrances, as mentioned later on. From the bridge, at the second landing level, there is a fine vista into the circular vestibule.

The first floor, used by the editorial staff, is arranged around an open central well over the space occupied by the clerks in the advertisement hall, which gives an imposing effect to this floor. The second and third floors have been planned as offices to be let to the public, and are separated from the other parts of the building by fire-resisting materials. The fourth and fifth floors consist of the composing and readers' rooms, and the foundry, where the plates are cast, and when ready for the printer they are sent down two unenclosed lifts in the enclosed area to the "bruising room" adjoining the printing-room, where they are accurately shaped, cooled in water, and sent to the machines.

The façades have been built in "Standard Grey" Norwegian granite. This was worked in Norway from drawings, the carving being done in Aberdeen. The design is a modern rendering of Louis Seize, and it has been the architects' aim to get a simple, dignified, and well-proportioned building. The dome is in copper, and the roofs are covered with green Westmorland slates. The whole of the large metal sashes are of special sections.

The whole of the electric light wiring was carried out on the steel conduit system with galvanised steel-drawn conduits. Patent flush switches have been used throughout, and a feature of the installation is the main switchboard, which controls the whole of the lighting and power circuits.

The general contractors were The Waring-White Building Company, Ltd., of 12a, Cockspur Street, S.W. The work was carried out expeditiously, and the contract figure was not exceeded.

The following are some of the sub-contractors:—

Lifts: Archibald Smith and Stevens, Ltd., London. *Granite*: A. and F. Manuelle, London. *Plastering*: H. Johnson and Sons, Liverpool. *Plumbing*: Mellowes and Co., London and Sheffield. *Wood panelling, carving, and fittings in large advertisement hall*: H. H. Martyn and Co., Ltd. *Fireproof floors, roof and dome*: Columbian Fireproofing Co., London. *Lighting, electric bells, gas supplies, fire alarms*: Strode and Co., London. *Casements and gates*: J. L. Howard and Co., London. *Balcony railings*: St. Pancras Ironwork Co., London. *Fire-resisting glazing*: British Luxfer Prism Syndicate, Ltd., London. *Steel casements*: James Gibbons, Wolverhampton. *Pavings and staircases*: Stuart's Granolithic Co., Ltd., London. *Electric light fittings*: Faraday & Sons, London. *Patent Hanging Tiles and Urinals*: Doulton and Co's Fireclay Co., Ltd. *Portland Cement*: (Hilton Anderson Brand), Associated Portland Cement Manufacturers, Ltd., London.



Photo: Arch. Review Photo Bureau.

"THE MORNING POST" OFFICE: GENERAL VIEW FROM THE STRAND.
MEWÈS AND DAVIS, ARCHITECTS.

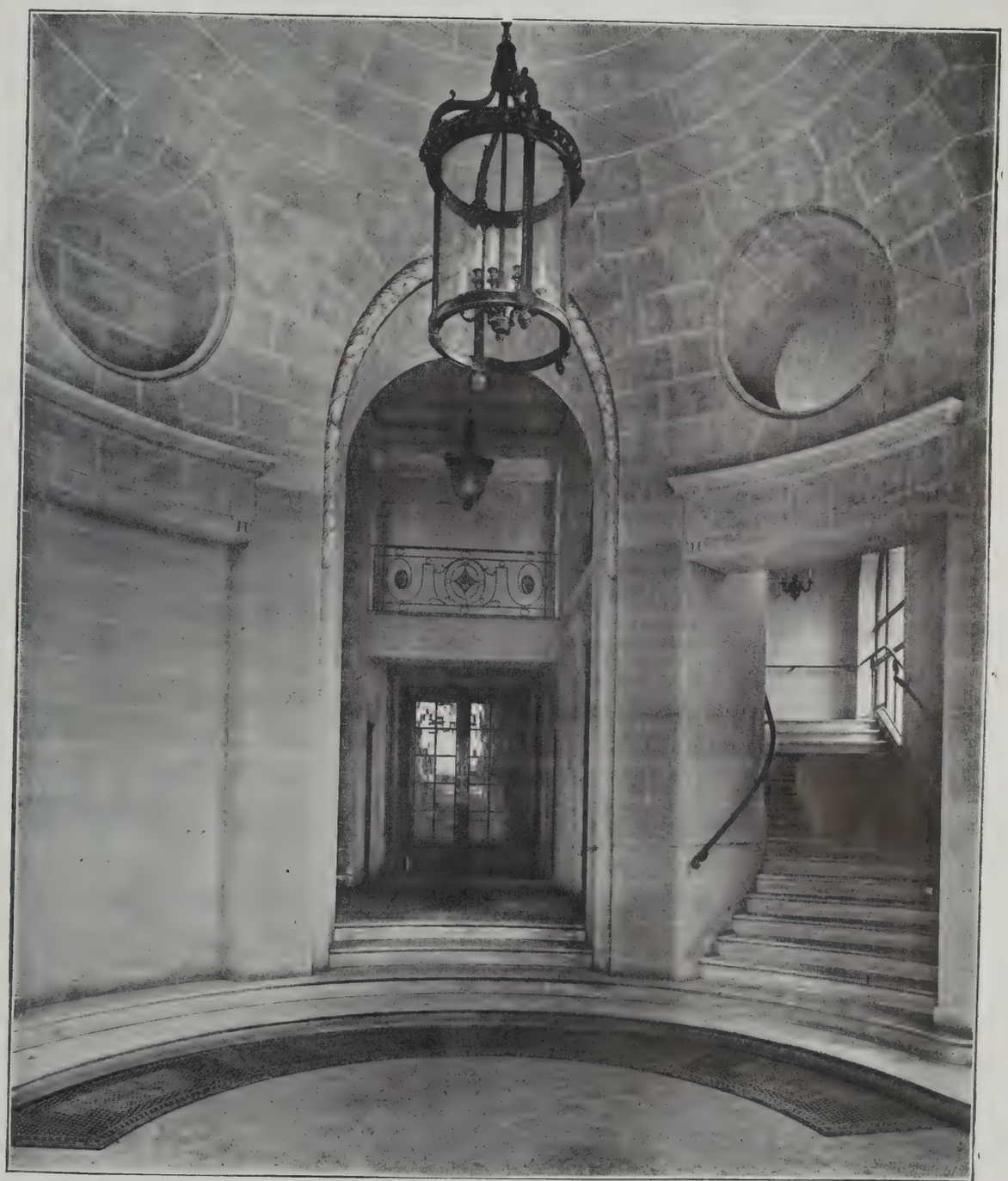


Photo: Arch. Review Photo Bureau.

"THE MORNING POST" OFFICE, LONDON: THE VESTIBULE.

MEWES AND DAVIS, ARCHITECTS



Photo: Arch. Review Photo Bureau.

"THE MORNING POST" OFFICE. LONDON: THE ADVERTISEMENT HALL. MEWES AND DAVIS, ARCHITECTS.

ST. MARY'S CHURCH, HIGHWEEK, DEVONSHIRE.

This new church, designed by Mr. Edmund Sedding, and dedicated to St. Mary the Virgin, has been erected on a new and open site about a mile from Newton Abbot station. Local limestone of a reddish tone was chosen for the general external walling, from quarries situated only a few miles away. The face of the stone has been left a natural surface, the stones being laid in level random courses. The windows are wrought out of Corsham stone, which has been used throughout for the wrought stonework of parapets, weatherings, and "flyers" of the buttresses.

It will be seen from the north-west view that only the "stumps" of the pinnacles have been built at present, the upper surfaces being temporarily protected with cement. The large west window is about twenty-five feet wide, with two large chamfered mullions, each 2ft. wide, dividing it into three compartments. All the windows are glazed with clear leaded glass, except the three east windows, which contain painted glass.

The foundations for the future tower have been laid at the south-west corner of the church.

It will be seen from the ground plan that the church is divided into a nave rather more than forty feet wide, with north and south aisles of six bays each, covered by lean-to roofs, the full width of nave and aisles being 60ft. The chamfered piers and arches are 2ft. 6ins thick, the clerestory walls above being 3ft. in thickness; the extra thickness of the walls is given to the inside in order to obviate the thrust of the barrel roof, and it is supported by a bold hollow moulding relieved by carved pateræ.

The principals, wrought out of Baltic pine, rest on cylindrical shafts, 7ins. in diameter, with carved capitals; the lower parts of the shafts are 6ins clear of the piers, owing to the additional thickness of the wall above.

The chancel is narrowed to 31ft. in width, and is separated from the nave by a low stone screen, above which is the chancel arch, a series of chamfers dying on to square responds. Space for the organ is provided on each side of the chancel behind the choir seats in the form of shallow transepts, the north and south arches being carried up as high as possible for acoustic reasons. The vestries are placed at the north-east and south-east corners of the building, and communicate with each other by an ambulatory, from which north and south doors open into the sanctuary.

The whole of the interior wall surface is lined with Bath and Bere stone, the two varieties being used to avoid monotony.

The main west wall is carried on three chamfered arches opening into a central baptistery, and north-west and south-west porches, all of which are covered by a continuous lean-to roof.

The roofs of nave and chancel are of barrel form, with arched ribs connected by purlins forming panels, which are boarded and painted white. All the structural timbers are of pine; the apex of the barrel roof is 45ft. from the floor.

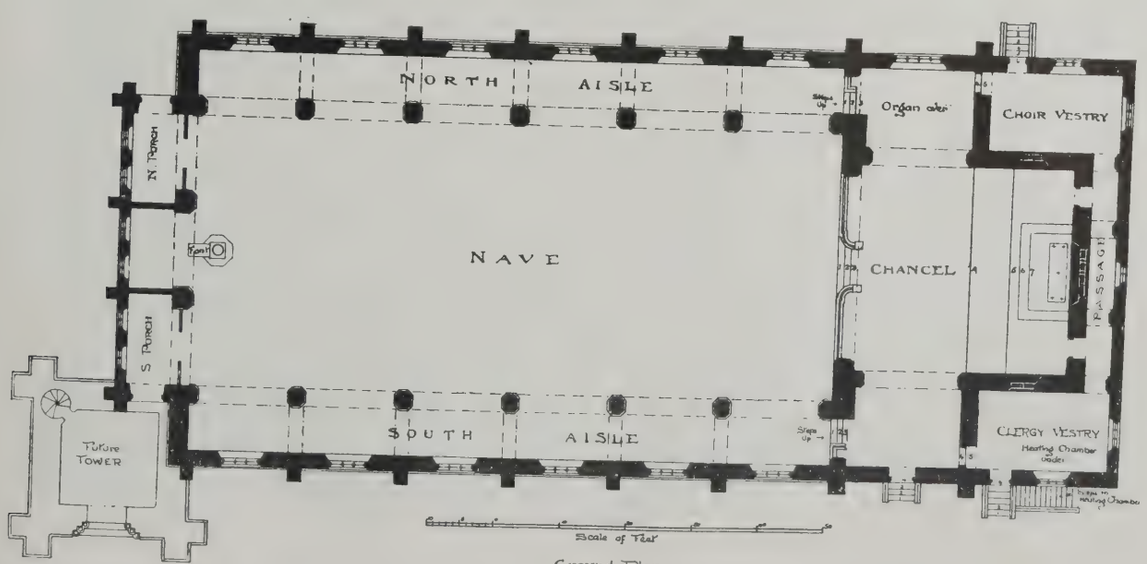
The chancel is paved with large slabs of Sicilian, Irish, and Devonshire marbles, while the whole area of nave and aisles is paved with Oregon blocks, laid on concrete.

The roofs are covered with best Cornish slates secured by copper nails. It may be interesting to note that it was found by experiment that the common ribs—which are 5 in. by 4in., 13in. apart, with 5in. by 4in. rafters connected by 7in. by 4in. collars—were capable of sustaining the weight of the roof without the addition of the main ribs and purlins which are placed under them for additional strength and effect inside the church.

The length of the chancel is 35ft., the nave being 97ft. long, while the full internal length of the church is 145ft.

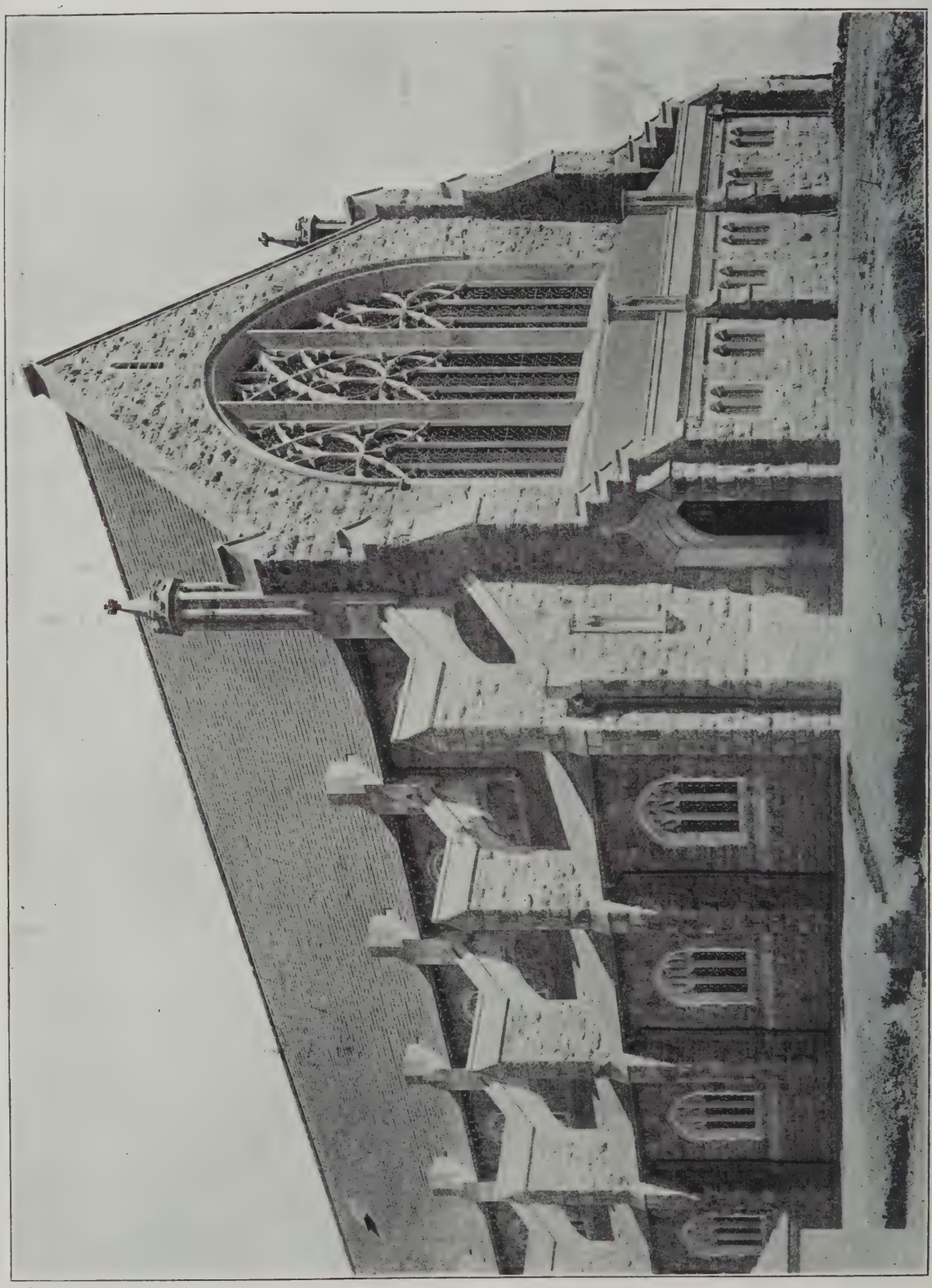
The heating is by low-pressure with floor-level and overhead pipes, the latter arranged at the apex of aisle roofs, the through openings in the arcade walls, masked with open tracery panels. The heat being conducted into the nave through openings in the arcade walls, masked with open tracery panels. The lighting is by incandescent gas.

The seats in the nave are low-backed pews, extending from the centre passage to the inner side of the bays; chairs are placed under the bay arches, and in the narrow aisles. The latter are so arranged that they can be used for processional purposes, the vestries having doors communicating with the choir transepts at the ends of the aisles. The choir vestry on the north side, and the clergy choir on the south side have separate entrances from the exterior, and an extra or emergency door is provided in the south transept. The chancel is raised three steps above the floor of the nave, and there are four more steps up to the altar level. The altar table has at present a simple backing of curtains, though there is ample height below the east window for a reredos of an elaborate character in the future.



Ground Plan

ST. MARY, HIGHWEEK, DEVONSHIRE. EDMUND SEDDING, ARCHITECT.



ST. MARY'S CHURCH, HIGHWEEK, DEVONSHIRE: GENERAL VIEW FROM THE NORTH-WEST. EDMUND SEDDING, ARCHITECT.



ST. MARY'S CHURCH, HIGHWEEK, DEVONSHIRE: GENERAL VIEW OF THE INTERIOR, LOOKING EAST. EDMUND SEDDING, ARCHITECT.

THE LONDON, EDINBURGH, AND GLASGOW ASSURANCE BUILDING, LONDON.

The new office of the London, Edinburgh, and Glasgow Assurance Co., Ltd., is close to all the railway termini which abut on Euston Road, and it has for near neighbours Euston, St. Pancras, and King's Cross Stations, of the London and North Western, the Midland, and Great Northern Railways respectively; also stations of the Metropolitan, City and South London, and Charing Cross and Hampstead Railways.

The elevations are of Portland stone in a monumental style of classic architecture particularly suitable for the offices of a great corporation. The great size of the internal apartments has enabled the front to be laid out with a sense of scale that is not usually obtainable in buildings in narrow city streets; ample light and dignified proportion, with architectural restraint, are the keynotes of the design.

The building, though in the neighbourhood of similar architectural monuments of great interest, such as University College, the entrance to Euston Station, and St. Pancras Church, being a public office is of a different character, but maintains the architectural traditions of these great neighbours successfully. The porch, situated near the angle of Euston Road and Euston Square, is spacious and solid, having polished granite columns carrying the curved pediment and archways, within which is the great keystone of the principal entrance which was put in position on November 6th, 1906, by Sir Richard Biddulph Martin, Bart., and is surrounded by a treatment of acanthus foliage. The carved oak doors open into the public hall. The finishings in this the public part of the building have been executed in dull glazed faience.

The internal walls of the entrance hall and the several archways in general offices are treated in Parian ware of two general tints, viz., primrose, yellow, and a low-toned sage-green, whilst the natural variations of each of these produced by the firing have been welcomed by Professor Pete, thus adding much to the richness and artistic character of the general effect.

Special mention must be made of the grand chimney-piece in the entrance hall, with its severe lines and the heraldic devices of the cities on the three slightly curved disks, the pattern work being boldly painted on the surfaces, and the colours, of course, fired on to the Parian ware.

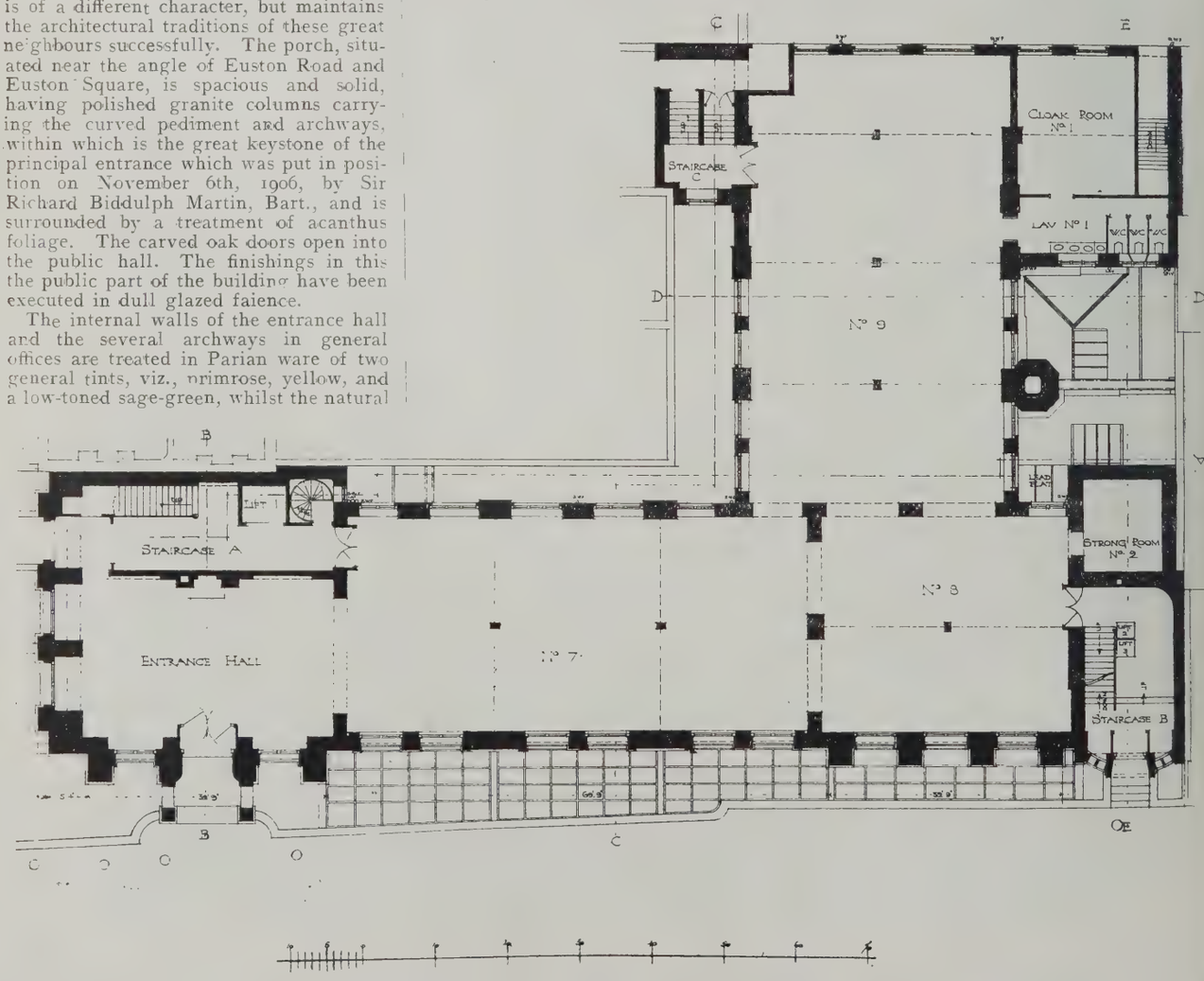
The door from the entrance hall leads to the directors' staircase, by which we ascend to the board room, which is over the entrance hall. The room is severely treated with large plain oak panels, with windows looking upon the Square, the one point of colour being the handsome marble chimney-piece.

The lot of the clerk will be a very different one from that of the ordinary City clerk. He is here in a light and airy building surrounded with the necessaries for his daily work, with comfortable cloak-rooms close at hand, with safety fire staircases and access, to say nothing of telephones and electric light, and the special heating appliances which are provided for the staff of the company. Further, provision has been made in an economical part of the building—that is, on the top floor—for staff dining-rooms in connection with the caretaker's establishment.

Professor Beresford Pite was the architect. The general contractors were Foster and Dicksee.

The following are some of the sub-contractors:—

Tiling and faience: Doulton and Co., Ltd. *Steelwork*: A. D. Dawnay and Sons, Ltd. *Heating*: G. N. Haden and Sons. *Railings, etc.*: Thos. Crawn and Co. *Marblework and carving*: Farmer and Brindley. *Lift*: R. Waygood and Co., Lt. *Kitchen fittings*: Benham and Sons, Ltd. *Mosiac floor*: Rusts Vitreous Mosaic Co. *Ironmongery casement fittings etc.*: Robert Adams, James Gibbons. *Stallboard lights and Fire-resisting glazing*: British Luxfer Prism Syndicate, Ltd., London. *Electric light fittings*: Faraday and Sons, London.



THE LONDON, EDINBURGH, AND GLASGOW ASSURANCE BUILDING, LONDON. GROUND FLOOR PLAN.
PROFESSOR BERESFORD PITE, ARCHITECT.



Photo: Arch. Review Photo Bureau.

THE LONDON, EDINBURGH AND GLASGOW ASSURANCE BUILDING, LONDON: GENERAL VIEW.
PROFESSOR BERESFORD PITE, ARCHITECT.



Photo: Arch. Review Photo. Bureau.

THE LONDON, EDINBURGH, AND GLASGOW ASSURANCE BUILDING, LONDON. PROFESSOR BERESFORD PITE, ARCHITECT.

THE ENTRANCE HALL.

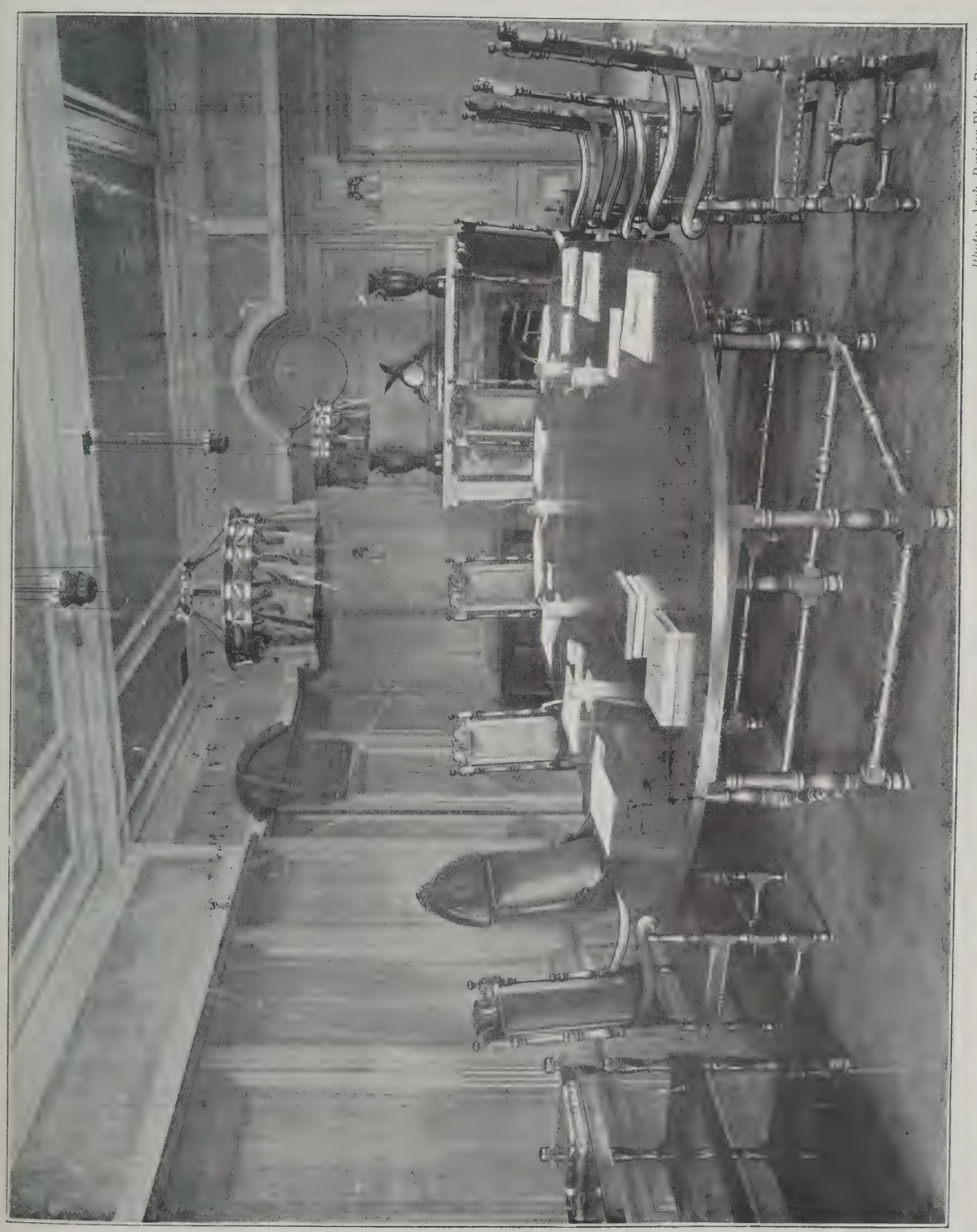


Photo: Arch. Review Photo Bureau.

THE LONDON, EDINBURGH AND GLASGOW ASSURANCE BUILDING, LONDON. THE BOARD-ROOM.
PROFESSOR BERESFORD PITE, ARCHITECT.

THE WALDORF HOTEL, LONDON.

Occuping a conspicuous site in the broad new crescent connecting the Strand with Kingsway, the new Waldorf Hotel strikes a dignified architectural note in this improved heart of London. The facade to Aldwych is of Portland stone upon a basement of Aberdeenshire granite, and like the rest of the building inside as well as outside is designed in the restrained style of Louis XVI. The architectural basis is one of scale and quality. The parts are large and the outlines are bold and simple—an effect of magnificence being attempted without the aid of ornament. It may be said that the only ornament is the sculptured frieze capitals and vases. In the centre of the front there is an architectural screen of the Ionic order which gives interest and variety, and corrects what would otherwise be a monotonous array of numerous and regularly placed windows, which are of course necessary for the purposes of an hotel. In the matter of planning the architects are said to have visited America and made a study of American requirements as well as English.

The excavation and foundations were done three years ago, but the contract for the building proper dates only from September, 1906. In the remarkably short time of eighteen months the contractors, the Waring-White Building Company, Ltd., 1, Cockspur Street, have completely finished, and Waring and Gillow have furnished and equipped the building to which visitors to London are now flocking. This achievement has been possible by the method of construction adopted—viz., a skeleton of steel standards and girders supporting the floors and roofs, with an outer shell of stone and brick walls and slated roof. The floors as well as the roofs are constructed of fireproof materials—steel and concrete, the floors having an upper covering of hard wood boards, and the roofs an outer covering of lead and slates.

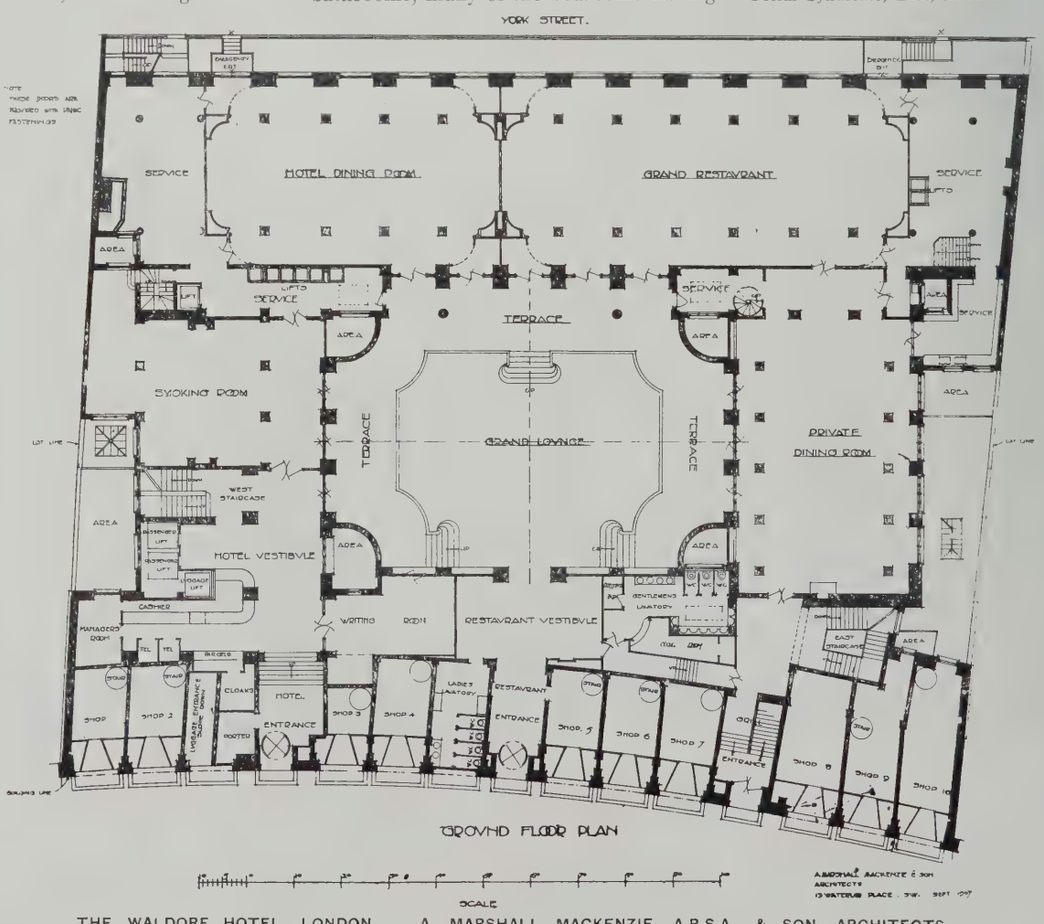
The partitions between the rooms are of Mack slabs, the use of which made for time-saving in the erection of the building. It may be noted that the partitions between rooms are of double construction for "deafening" purposes. The floors of the bathrooms are of "Doloment," said to be warmer than marble or tiles, and better as a non-transmitter of sound. The decorations and furnishing of the interior is, like the rest of the building, in the style of Louis XVI. The grand lounge in the centre measures 80ft. by 60ft., and is surrounded by the public rooms of the hotel and restaurant, as will be seen by the accompanying plans. The grill-room and grill-lounge and masonic temple rooms are in the basement, and the drawing-room, the billiard-room, and private dining-rooms are on the entrance floor. There are 400 bedrooms and 176 bathrooms, many of the bedrooms having bathrooms attached, while several of the rooms are arranged in small flats with sitting-room, bedrooms, and bathroom.

In the ventilating system fresh air is driven into the grill-room and grand lounge by means of two 15in. double-inlet cased fans, each direct-coupled to a 1¼-b.h.p. electric motor, and before being distributed to the various rooms is thoroughly washed and filtered, thus being made perfectly free from all extraneous matter. In cold weather the air is warmed by being driven over hot batteries.

The vitiated air from the grill-room, lounge, restaurant, ballroom, smoke-room, and masonic hall is carried up a vertical shaft to roof, and extracted by means of a 40-in fan.

The following are some of the sub-contractors:—

"Mack" fireproof partitions: J. A. King and Co. *Asphalt*: Thomas Faldo and Co., Ltd. *Cement*: Associated Portland Cement Co., Ltd. *Granolithic stairs and paving*: Stuart's Granolithic Stone Co. *Heating, ventilating, hot and cold water services, and fire hydrants*: R. Crittall and Co. *Passenger lifts*: The Otis Elevator Co. *Service lifts*: R. Waygood and Co., Ltd. *Plumbing and sanitary fittings*: Shanks and Co. *Joinery*: S. Elliott and Sons, Reading. *Plastering*: H. Johnson and Sons, Liverpool. *Fire escape staircases*: St. Pancras Ironwork Co. *Reinforcing bars*: Patent Indented Steel Bar Co. *Joinery, decoration, and furnishing*: Waring and Gillow. *Kitchen fittings*: Benham and Sons. *Expanded metal reinforcements*: Expanded Metal Co., Ltd. *Fire-resisting glazing*: British Luxfer Prism Syndicate, Ltd., London.

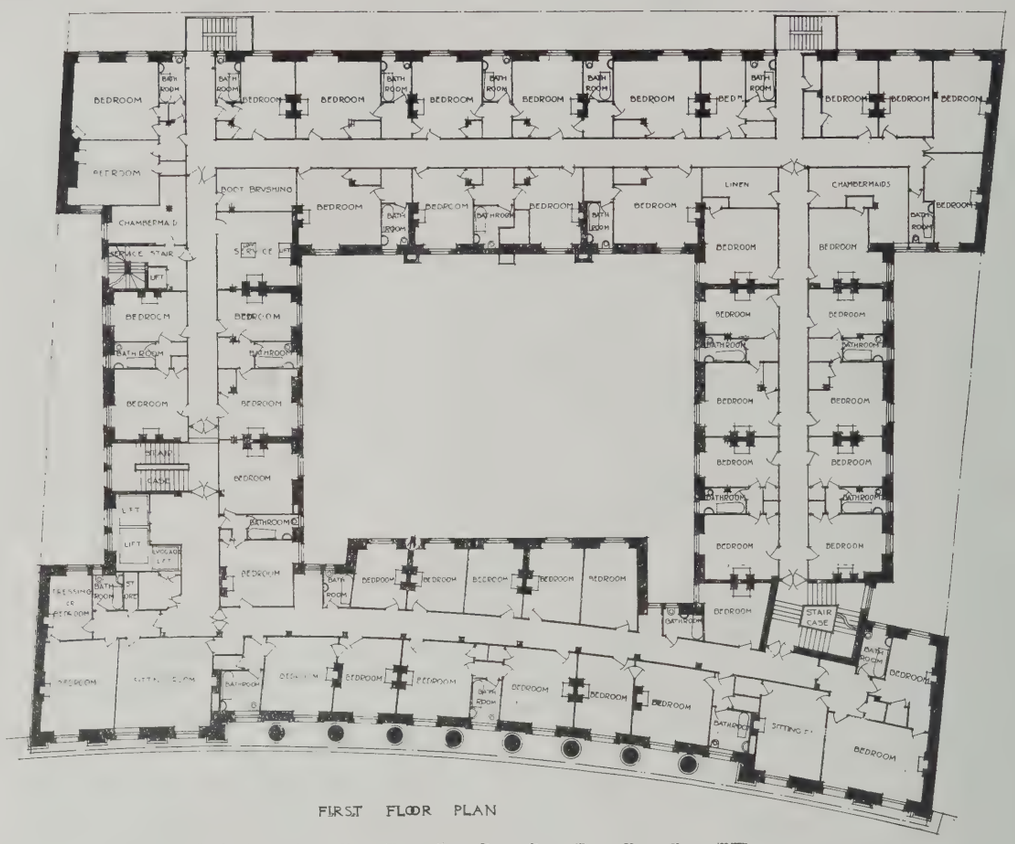


THE WALDORF HOTEL, LONDON. A MARSHALL MACKENZIE, A.R.S.A., & SON, ARCHITECTS.

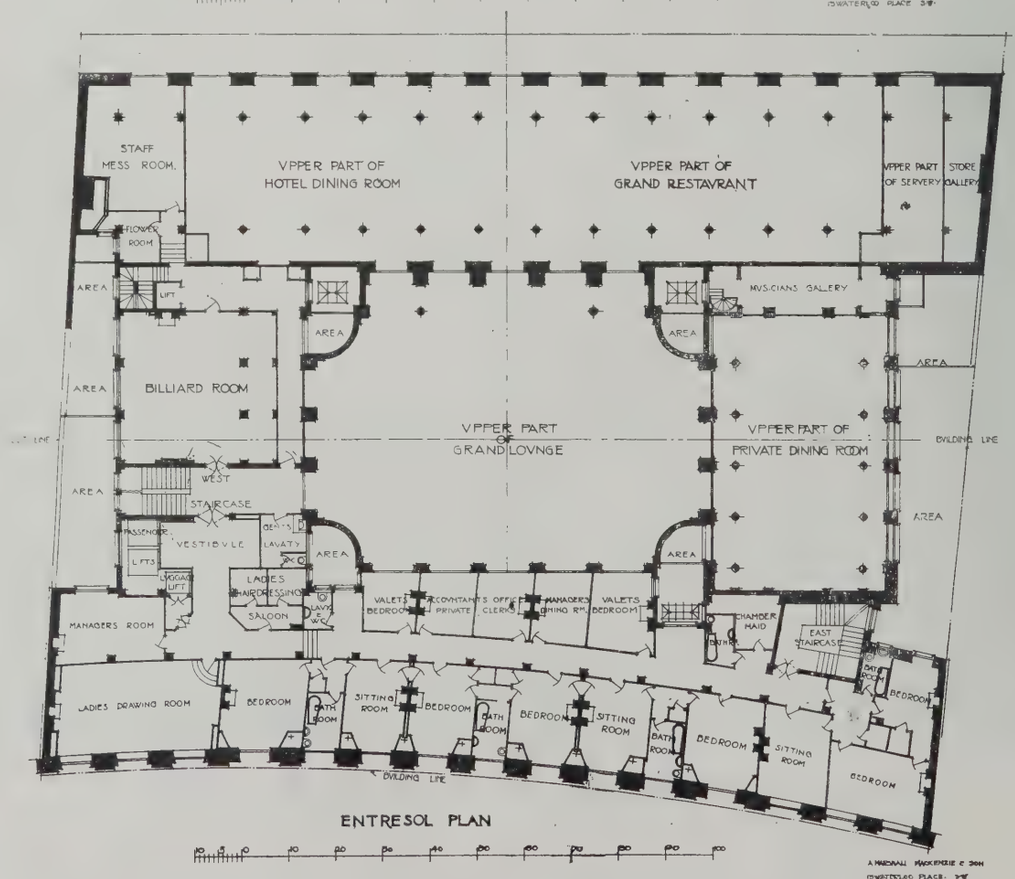


Photo: Arch. Review Photo Bureau.

THE WALDORF HOTEL, LONDON: GENERAL VIEW FROM ALDWYCH.
A. MARSHALL MACKENZIE, A.R.S.A., AND SON, ARCHITECTS.

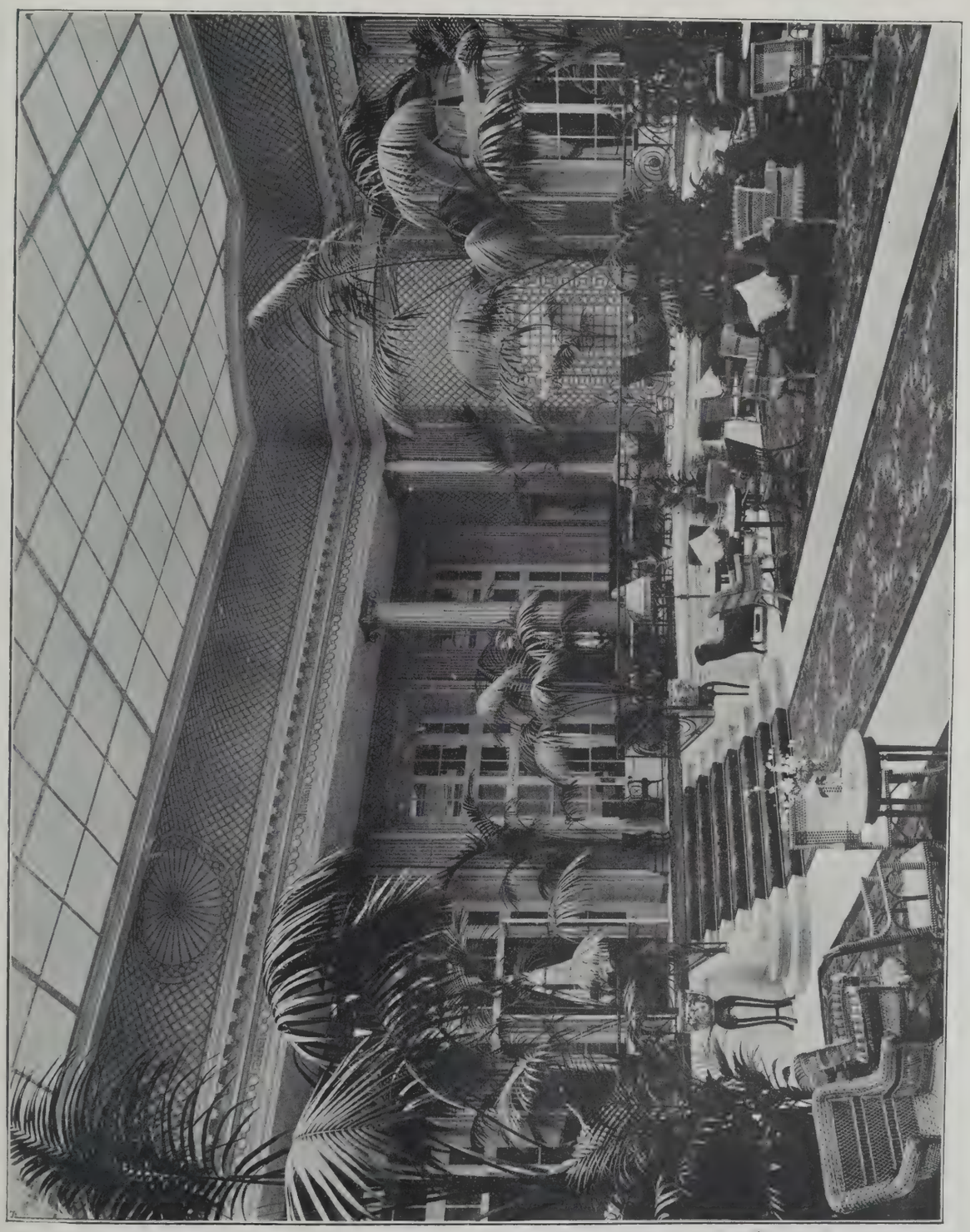


FIRST FLOOR PLAN



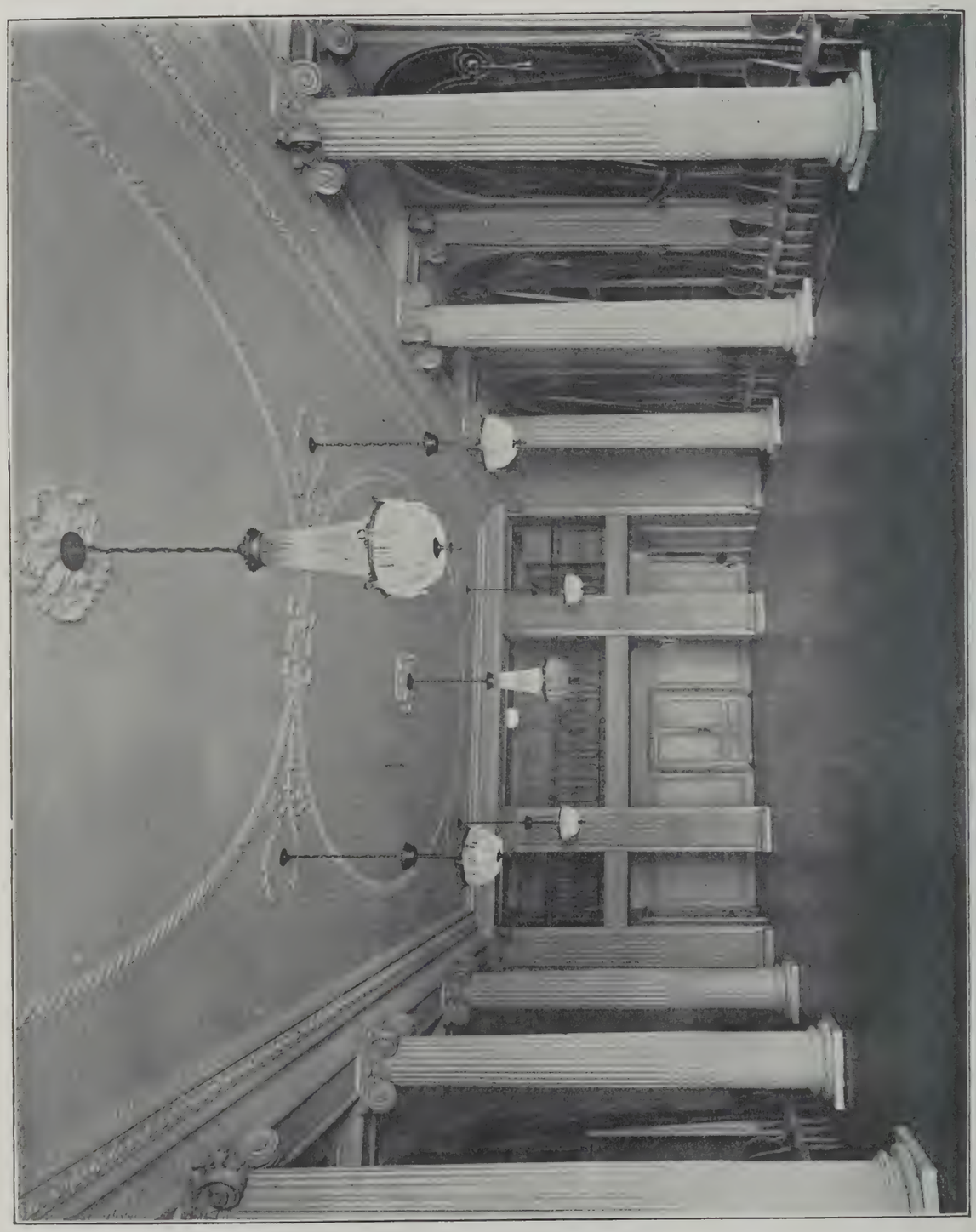
ENTRESOL PLAN

THE WALDORF HOTEL, LONDON. PLANS.
A. MARSHALL MACKENZIE, A.R.S.A., AND SON, ARCHITECTS.



THE WALDORF HOTEL, LONDON: THE PALM COURT. A. MARSHALL MACKENZIE, A.R.S.A. AND SON, ARCHITECTS.

Photo: Arch. Review Photo Bureau.



THE WALDORF HOTEL, LONDON: THE BALLROOM. A. MARSHALL MACKENZIE, A.R.S.A., AND SON, ARCHITECTS.

Photo: Arch. Review Photo Bureau.

OFFICES FOR THE RIVER WEAR COMMISSIONERS, SUNDERLAND.

These premises have been erected upon the site of the old Post Office, situated at the corner of St. Thomas and John Streets, Sunderland, with aspects north and west respectively. The exterior of the building is faced with blue Heworth Burn stone, with rock-faced Corrennie red granite base, and the doorway is of polished granite from the same quarry, while the roof is covered with Tilberthwaite green slates.

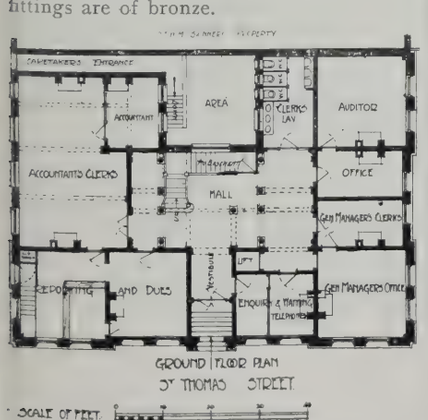
In St. Thomas Street is placed the principal entrance, giving access to the central hall through a vestibule, the walls of which are lined with Skyros marble panels, surrounded by bands of verde antico, with base of Bleu Belge marbles, and the moulded capping, architrave, and soffits of arches are of selected alabaster; above is a barrelled and coffered fibrous plaster ceiling.

The central hall and landings give easy access to all parts of the building. The floors are fireproof and laid with marble tiles formed in black and white squares, and the wall panelling, staircase, and columns are executed in Austrian oak fumed and dull polished.

A coffered fibrous plaster dome rises from the ceiling; the latter, enriched and coved, springs from an arcade of fluted ionic columns upon pedestals, with a balustrade between, which forms a handrail to the first floor landing. Lighting to the staircase is obtained by means of a large window, also from the glazed eye of the dome.

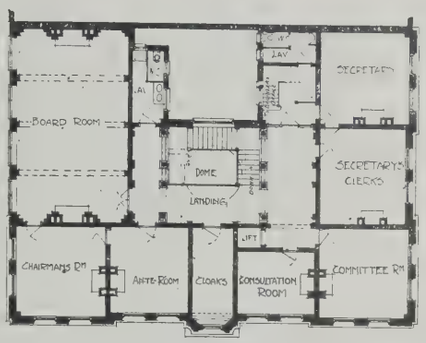
The board-room is upon the first floor, and the walls are panelled to a height of 15ft. with Cuban mahogany; festoons of carved fruit and flowers of the same wood decorate the pilasters, and the carving over the chimneypiece at each end of the room is in lime-tree. An enriched barrelled and panelled ceiling surmounts a coved and carved cornice.

All departments have open fires, and the entrances, landings, and lavatories are heated by radiators on the low-pressure system. Teak is used throughout for all external windows. A lift communicates with all floors. The principal electric fittings are of bronze.



GROUND FLOOR PLAN
ST THOMAS STREET.

SCALE OF FEET.



FIRST FLOOR PLAN

The general contractor was J. W. White, Sunderland. The following are some of the sub-contractors:—

Plaster modelling and decorative work: Jas. Garvie and Sons, Aberdeen. *Plastering*: A. & S. Wheater and Sons, Leeds. *Sanitary goods*: Shanks and Co., Ltd., Barrhead, Glasgow. *Marble work*: J. and H. Patteson, Manchester. *Terrazzo paving and wall mosaic*: Diespeker, Ltd., London. *Fire grates*: Steel and Co., Sunderland. *Stone carving*: H. H. Martyn and Co., Ltd., Cheltenham. *Hardware*: Jas. Gibbons Wolverhampton. *Lift*: A. Smith and Stevens, London. *Bronze electric fittings*: N. Spital and Clark, Birmingham. *Parquet floors*: the Westminster Patent Flooring Co., London. *Roof glazing*: the Standard Patent Glazing Co., London.



Photo: T. Lewis.

THE BOARD ROOM CHIMNEY-PIECE. JOHN HALL, ARCHITECT.



OFFICES FOR THE RIVER WEAR COMMISSIONERS, SUNDERLAND: GENERAL VIEW. JOHN HALL, ARCHITECT.

Photo: Thos. Lewis.

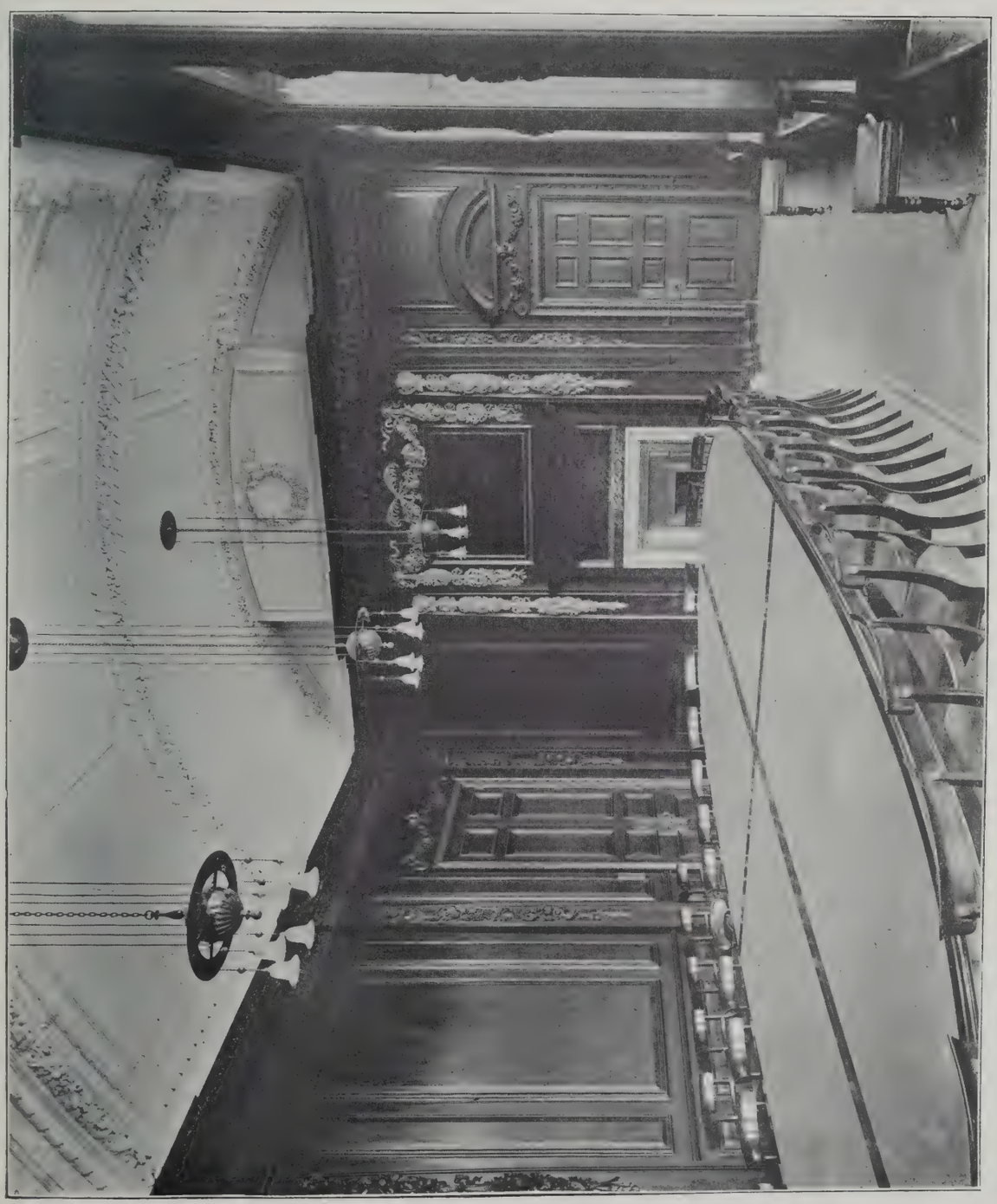


Photo: Thos. Lewis

OFFICES FOR THE RIVER WEAR COMMISSIONERS, SUNDERLAND: THE BOARD-ROOM. JOHN HALL, ARCHITECT.



OFFICES FOR THE RIVER WEAR COMMISSIONERS, SUNDERLAND: FIRST FLOOR LANDING. JOHN HALL, ARCHITECT.

Photo: Thos. Lewis.

MANSION FLATS IN LONDON.

The monumental treatment of domestic buildings in London has hitherto been neglected, and but little appears to have been attempted towards its furtherance. Some large blocks of apartment houses designed in a manner essentially classical will not fail to evoke an interest therefore.

The layman and the architect both receive their impression of the merits or demerits of a building from its external appearance, and under these circumstances it is perhaps advisable first to elucidate the æsthetic principles that govern the design of these buildings before dealing with the strictly utilitarian problems of planning that shape themselves to the general scheme. The composition is of the most simple kind, as a reference to the illustrations of Berkeley Square and Cleveland Row, St. James's, will show. There is no striving after an unattainable originality, but a broad, dignified treatment of mass that relies on its scale for effect; no pedantic rendering of obsolete schools, or a version of modern French Renaissance (so much in favour now); rather a treatment that draws on all classical sources for its being, and is, if a name must be given it, more Neo-Grec in character than anything else.

One of the aims has been to studiously avoid using the columns and entablatures of any of the five orders of architecture as the chief elements of design in the facades; the buildings are astylar, and in that respect very much resemble the breadth of elevation attained by the Florentine architects. Although the order is, as exemplified by the column, conspicuous by its absence, its proportions are retained, and the result is more convincing, direct, and truthful. If the Florentine Palace is suggested by the astylar treatment, the Venetian Palace might also be claimed to have served as a prototype for the projecting balconies; but this is not strictly so, as the architectural treatment of iron balcony railings employed in London by the architects of the Classical Revival has perhaps been the greatest source of inspiration for a feature of London street architecture that is sadly neglected in modern contemporary design. Not since the days of the Brothers Adam, Sir John Soane, Nash, or Decimus Burton (excepting the mediocre work in Belgravia) has an attempt been made in London to deal with the problem of combining several dwellings under one architectural scheme, in a manner suitable to the true architectonic character demanded by the dignity of a great city. The usual method of design is to impart wholesale into the fabric all the details and rusticities evolved by country conditions. The result cannot be satisfactory, and buildings erected in this manner look out of place; finally, blackened by the London soot, they frown on the passer-by as though looking for the cause of their misfortune.

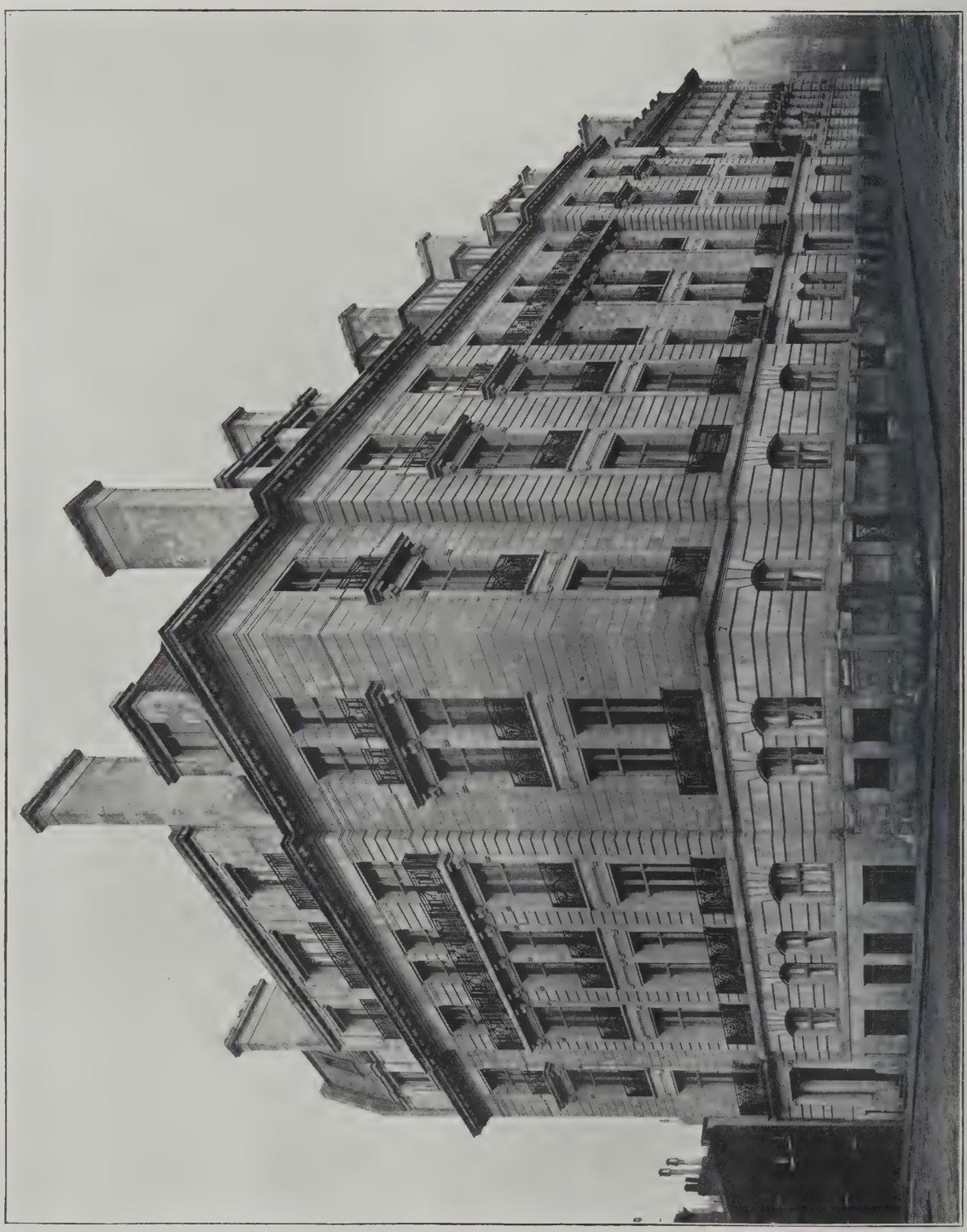
As already pointed out, there is ample precedent in London for the classical treatment of Flats. The original design for the old Regent Street Blocks provided for suites of apartments over the shops. The design for a West End address for the many was evident nearly a hundred years ago, and the demand was then met in an architectural spirit.

The requirements of the London Building Act allow full advantage to be taken of the 80ft. height line, and in two of these blocks, *i.e.*, Berkeley Square and Portland Place, six storeys are combined under the main cornice, including the ground floor. The advantages of a classical treatment for the façades is apparent, and if reference is again made to the illustrations it will be seen that no one floor is given prominence over another, and this trait is caried right through the work. The rents of each floor naturally vary slightly according to their height above the ground floor, but the result desired is that the tenants shall feel that the floor they occupy is of the same artistic importance to the appearance of the house as any other floor rented by their cotenants, irrespective of rental value. The window openings above the plat band in these three buildings are designed as simply as the main masses, heavily-moulded architraves are avoided, likewise meaningless keystones, absurd rustications, and all the paraphernalia of the man who does not think and reason out his details. If a columnar treatment is avoided, so also is the usual type of architrave to the windows, and so through all the details elimination of superfluities is continued. Another important feature aimed at is a cohesion between all the



FIRST FLOOR PLAN.

FLATS, CLEVELAND ROW, ST. JAMES'S, LONDON. FRANK T. VERITY, ARCHITECT.



FLATS, CLEVELAND ROW, ST. JAMES'S, LONDON. FRANK T. VERITY, ARCHITECT.

Photo: Arch. Review Photo Bureau.

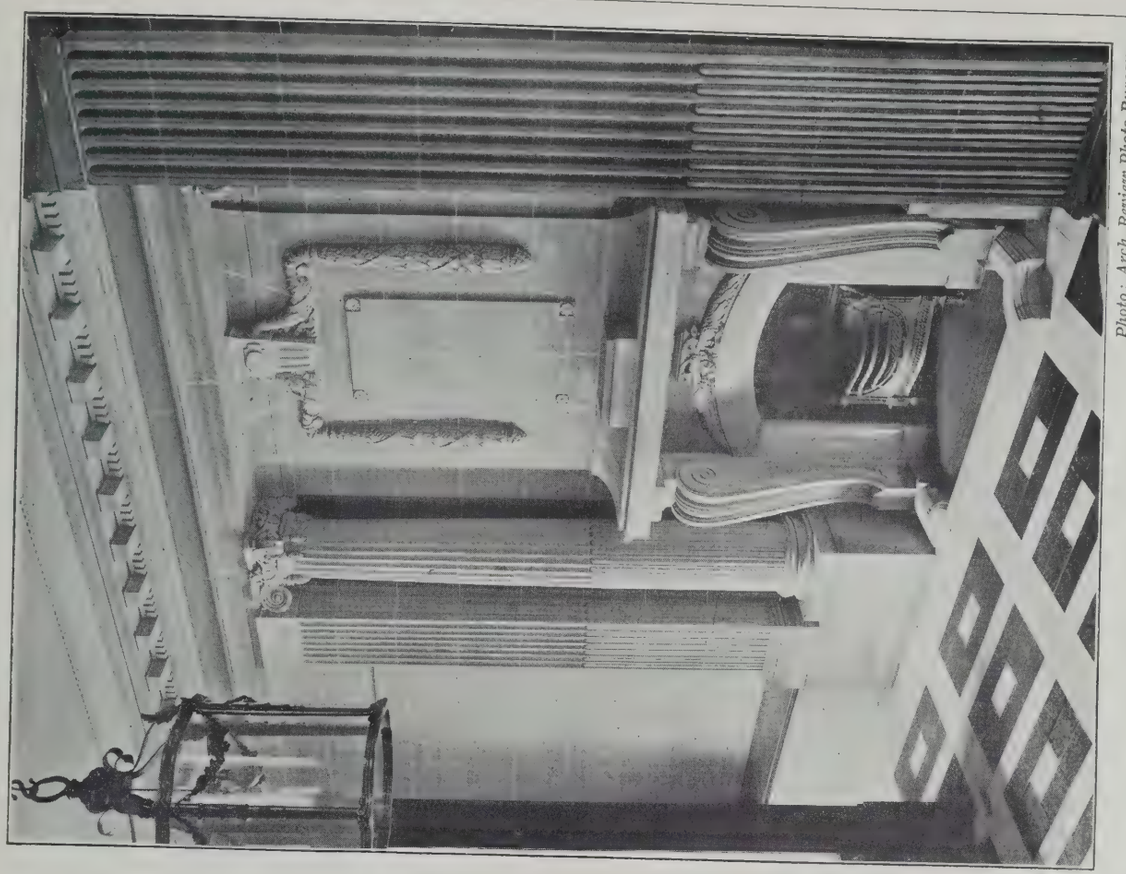


Photo: Arch. Review Photo Bureau.

Entrance hall.



Entrance doorway.

FLATS, CLEVELAND ROW, ST. JAMES'S, LONDON. FRANK T. VERITY, ARCHITECT.



Photo: Arch. Review Photo Bureau.

FLATS, BERKELEY SQUARE, LONDON. FRANK T. VERITY, ARCHITECT.

window openings in a vertical direction. Horizontally, this is not a difficult matter, as the flow of line is easier to maintain; but vertically the prob'em is much more difficult, especially if the designer burns his boats behind him, and discards stock-in-trade elements.

Over and beyond the question of planning and accommodation, there is one of these blocks in which the problem was rather more difficult. The building referred to constitutes a block known as Nos. 3, 4, 5, and 7, Cleveland Row, on a site facing St. James's Palace, and carries on the architectural lines of the adjoining New Alliance building. The conditions of the scheme were laid down to comprise three town houses with a frontage to Cleveland Row and with garages to each in the rear, and a suite of flats to Cleveland Square with accommodation in the roof over these flats for the London Fencing Club.

The height of the various stringcourses and the main cornice were set by the Crown authorities, and the conditions also require a traditional roof being used above the main cornice contrary to the architect's usual manner. The scale of the whole block was given by the three houses in Cleveland Row, and, bearing in mind the limitation of height, the detail was kept consistently delicate and refined, as befitting its purpose.

If a building is to be considered monumental, apart from its design, it must be constructed of lasting material, and the designer of large buildings almost invariably chooses Portland stone, it being the most suitable material for the London atmosphere. With the exception of the mansions at Hyde Park Place (which are built of Ham Hill stone), all the buildings executed by Mr. Verity have been carried out in Portland stone.



Photo: Arch. Review Photo Bureau.

FLATS IN BERKELEY SQUARE, LONDON: ENTRANCE VESTIBULE. FRANK T. VERITY, ARCHITECT.

As already mentioned, the cast-iron illings forming the balcony fronts to the ove buildings are influenced by the inciples of design that characterised the lcony fronts of the late eighteenth and rly nineteenth centuries. The ironwork designed with due respect to the various itures of the front it enriches, with a adual lessening from richness to a com-rative plainness according to height.

nternally, the entrance halls, vesti-les, and staircases are finished in uc," or "Stonite," French prepara-tions, the use of which enables the architect to give an excellent representation of a stone interior at very little expense.

The cost of the buildings has been as follows:—

Berkeley Square, £50,000; contractors, Mark Patrick and Son. Cleveland Row, £60,000; contractor, James Carmichael.

The following are some of the sub-contractors:—

Stone (generally): Ham Hill Stone Co. *Stone (carved work, chimneypieces), flooring (mosaic marble, stone)*: Farmer and Brindley. *Steel work*: Dennett and Ingle. *Tiles, mosaic decoration and marble work (not floors)*: Rusts' Vitreous Mosaic Co. *Asphalt Roofing*: Faldo Asphalte Co., Ltd. *Casements and casement fittings, stair treads*: St. Pancras Ironwork Co. *Patent glazing and fittings*: Heywood's Patent Glazing. *Stoves, grates, mantels*: Bratt, Colbran and Co., Longden and Co. *Plaster work*: George Jackson and Sons, Ltd., Battiscomb and Harris. *Art metal work, gates, railings, handrails, etc.*: Joseph Stone and Co. *Electric light fixtures, electric wiring, ventilating apparatus (alone), bells, electric and wire pull, etc., telephones*: Higgins and Griffiths. *Door furniture, locks, etc.*: Carter and Aynsley. *Folding gates, shutters, etc.*: Bostwick Gate Co. *Lifts*: Titan Lift Co., and R. Waygood and Co., Ltd. *Strongroom doors, safes, etc.*: Milner and Co. and St. Pancras Ironwork Co. *Cooking machinery*: Eagle Range Co. *Granolithic staircases*: Stuart's Granolithic Stone Co., Ltd.

NEW PREMISES FOR DEBENHAMS', LTD., LONDON.

The new buildings, of which a model was on view at the Franco-British Exhibition, were designed by and carried out under the superintendence of Mr. William Wallace and Mr. James S. Gibson, as joint architects.

The structure is of fireproof construction throughout, solid steel columns of small section and of great strength being used, and these were afterwards encased in marble.

The external elevations are entirely faced with Carrara Ware, as used at the Savoy Hotel and Gloucester House, which, by reason of its vitrified surface, is one of the few materials capable of withstanding the atmosphere of a large city, and of being restored to its original condition by periodical washing and cleaning.

The spacious entrance opens into a beautiful reception hall, lined with cool grey-green and white marbles. On either side are large rooms, and in front is the marble staircase leading to the departments above.

The decorative note is one of quiet harmony—the green marbles, dull bronze, touches of bright enamel, rich woodwork, delicately-modelled ceilings, and soft carpets in greens and greys, all serve to produce an unobtrusive but rich effect.

A feature of the building is its interior and exterior metal-work; the bronze and enamel columns and railings in the two main galleries, the bronze lamp-covers, electric fittings, bronze and cream-enamelled nameplates, and the bronze balustrading to the marble staircase and bronze caps and bases to the marble columns, internally and externally.

In rebuilding, the great problem was to minimise the disturbance of business, and to cause as little inconvenience as possible to the customers. It was finally decided that the most practical method was to rebuild in sections, each part to be finished before another was begun.

Great credit is due to the general contractors, Messrs Geo. Trollope and Sons, and Colls and Sons, Ltd., for the manner in which they worked out, in conjunction with the advisory staff, the general scheme for rebuilding.

The work was begun in February, 1906, and finished in September, 1907, and each section was not only completed within its scheduled time, but in many cases considerably earlier.

In order to do this, the work was carried on by two gangs of men working day and night under relief foremen. In most cases the lower floors were handed over, one by one, before the upper ones were completed or roofed in, temporary asphalt roofs being formed at different levels to enable the finishing of the floors below to be effected.

During all this time, however, business was conducted as usual, and, where necessary, communication between various departments was maintained by covered passages.

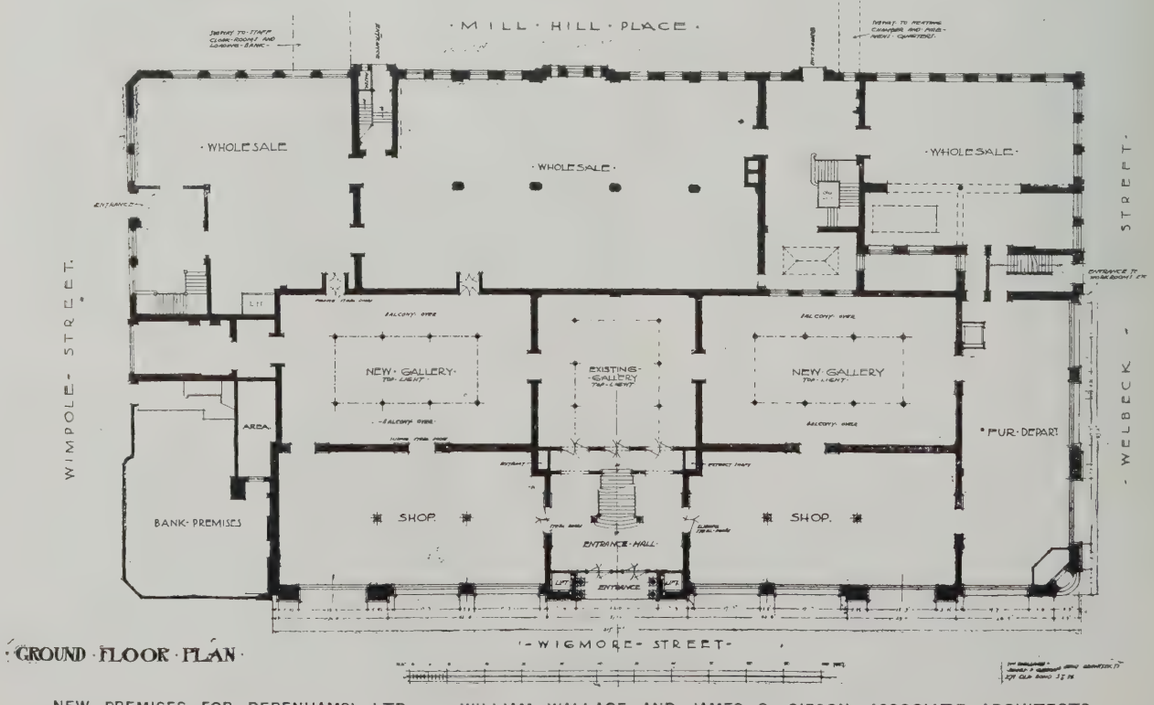
The heating is, in the main buildings, by steam on the atmospheric system, and the whole of the basement being ventilated on the plenum system, with very satisfactory results. The hot-water service throughout the building is provided from the boilers of the heating service during the winter, while change-over valves allow of this being heated by an ordinary low-pressure water boiler during the summer months. The apparatus, being maintained at a pressure lower than the atmosphere, gives a uniformly pleasant heat without any scorching effect upon the air, while the vacuum system obviates altogether the escape of foul air from the air valves.

The metal casements throughout the building have the best weather-tight sections, with simply designed gunmetal fittings.

A feature of the retail portion of the premises is the attention paid to the comfort of patrons, for whom lifts are provided to the upper floors. On the third floor a light and airy restaurant has been arranged with a smoking-room annexe, and on the opposite side of the landing is the club-room, with desks and stationery, easy chairs, and newspapers, for the use of patrons.

The following are some of the sub-contractors:—

Carrara ware: Doulton and Co., Ltd., Lambeth. *Constructional steelwork*: Homan and Rodgers, London. *Passenger and service lifts*: The Otis Elevator Co., Ltd., London. *Bronze caps and bases to columns, and balustrading to main staircase*: J. W. Singer and Sons, Ltd., Frome. *Marble work*: J. and H. Patteson, Manchester. *Decorative plastering to first and restaurant floors*: Ernest W. Gimson, Cirencester. *Decorative plastering to ground floor and galleries*: Gilbert Seale, London. *External and internal decorative work*: The Birmingham Guild of Handicraft, Birmingham. *Steam heating and metal casements*: Henry Hope and Sons, Ltd., Birmingham. *Pavement lights and electro-copper glazing*: The British Luxfer Prism Syndicate, Ltd., London. *Mosaics*: Rust's Vitreous Mosaic Co., London. *Steel doors*: The Crittall Manufacturing Co., Ltd., London. *Ventilating*: Jas. Keith and Blackman, Ltd., London. *Portland cement* (Hilton, Anderson brand): Associated Portland Cement Manufacturers, Ltd. *Exterior stone carving*: H. H. Martyn and Co., Cheltenham.



GROUND FLOOR PLAN

NEW PREMISES FOR DEBENHAMS' LTD. WILLIAM WALLACE AND JAMES S. GIBSON, ASSOCIATE ARCHITECTS.

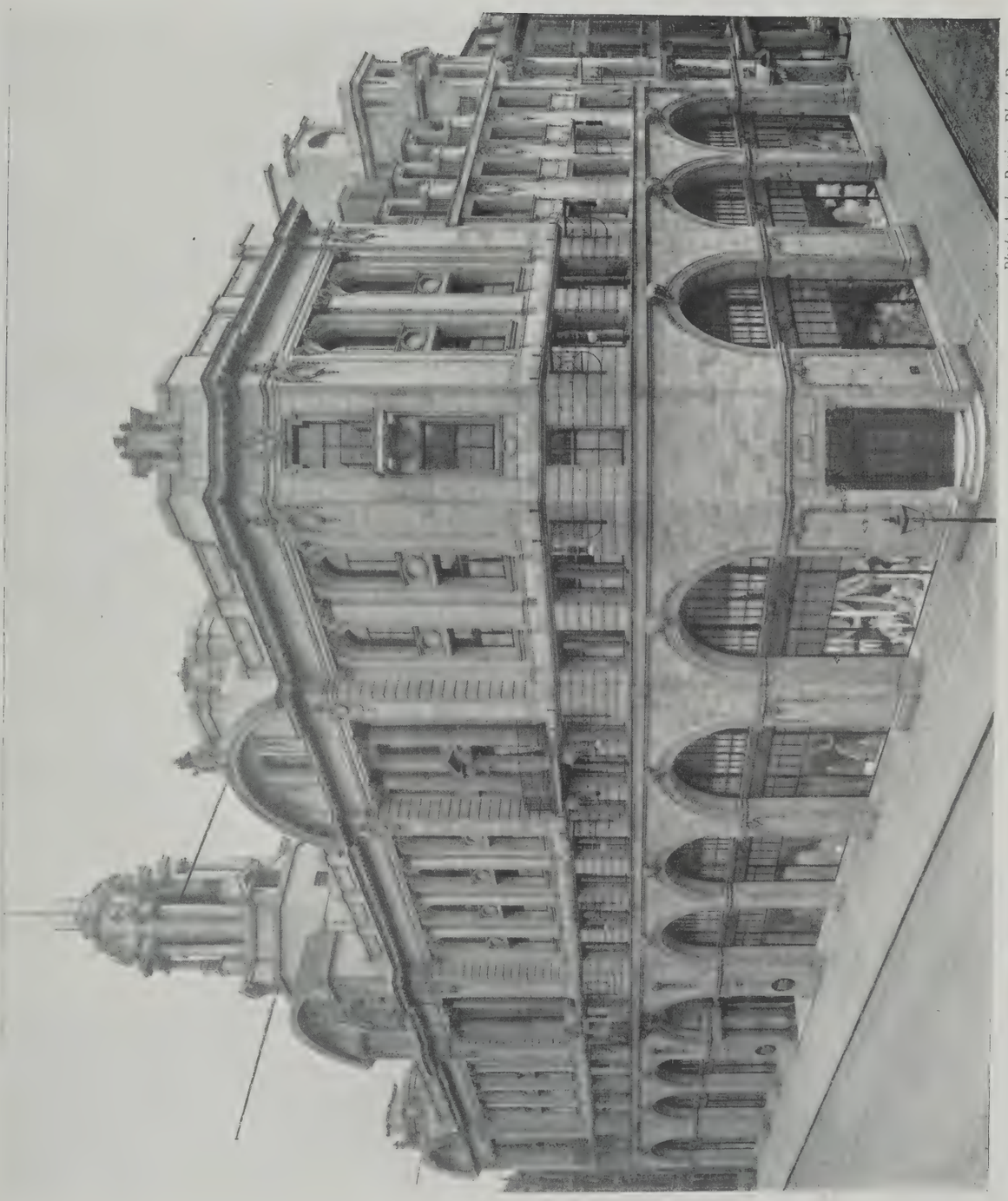


Photo Arch. Review Photo Bureau.

NEW PREMISES FOR DEBENHAMS' LTD., LONDON. GENERAL VIEW FROM WIMPOLE STREET.
WILLIAM WALLACE AND JAMES S. GIBSON, ASSOCIATE ARCHITECTS.

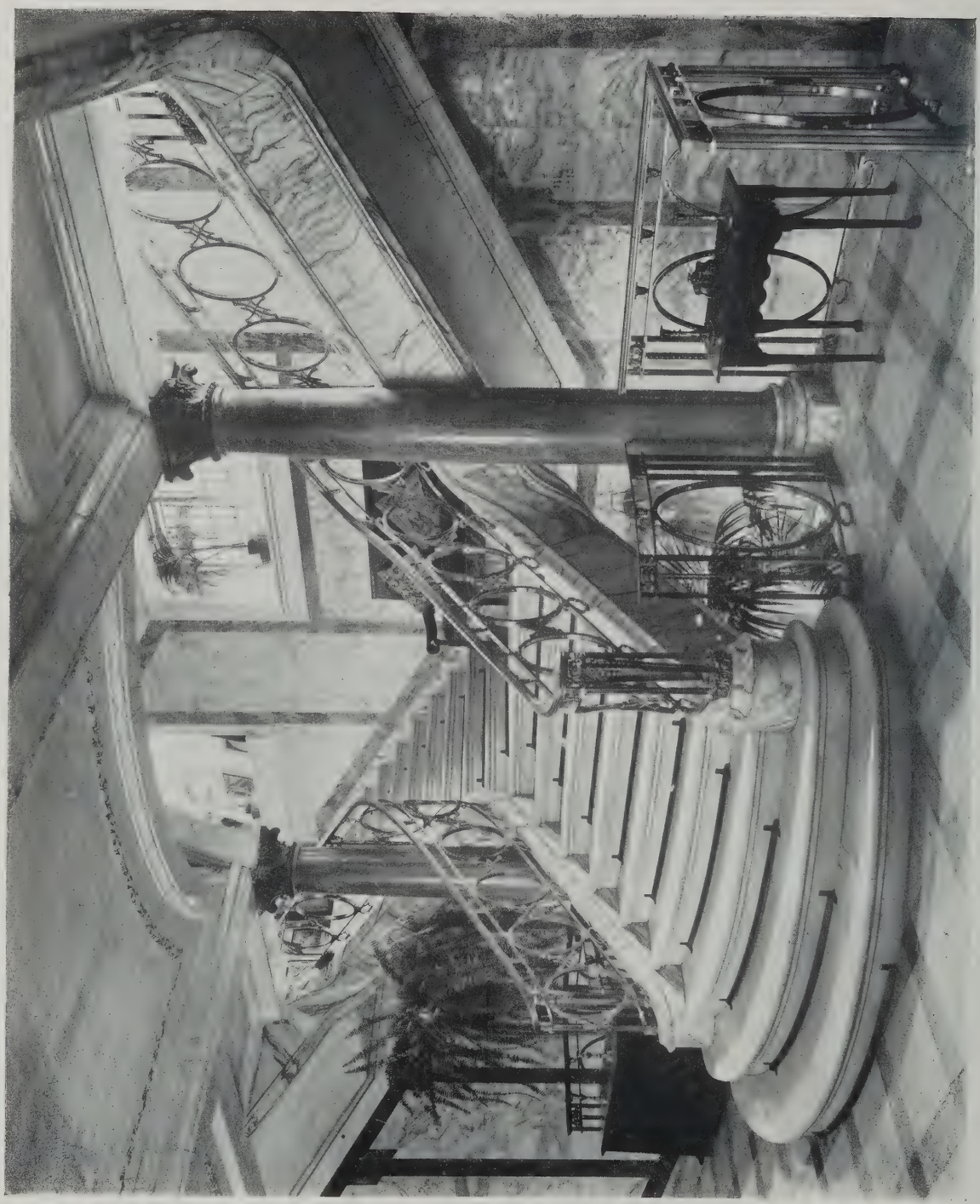


Photo: Arch. Review Photo Bureau.

NEW PREMISES FOR DEBENHAMS' LTD., LONDON. THE MAIN STAIRCASE FROM THE ENTRANCE HALL.
WILLIAM WALLACE AND JAMES S. GIBSON, ASSOCIATE ARCHITECTS.



NEW PREMISES FOR DEBENHAMS' LTD., LONDON: A GALLERY ON THE GROUND FLOOR. WILLIAM WALLACE AND JAMES S. GIBSON, ASSOCIATE ARCHITECTS.

Photo: Arch. Review Photo. Bureau.

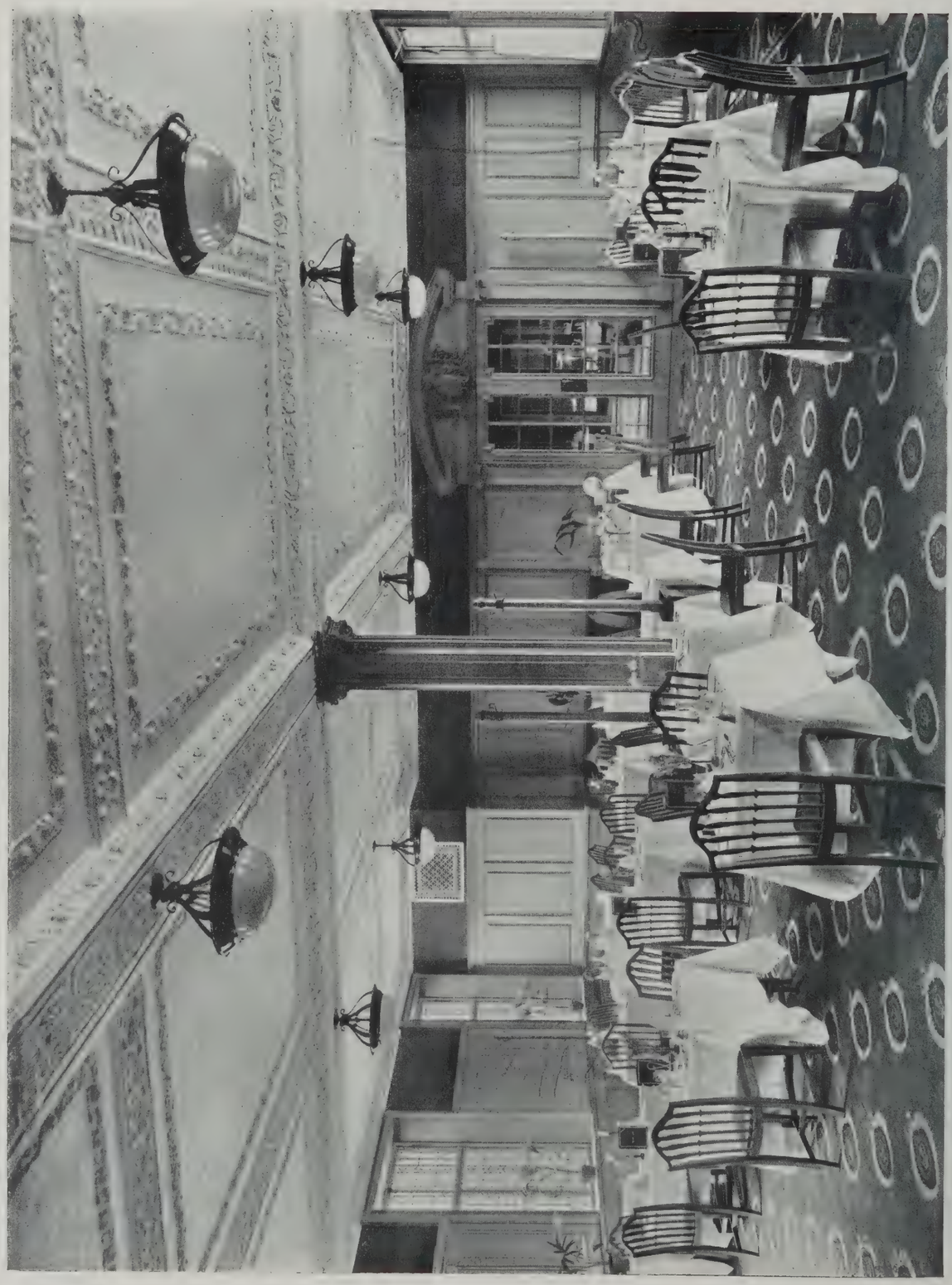


Photo: Arch. Review Photo Bureau.

NEW PREMISES FOR DEBENHAMS', LTD.: THE RESTAURANT ON THE THIRD FLOOR.
WILLIAM WALLACE AND JAMES S. GIBSON, ASSOCIATE ARCHITECTS.

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL.

This building, designed by Briggs and Wolstenholme, F. B. Hobbs, and Arnold Thornely, has been erected by the Docks Board to accommodate the various departments which until recently were inconveniently scattered. The offices occupy a commanding position on the river frontage, the site being a portion of the old George's Dock, close to the Pier Head. The aspect is due west.

The structure was started about five years ago, the first nine months being occupied in putting in the foundations, which start from the solid rock from 30 ft. to 40 ft. below street level. About 5,000 tons of cement concrete were used for this portion of the work. Owing to the proximity of the River Mersey, and the fact that spring tides reach within 3 ft. of the level of the street, great care has been taken to ensure the basement being thoroughly dry. An inch of asphalt was accordingly laid over the whole of the site and carried up inside the balustrade wall to pavement level. The building is of fire-resisting construction throughout, steel columns, girders, etc., being incased in concrete. There are in all twenty-five strong-rooms, equipped with patent strong-room doors and ventilating gates, and there are, in addition, a large number of fire and thief-resisting safes.

The chief feature of the interior is the central octagonal hall, 72 ft. in diameter, and rising internally to a height of 120 ft., with a grand staircase and galleries at each floor level. Corridors radiating from these galleries provide access to all parts of the building. Seven electric passenger lifts have been installed.

The grand staircase is constructed of grey granite from the quarries belonging to the Dock Board at Creetown, Dumfriesshire, and the balustrade round the site is also built of the same material.

The halls and corridors on the ground floor are lined with white (Calacata) marble to a height of 8 ft. 6 in., the corridors on the upper floors having dadoes of white marble.

Danzig oak is used for the woodwork, except in the board-room, which is finished in Spanish mahogany. Bronze has been used throughout for all door furniture, all fittings being to special designs.

The lavatories are lined with glazed tiles up to ceiling level, and opaline divisions by Adamsez, Ltd., have been used between the w.c.'s. All woodwork here is of oiled teak.

A large number of the windows were manufactured to the architects' details. The sections employed were of special patterns with a high-class finish, which are generally used for buildings of this class. The windows are mahcine-made throughout, the joints being very exactly fitted through cutting with milling machines which scribe and tenon the ends to the exact shape required.

The designs throughout have been arranged with thought, imbued with the maritime nature of the business for which the building was erected—especially noticeable being the bronze terminals on the main entrance gates, representing a globe supported by dolphins, and the outside bronze electric light brackets, with the lamps in the hands of the broadly designed figure of Neptune.

The following are some of the sub-contractors :—

Best Whitbed stone: F. J. Barnes, Quarries, Isle of Portland. *Carved stonework*: Earp, Hobbs and Miller, Manchester; E. O. 'Griffiths, Liverpool. *Wall tiling*: C. W. Williams and Co., Manchester. *Opaline slabs to lavatories*: Adamsez, Ltd., Leeds. *Slating*: Waterhouse and Dondy, Liverpool. *Copper dome*: Ewart and Sons, London. *Asphalte flats*: The Seyssel and Metallic Lava Asphalte Co., London. *Casements and casement fittings*: Geo. Wragge, Ltd., Manchester; H. Hope and Sons, Birmingham; James Gibbons, Wolverhampton. *Patent glazing and fittings*: W. H. Heywood and Co., Huddersfield. *Grates and mantels*: Goodall, Lamb and Heighway, Ltd., Manchester. *Plumbing and sanitary fitting work*: Mellowes and Co., Sheffield. *W.C.'s*: Doulton and Co. *Urinals*: Twyford, Ltd., Hanley. *W.H basins*: Mellowes and Co. *Lead down pipes and R.W. heads (special make)*: Mellowes and Co. *Mosaic and marble flooring*: Diespeker, Ltd., London. *Electric wiring and bells*: The Alliance Electrical Co., Ltd., Birmingham. *Electrical fittings*: Veritys, Ltd., London. *Modelled plasterwork*: *special woodwork and carving*: Earp, Hobbs and Miller, Manchester. *Special doors*: Van Kannel Revolving Door Co., Ltd., London. *Stained glass*: G. Wragge and Co., Ltd., Manchester. *Leaded lights*: Mellowes and Co., Sheffield. *Art metal work (special designs)*: Geo. Wragge, Ltd., Manchester. *Bronze entablature, etc.*: Spital and Clark, Birmingham. *Gates, railings, handrails, balusters, etc.*: G. Wragge, Ltd., Manchester. *Book, service and passenger lifts*: Easton Lift Co., London. *Strong room doors*: Milners Safe Co., Liverpool. Goodall, Lamb and Heighway, Ltd., Salford. *Portland cement* (J. B. W. brand): Associated Portland Cement Manufacturers, Ltd., London. *Paving work and staircases*: Stuart's Granolithic Co., Ltd., London.



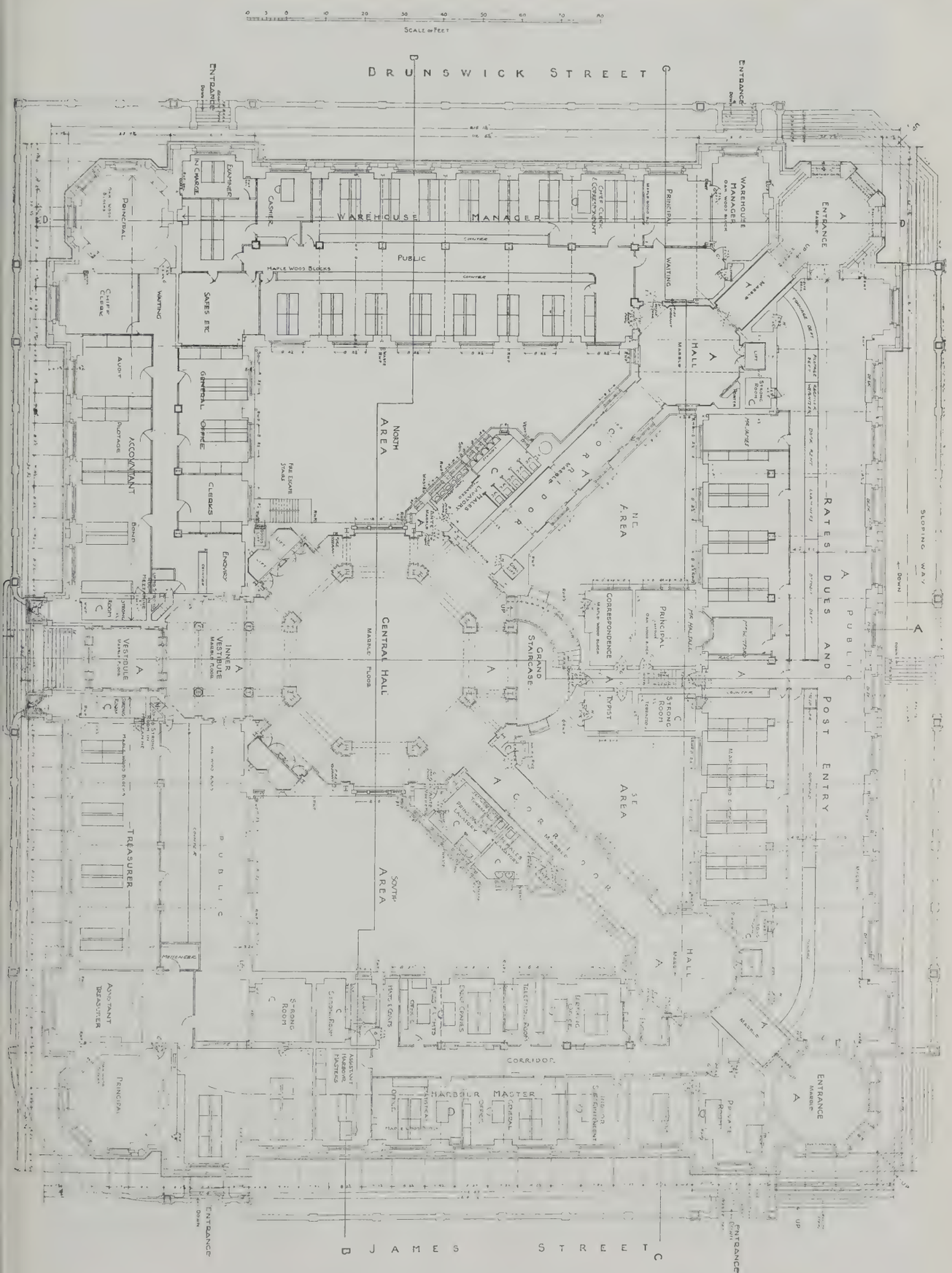
Photo: T. Lewis.

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL: GENERAL VIEW. BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.



Photo: T. Lewis.

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL: GENERAL VIEW FROM THE NORTH-WEST.
BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.



THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL. GROUND PLAN.
BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.



The Central Hall: Ground Floor.



The General Office: Ground Floor. *Photos: T. Lewis.*

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL.
BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.



The waiting hall: Second floor. *Photo: T. Lewis.*

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL. BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.



The Board Room. Photo: T. Lewis.

THE MERSEY DOCKS AND HARBOUR BOARD OFFICES, LIVERPOOL.
BRIGGS AND WOLSTENHOLME, F. B. HOBBS AND ARNOLD THORNELY, ARCHITECTS.

NEW PUBLIC OFFICES, WESTMINSTER.

The site of the above building was acquired under the authority of several Acts of Parliament. It occupies an important position at the corner of Parliament Square and Parliament Street, and the area at present covered is about three acres. The buildings when eventually completed will extend the full length of Great George Street to St. James's Park, and will then occupy a further area of two acres. The new block is connected to the Home Office block by a stone bridge with three arches.,, The foundations were commenced in 1900, this part of the work being carried out by Mowlem and Co.; but before the superstructure was begun Mr. Brydon died, and its subsequent erection by Spencer, Santo and Co., Ltd., has been under the direction of Sir Henry Tanner, Principal Architect to the Commissioners of Works.

The style is English Renaissance, an important feature being the circular court, 160ft. in diameter, approached through archways from Charles Street, and to be later approached in a similar way from Great George Street. The latter part of the court is at present incomplete, pending the acquisition and demolition of the Institution of Civil Engineers and other buildings existent on the Great George Street frontage. The exterior is faced with Portland stone, and worked by the general contractors. The sculpture in the pediment is the work of Bertram Mackennal, and is designed to represent in some manner the use to which the building is assigned.

The principal entrance is on the Parliament Street front, and the sculpture here and all round the lower part of the building is by Mr. W. S. Frith. Mr. Frith is also responsible for the sculpture of the spandrels to the arches of the bridge connecting the new block of buildings with the Home Office block. The top sculpture on the bridge, from the chisel of Paul R. Montford, is made up of two projecting groups and a centre panel.

The entrance archways in Charles Street are closed by three massive wrought-iron gates, with decorative coats of arms in bronze.

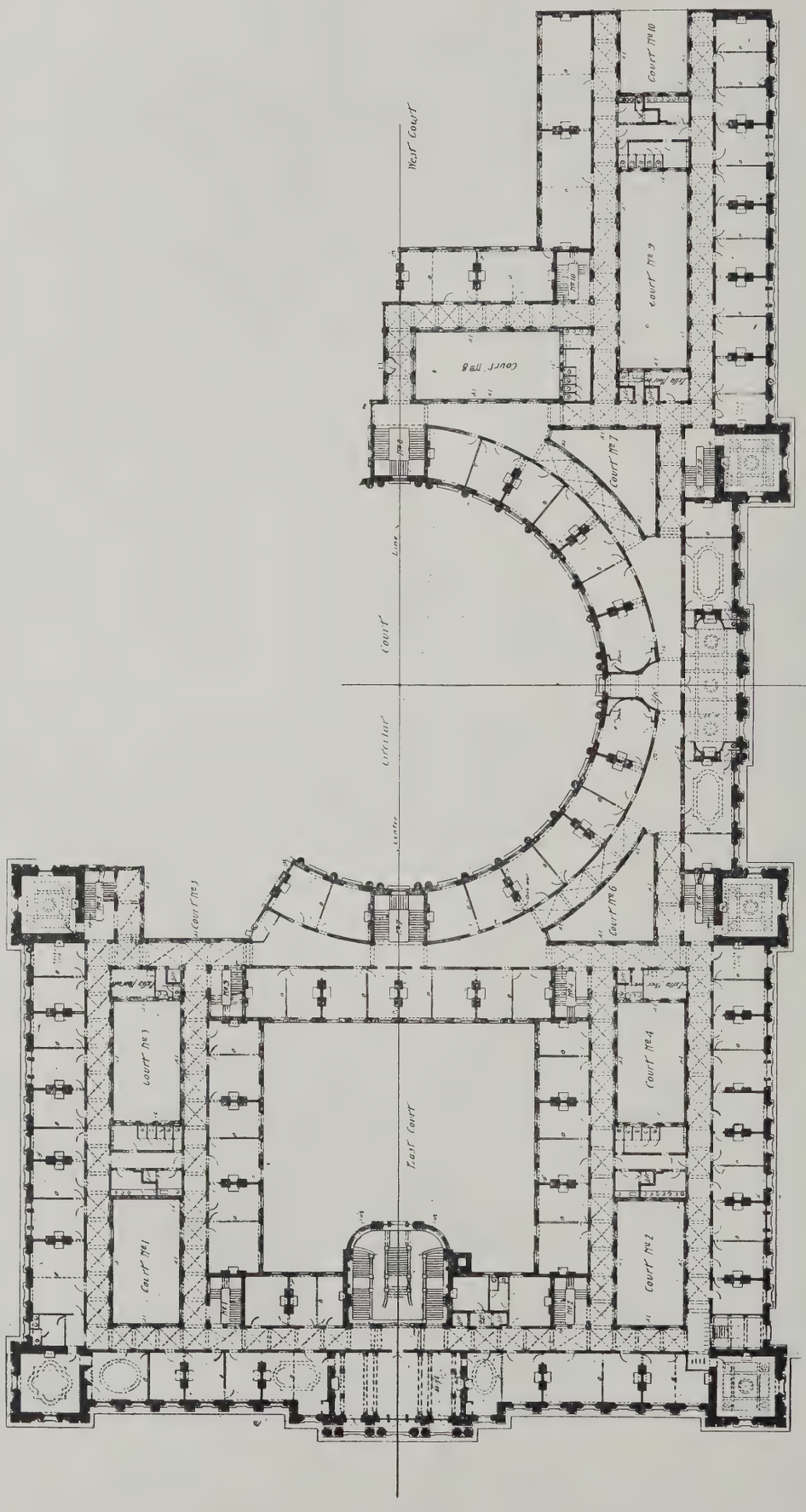
The interior contains about 500 rooms for the accommodation of about 1,500 officials; the number of the latter has increased considerably since the buildings were first planned. In general the aim of the planning has been to provide large, airy rooms for the use of two or three officials, rather than provide a large number of small private rooms. The Local Government Board Department occupies the Parliament Street and Great George Street fronts; the Education Department is situated on the Charles Street side.

The principal entrance opens into a spacious hall, the ceiling of which is upheld by monolith Mazzano columns. The Mazzano marbles obtained from the quarries at Brescia have soft, warm colours. The principal entrance hall leads directly to the grand staircase, carried out entirely in Mazzano marble, giving access to the principal floor. Directly opposite to the staircase on the principal floor is the audience room, where the President of the Local Government Board receives deputations. This, with its pilasters of pavonazzo marble, and an enriched plaster ceiling, and the board room of the Education Department, are the most elaborately-decorated apartments in the building. The whole of the interior woodwork has been executed by the general contractors, including the panelling in the principal rooms, the doors, teak window frames, and the fine pair of teak doors at the entrance. The Ministers' rooms and those of the principal permanent officials have



Photo: Arch. Review Photo Bureau.

NEW PUBLIC OFFICES, WESTMINSTER: THE BOARD ROOM, BOARD OF EDUCATION.
BUILDING DESIGNED BY THE LATE JOHN BRYDON: COMPLETED BY SIR HENRY TANNER, I.S.O.



NEW PUBLIC OFFICES, WESTMINSTER. DESIGNED BY THE LATE JOHN BRYDON; COMPLETED BY SIR HENRY TANNER, I.S.O.

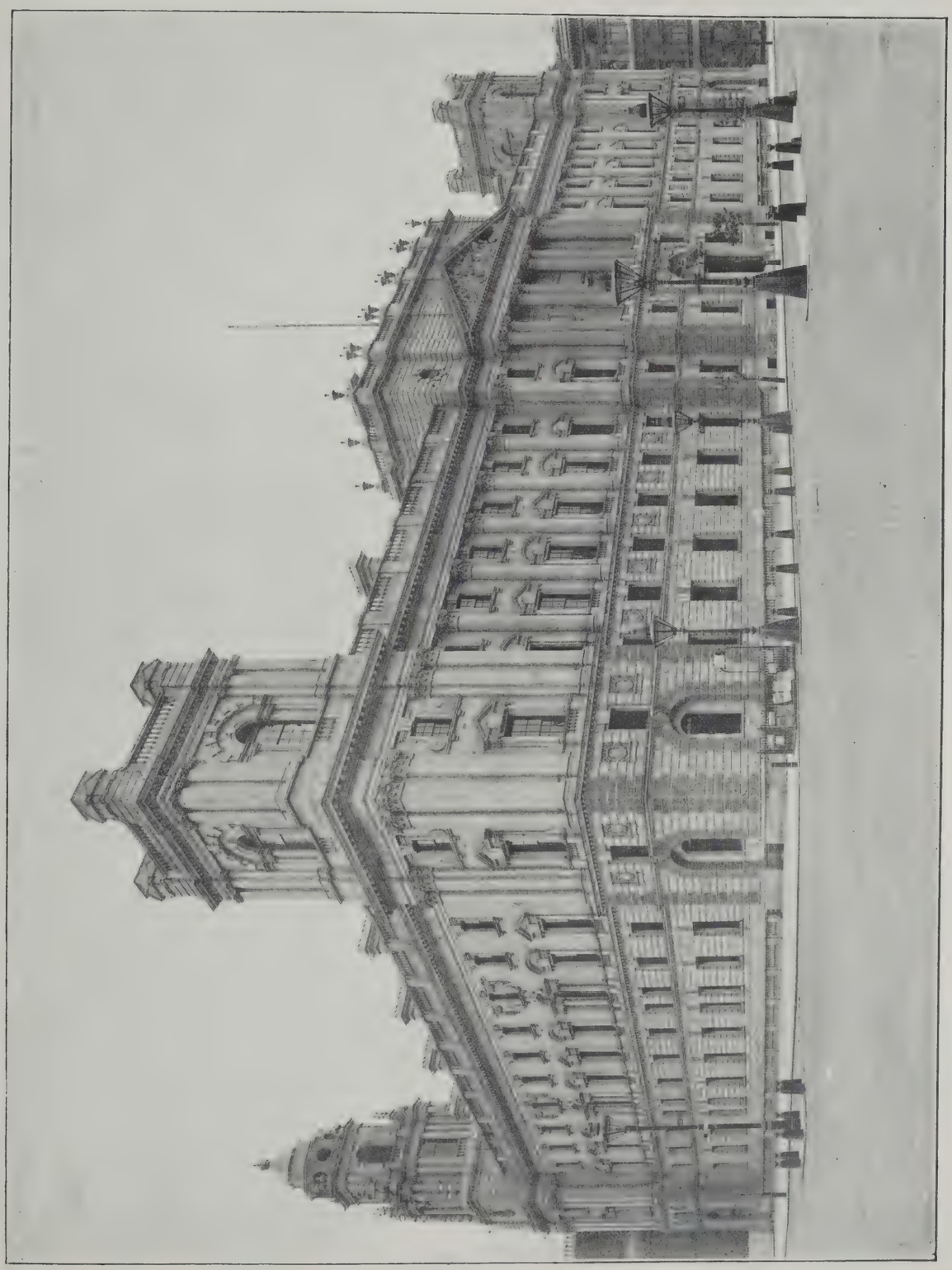


Photo: Arch. Review Photo Bureau.

NEW PUBLIC OFFICES, WESTMINSTER: VIEW FROM PARLIAMENT SQUARE. DESIGNED BY THE LATE JOHN BRYDON; COMPLETED BY SIR HENRY TANNER, I.S.O.



Photo: Arch. Review Photo Bureau.

THE NEW PUBLIC OFFICES, WESTMINSTER: THE PRINCIPAL STAIRCASE FROM THE ENTRANCE HALL.
DESIGNED BY THE LATE JOHN BRYDON: COMPLETED BY SIR HENRY TANNER, I.S.O.

been more plainly fitted with fine wainscot, and have enriched ceilings; but the other offices, and the interior generally, are of a plain character, as befits an office building, and the walls are for the most part painted in soft green shades. The present President of the Local Government Board having stipulated for plenty of book-shelf accommodation, two large book-cases have been erected in his room as part of the general scheme of decoration, and the same satisfactory arrangement has been carried out in several of the other rooms.

The whole of the engineering work has been executed under the direction of Mr. E. G. Rivers, I.S.O., M.Inst.C.E., Chief Engineer to the Commissioner of Works.

Kitchen and refreshment rooms have been fitted up in the top floor of the building for the accommodation not only of the two departments housed therein, but also for the Home Office officials.

Portland stone: Bath Stone Firms, Ltd. *Lifts*: R. Waygood and Co., Ltd. *Marble work*: Farmer and Brindley, Ltd.; John Daymond and Son. *Internal tiling*: Carter and Co., Ltd. *Tiling*: G. Woolliscroft and Son, Ltd. *Wood carving*: H. H. Martyn and Co., Ltd.; Farmer and Brindley, Ltd. *Stone carving*: John Daymond and Son; W. S. Frith. *Enriched plaster; wood carving*: H. H. Martyn and Co., Ltd. *Wrought iron and bronze gates; special dog grates and grille*: W. Bainbridge Reynolds, Ltd. *Wrought iron work*: T. Brawn and Co., Birming- *Hydraulic power and hydraulic injector*: The London Hydraulic Power Co. *Electric fittings*: Veritys, Ltd. *Heating installation*: Strode and Co., Ltd. *Domestic hot water service*: R. Crittall and Co. *Joinery work throughout, wood chimney-pieces, panelling, etc.*: Spencer, Santo and Co., Ltd. *Special elertric fittings and cast-iron standards and bronze lanterns for the outside*: The Bromsgrove Guild. *Gas-cooking plant*: The Carron Foundry Co. *Bronze finger-plates, etc.*: Henry Hope and Sons, Ltd. *Paints*: R. Gay and Co. *Asbestos slate*: Calmon Asbestos and Rubber Works, Ltd. *Locks and furniture*: James Gibbons; C. Smith, Sons, and Co. *Mosaic and terrazzo flooring*: Diespeker, Ltd. *Ash and coal platform lift*: Easton Lift Co. *Radiators*: British Radiator Co. *Stair balustrading*: Jones and Willis, Ltd. *Stoves and grates*: W. B. Clarke and Co. (Corker and Co.); T. Elsley and Co. *Chimneypieces*: G. R. McKenzie and Co. *Steam cooking apparatus*: Wenham and Waters. *Euboeolith jointless flooring*: J. Percy Day. *Granolithic paving*: Stuart's Granolithic Co., Ltd. *Glazed bricks*: Burmantofts Branch, Leeds Fireclay Co. Ltd.



Photo: Arch. Review Photo Bureau.

NEW PUBLIC OFFICES, WESTMINSTER: THE ENTRANCE HALL.
DESIGNED BY THE LATE JOHN BRYDON; COMPLETED BY SIR HENRY TANNER, I.S.O.



Photo: Arch.l Review Photo Bureau.

NEW PUBLIC OFFICES, WESTMINSTER: THE PRINCIPAL STAIRCASE FROM MEZZANINE FLOOR LEVEL.

DESIGNED BY THE LATE JOHN BRYDON; COMPLETED BY SIR HENRY TANNER, I.S.O.

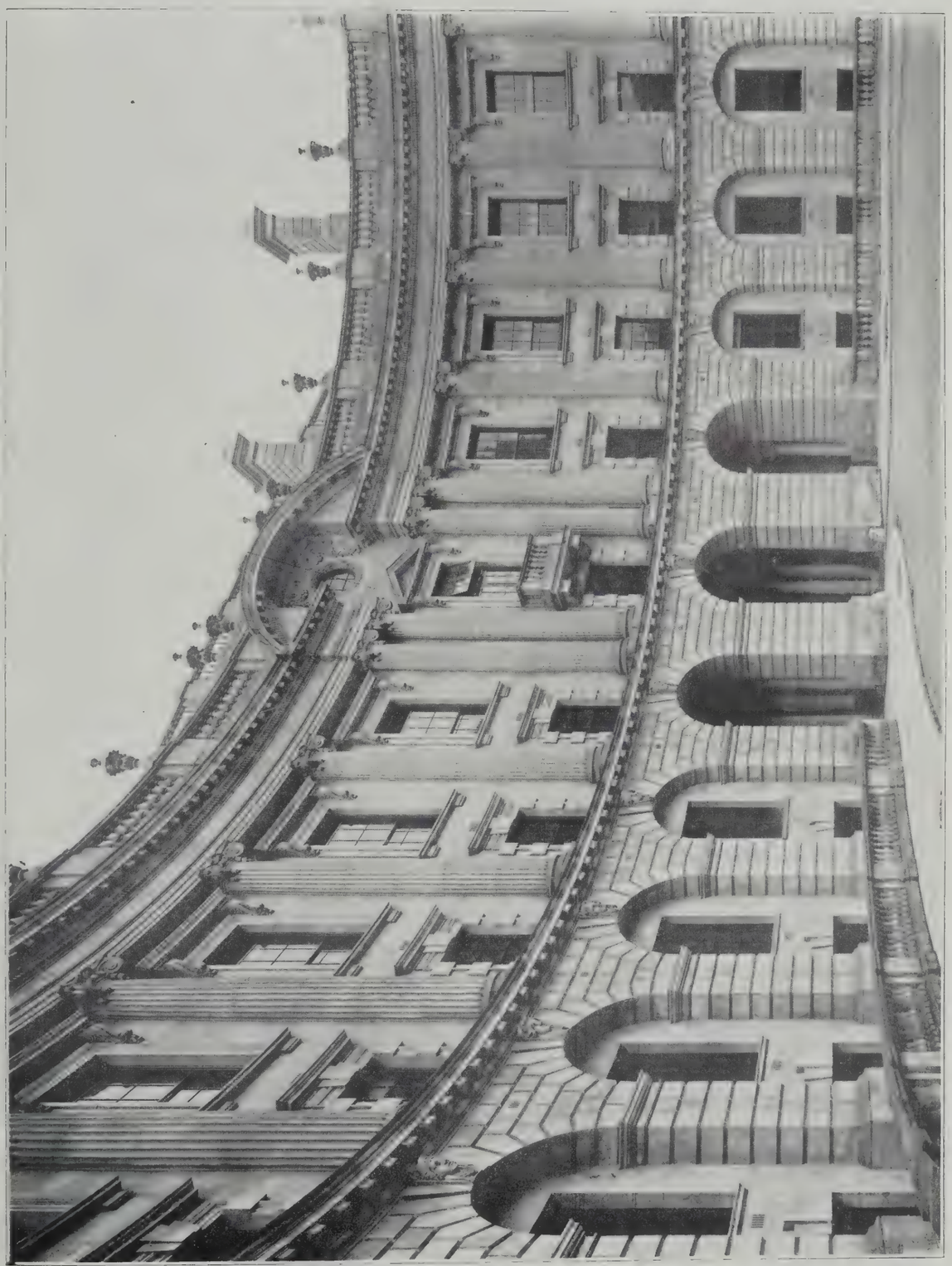


Photo: Arch. Review Photo Bureau.

NEW PUBLIC OFFICES, WESTMINSTER: THE CIRCULAR COURT, LOOKING TOWARDS THE CHARLES STREET ENTRANCE.
DESIGNED BY THE LATE JOHN BRYDON: COMPLETED BY SIR HENRY TANNER, I.S.O.



The Audience Room, Local Government Board.



The President's Room, Local Government Board. *Photos: Arch. Review Photo Bureau.*

NEW PUBLIC OFFICES, WESTMINSTER.

DESIGNED BY THE LATE JOHN BRYDON: COMPLETED BY SIR HENRY TANNER, I.S.O.



The Loggia Entrance, Charles Street, from the Circular Court.



Photos: Arch. Review Photo Bureau.

The Loggia, Charles Street, from the Carriageway.

THE NEW PUBLIC OFFICES, WESTMINSTER. DESIGNED BY THE LATE JOHN BRYDON: COMPLETED BY SIR HENRY TANNER, I.S.O.

THE HAMBURG-AMERIKA LINIE BUILDING, LONDON.

Erected by the Disconto Gesellschaft, the main portion of the ground floor and basement of the Hamburg-Amerika Linie Building, 14, 15, and 16, Cockspur Street, S.W., is now occupied by the latter company for their enlarged offices, the remainder of the building being available for letting as offices—to be divided into suites to tenants' requirements.

The building, which is of seven storeys and is of steel construction, stands on two different properties, and the main setting out has been unalterably determined by the conditions of the site, the requirements of the freeholders, and the exigencies of the light and air of the adjoining properties. The upper part of the facade is carried out in Portland stone. The main shipping office is about 75ft. by 40ft. by 18ft. high, and is treated as one large room, the left-hand side devoted to the cabin, and the right-hand to the tourist departments, with the cashier in the centre. Behind the cashier's department are the telephone cabinets and the typewriters. In the basement beneath the main shipping office are the baggage room, with strong room, goods lift to the back street, and extra office accommodation, lavatories, etc. The manager's room in connection with the main office is, approximately, hexagonal in shape, and has a domed ceiling; the walls are lined with panelling, painted white, with a marble fireplace.

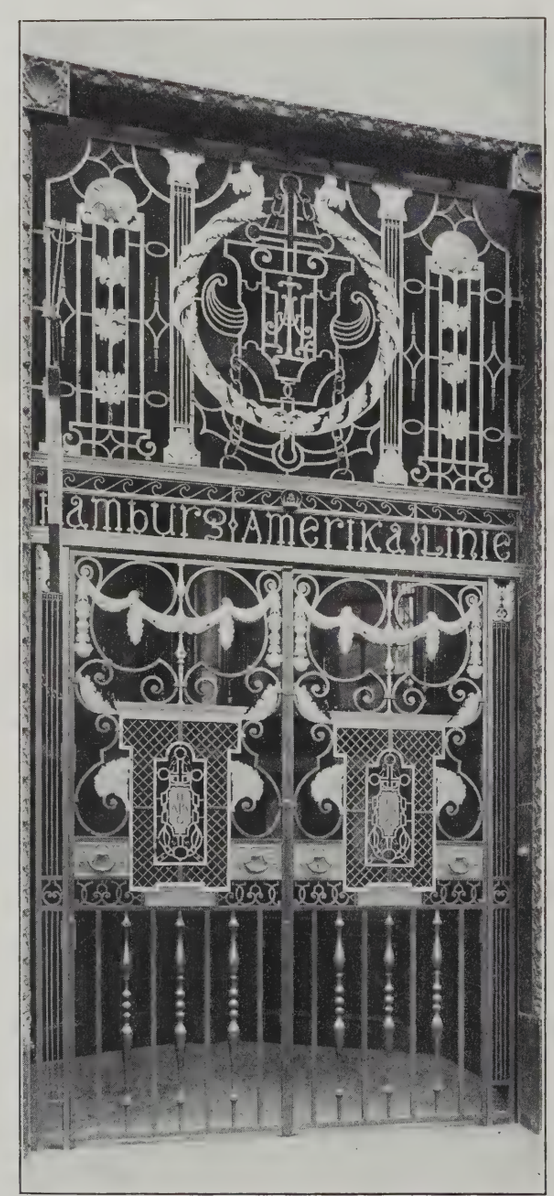


Photo: Bedford Lemere.

WROUGHT-IRON AND GILT GATE.

The main office ceiling is of modelled plaster of considerable scale and relief; the walls are panelled 11ft. high in choice Cuba mahogany with specially selected veneers in the upper tier of carved panels. The dividing pilasters are inlaid with mother-of-pearl of selected colouring, and the caps and bases of the secondary pilasters are of ormolu. The mahogany is of natural colour, polished but not stained, and is of golden yellow-brown in colour. There is a frieze of modelled plaster 6ft. deep above the panelling, the principal bays having ovals representing by figure composition the four Continents.

All the modelling has been carried out by Mr. Schacht from the architects' drawings, and the casting was executed by Mr. Aubrey. The central columns on the dividing line of the properties are of steel encased in concrete, and have been finished on the solid with superfine Keen's cement and polished by Mr Minshull to a white marble face, the bases being finished black, while the caps are gilded and in part burnished.

All the elaborate joinery fittings and furniture have been carried out from the architects' drawings, and Mr. Raymond has been responsible for the solid mahogany carving. The mother-of-pearl inlay was supplied and cut by Mr. Lucas. The floor is of interlocked indiarubber, laid out in white bands with a solid black filling, and has been executed from the architects' designs.

Irish green marble from Connemara has been used in the fireplace in combination with pavonazzo and Italian Brescia. The large and elaborate chandeliers and other fittings, the ormolu and bronze screens, door-plates, etc., and the large wrought-iron screen and gates to the main entrance, and also the balcony railings, have all been executed from the architects' drawings.

The external bronze work, including the large panel with life-size figures over the entrance to the shipping office, was modelled by Mr. J. Wenlock Rollins. The work occupied about eighteen months, and the total cost approaches £50,000. The general contractors were Waring and White, Ltd. The following were some of the sub-contractors:—

Norwegian granite: J. Whitehead and Sons, Ltd. *Joinery (deal and hardwood)*: Waring and Gillow, Ltd. *Mother-of-Pearl inlay*: Mr. Lucas. *Modelled and cast decoration*: Schacht and Aubrey. *Paving*: The British Doloment Co., Ltd. *Concrete staircases and cement floors*: Stuart's Granolithic Co., Ltd. *Electric wiring*: Beaven and Sons, Ltd. *Heating*: Nicholson and Co. *Bronze screens anud wrought iron work*: The Birmingham Guild of Handicraft. *Cast bronze*: Mr. Burton. *Party wall doors and safes*: Ratner Safe Co., Ltd. *Grate interiors*: Wright and Co. *Hydraulic and electric lifts*: Waygood and Co. *Casements*: Burt and Potts. *Glazing*: Harvey and Ashby. *Show-cases*: Stanley, Jones and Co. *Mosaic floor vestibule*: Burke and Co. *Rubber flooring*: New York Belting and Packing Co., Ltd. *Asphalt flats, etc.*: Thomas Faldo and Co., Ltd. *Painting, etc.*: Waring and Gillow, Ltd. *Hall's washable distemper*: Sissons Bros. and Co., Ltd. *Portland Cement* (Hilton, Anderson brand): Associated Portland Cement Manufacturers, Ltd. *Luxfer Fire-resisting glazing*: British Luxfer Prism Syndicate, Ltd.



Photo: Bedford Lemere.

THE HAMBURG-AMERIKA LINIE BUILDING, LONDON: GENERAL VIEW OF THE FACADE.

ARTHUR T. BOLTON AND STOCK, PAGE AND STOCK, ARCHITECTS.



Photo: Bedford Lemere.

THE HAMBURG-AMERIKA LINIE BUILDING, LONDON: THE MANAGER'S ROOM.

ARTHUR T. BOLTON AND STOCK, PAGE & STOCK, ARCHITECTS.

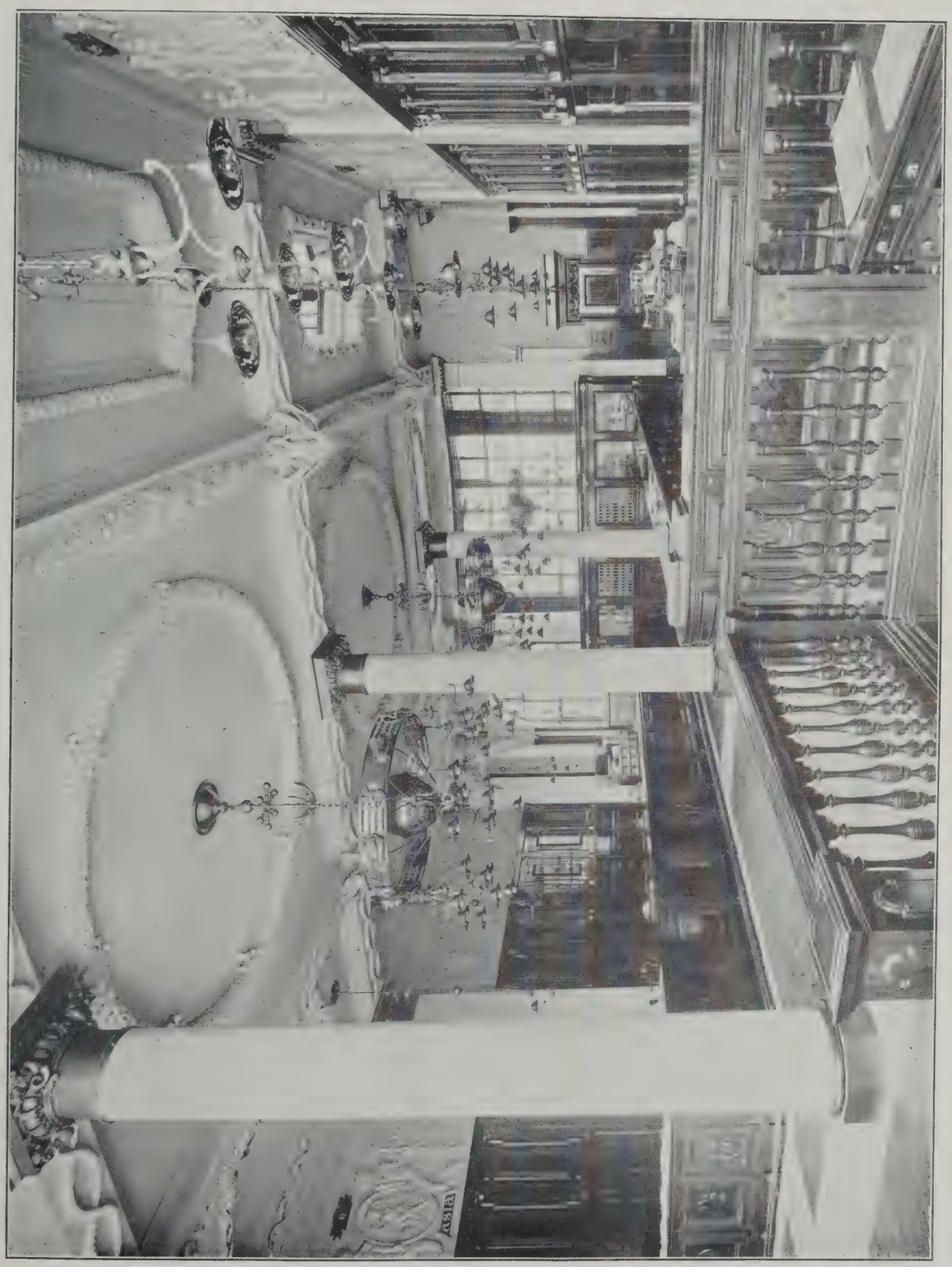


Photo. Bedford Lemere.

THE HAMBURG-AMERICA LINE BUILDING, LONDON. THE MAIN HALL FROM THE ENTRANCE.
ARTHUR T. BOLTON AND STOCK, PAGE AND STOCK, ARCHITECTS.

THE PICCADILLY HOTEL, LONDON.

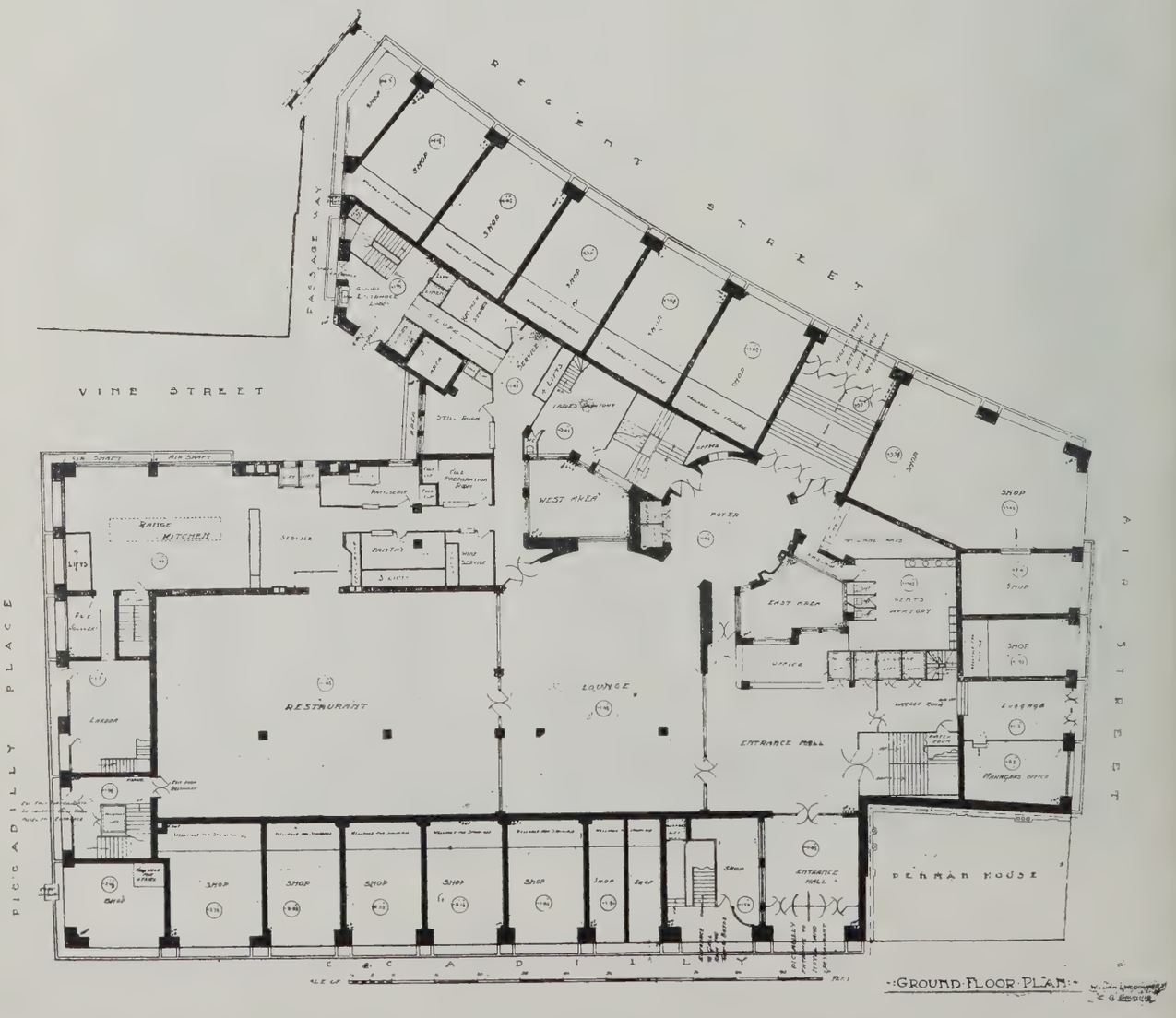
The first plans for this building were prepared by Messrs. William Woodward, F.R.I.B.A., and Walter Emden, who were required to work to the exterior design by Mr. Norman Shaw, R.A., as approved by the advisory committee, consisting, in addition to Mr. Shaw himself, of Sir Aston Webb, R.A., Sir John Taylor, and Mr. John Belcher, A.R.A. Mr. E. A. Gruning, F.R.I.B.A., subsequently succeeded Mr. Emden, on the retirement of the latter gentleman from practice as an architect, and Mr. Charles Woodward, A.R.I.B.A., assisted his father and Mr. Gruning.

The foundations extend 40 ft. beneath the street level, giving three underground floors, and ensuring the prevention of vibration from the street traffic. The Turkish and swimming baths are below ground, and can be reached by means of lifts. There are thirty lifts in all—six for passengers, six for goods, sixteen for service, and two hydraulic freight elevators; all but those last named being worked electrically, and all completely equipped with indication, control, and safety devices. The grill-room in the basement, and the restaurant on the ground floor, are 80 ft. by 52 ft. On the first floor there are two dining-rooms, the larger of which is 47 ft. by 32 ft. On the second floor is the terrace, which can be regarded either as a winter garden or as an open-air summer lounge.

The construction is, of course, as perfectly fire-resisting as modern resources render possible. In the steel construction work the stanchions below the ground-floor level are of cast iron, and the superstructure in wrought steel. There are many heavy box girders, some weighing over thirty tons. The roofs necessitated much intricate framing. The stanchions, girders, floors, and roof contain in all from 6,000 to 7,000 tons of iron and steel, and the building as a whole forms a fine example of steel fireproof construction.

The internal decorations represent various styles and periods. In the grill-room the style is derived, but is not slavishly copied, from the galleries of the Palace of Versailles. The wall space is broken up by pilasters having an artistically modelled entablature, surmounted by a cavetto moulding, beyond which the deeply panelled ceiling is painted with clouds and sky. In the billiard-rooms, Norman arcading, pillars with cushion capitals, and trophies of ancient arms, give an effect that is at least quaint, if somewhat out of keeping with the assentially modern tables, cues, and shaded lamps.

The ladies' drawing-room is in Marie Antoinette style, in grey and gold, with sprays of painted flowers on the walls, and amoretti sporting with garlands on the domed ceiling. The large dining-



GROUND FLOOR PLAN.

room and adjoining reception-room are decorated in varied shades of cream and biscuit, with restraint and simplicity of ornamentation.

In the Adam dining-room and reception-room a background showing delicate shades of green, rose, and grey lends effect to the characteristic devices of which the brothers Adam have left so many examples. In the private sitting-rooms, and for the bedrooms, many standard styles of decoration and equipment are represented—old English, Georgian, Adam, Chippendale, Sheraton, Empire, and what not.

The all-important kitchen suites have naturally received the fullest possible attention, and represent a model modern equipment, comprising apparatus for cooking, baking, and pastry-making, and specially fitted stillrooms, etc.

The sanitary fixtures include eight sets of lavatory ranges, 135 closets, 61 plunge baths, 32 canopy baths, and four skeleton spray baths. The lavatory ranges are of Sicilian marble. The walls of the lavatories, bathrooms, and water-closets are tiled, and there are five different designs among the ninety-four rooms which are tiled from floor to ceiling. Sanitation of a rather special character is represented by the five suction cleaners, which, absorbing all dust and dirt, and conveying it into the drains, keep the hotel perfectly cleansed from all suspicion of disease germs. The walls of the entrances, Rotunda and foyer are finished with French stone stuc. The decorative work comprised also very extensive fibrous plaster work.

The flat roofs, gutters, and verandahs, also roof tank-rooms, second-floor loggia or terrace to Piccadilly elevation, are covered with asphalt.

The arrangements for heating, ventilation, and electric lighting were entrusted to Mr. Wingfield Bowles. In connection with the electricity installation, more than 4,000 switches have been used. The general contractors for the building were Messrs. Perry and Co.

The architects acknowledge the assistance, in the general supervision of the work, of Mr. H. H. Bartlett, of the firm of Messrs. Perry and Co., whose wide knowledge and experience of building work was invaluable. Mr. H. A. Bartlett also assisted in supervising the general building operations.

The following are some of the sub-contractors:—

Constructional iron and steel work: H. Young and Co., London. *"Cranham" soundproof partitions*: J. H. Sankey and Son, London. *Fireproof floors*: Frazzi Fireproof Construction, Ltd., London. *Artesian well*: Isler and Co., London. *The whole of the Portland stonework*: F. J. Barnes, Isle of Portland. *Heating, hot water, and ventilation*: Z. D. Berry and Sons. *Electric wiring*: Blackburn, Starling and Co. *Ornamental iron-work*; Hardman, Powell and Co., London and Birmingham; W. Miller and Sons, Wolverhampton. *Mosaic work*; Diespeker, Ltd., London. *The marble work to the principal staircases*: Fenning and Co., London. *Marble work*: J. and A. Crew, London. *Tiling*: George Woolliscroft and Son, Ltd., Hanley. *Baths, lavatories, w.c.'s*; Doulton and Co., London. *Conveniences*: George Jennings, Ltd.., London. *French stone stuc and decorative plaster*: Henry Johnson and Sons, Liverpool and London. *Decorations and furnishing*: Goodalls, Ltd., Manchester. *Cooking apparatus*: R. Crittall and Co., London. *Electric passenger goods and service elevators, also Hydraulic freight elevators*: Otis Elevator Co., London. *Stairtreads*: Metallic Paving and Artificial Stone Co., London. *Fire appliances*: Wm. Rose Hose Co., Manchester. *Power for lifts, fire hydrants, etc.*: London Hydraulic Power Co. 4,000 *"Diamond H" switches*: Hart Manufacturing Co. *Flat roofs, gutters, verandahs, roof tank rooms, etc.*: The Seyssel and Metallic Lava Asphalte Co., Ltd. *Sanitary fixtures and the whole of the plumbing*: Beaven and Sons, Ltd., London and Gloucester. *Portland cement* (Hilton, Anderson brand): Associated Portland Cement Manufacturers, Ltd., London. *Luxfer fire-resisting glazing and pavement lights*: British Luxfer Prism Syndicate, Ltd., London. *Fibrous plaster work to grill room, restaurant, lounges, etc., and two Adams dining-rooms in compo*: Veronese, Ltd., London.



Photo: Miles and Kaye.

THE PICCADILLY HOTEL, LONDON: THE RESTAURANT.



Photo: Arch. Review Photo Bureau.

THE PICCADILLY HOTEL, LONDON: THE PICCADILLY FRONT.

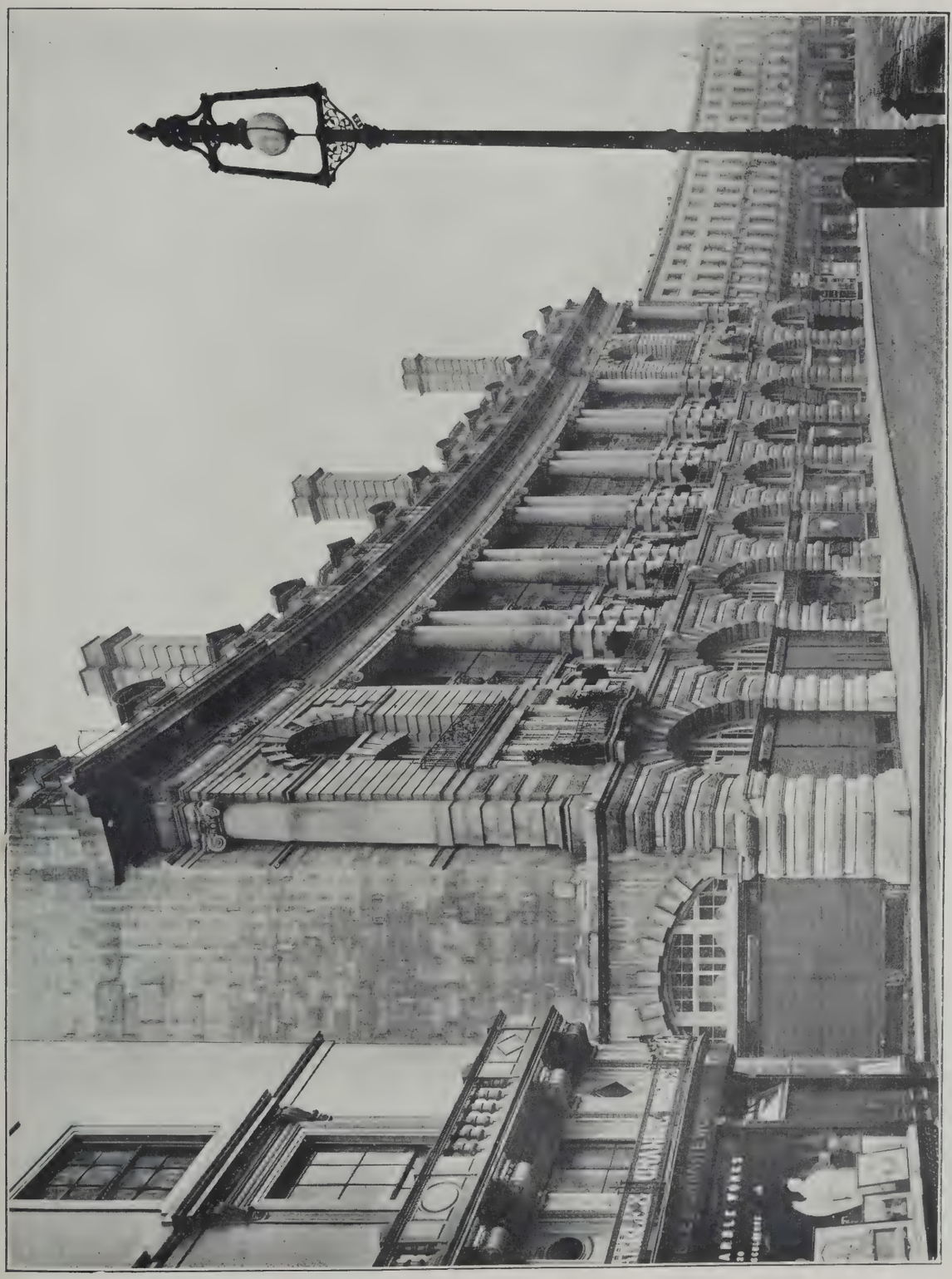


Photo: Arch. Review Photo Bureau.

THE PICCADILLY HOTEL, LONDON: THE REGENT STREET QUADRANT FRONT.



Photo: Miles and Kaye.

THE PICCADILLY HOTEL, LONDON: PICCADILLY ENTRANCE HALL AND OFFICES.



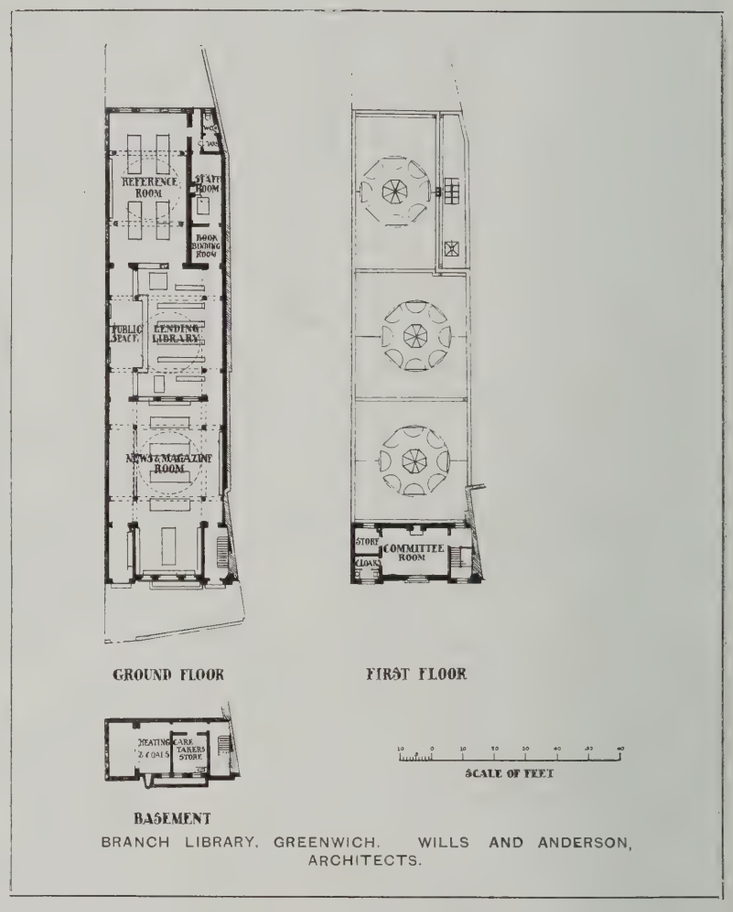
Photo: Miles and Kaye.

THE PICCADILLY HOTEL, LONDON: THE GEORGIAN ROOM.

TWO RECENT PUBLIC LIBRARIES.

BRANCH LIBRARY, LONDON ROAD, GREENWICH.

The site of this building is nearly opposite Greenwich Station. The walls had to be carried on concrete arches and piers, as no foundation could be obtained for 6 ft. below the surface of the ground. The front is carried out in rubbed brickwork and Portland stone, the roofs are of concrete and steel covered with asphalt, with the exception of the front roof, which is covered with Westmorland slates. The architects were Wills and Anderson, of London, and the general contractor was F. J. Gorham, of Point Hill, Greenwich. Among the sub-contractors were Henry Hope and Sons, who carried out the casements and fittings and leaded lights; N. F. Ramsay and Co., who supplied the door furniture, locks, etc.; R. Crittall and Co., who carried out the heating and ventilating; and T. Brawn and Co., who made the special gas fittings.



BRANCH LIBRARY, GREENWICH. WILLS AND ANDERSON, ARCHITECTS.

THE ABERDEEN PUBLIC LIBRARY.

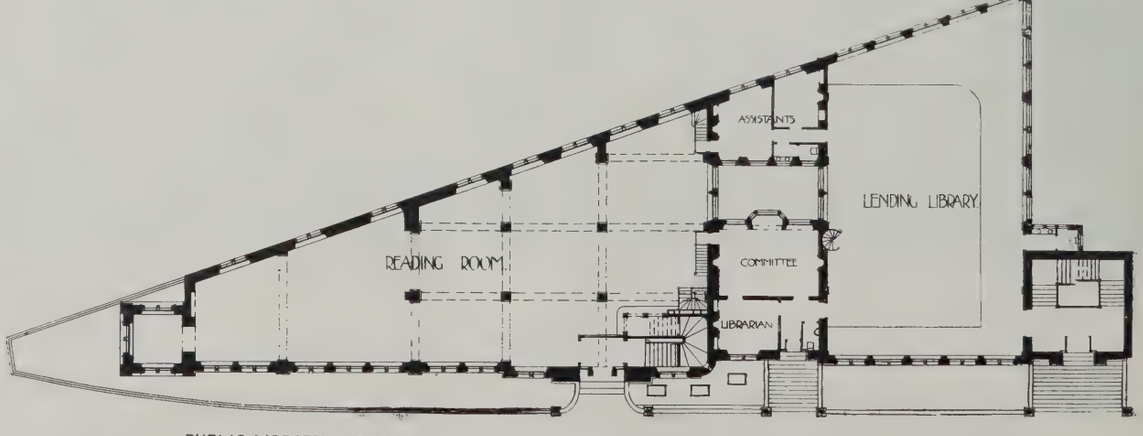
The symmetrical portion of the buildings on the right-hand side of the pictures held the original library, opened in 1890 by Mr. Carnegie. It contained three floors of equal area, and provided at the time ample accommodation. The reading-room was in the basement, the lending department on the ground-floor, and the reference-room on the first floor, while off each floor were staff-rooms and other suitable accessories.

After some ten years' experience of the buildings it was agreed to extend them westward. The reading-room particularly was found to be congested, and the stairs to the basement level were difficult to negotiate. Accordingly the whole of the ground floor of the new area was devoted to reading-room purposes. A portion only of the new building was carried into a second storey, and here additional accommodation was found in connection with the reference department.

The style of the extension is in keeping with the character of the original building, and the note of unity has been maintained throughout. Advantage has been taken of the change in the building line and the difference of the floor levels to introduce variety in the details of the front elevation, although these conditions added considerably to the difficulty of designing an addition to an already symmetrical and balanced building.

The front is wholly built of white Kemnay granite, fine axe-dressed, and the roofs are covered with Coniston green slates. The stairs are constructed of Stuart's granolithic steps, and the whole of the furnishings are in American oak.

The architects are Brown and Watt, of Aberdeen, and the following are the contractors for the work:—Mason work, R. Beattie and Son; carpentry, George Jamieson; slate work, George Farquhar; plasterwork, James Simpson; plumbing, James Monro; painting, W. L. Leslie; steel work, J. A. Sangster; heating and electric lighting, Claud Hamilton, Ltd.—all of Aberdeen.

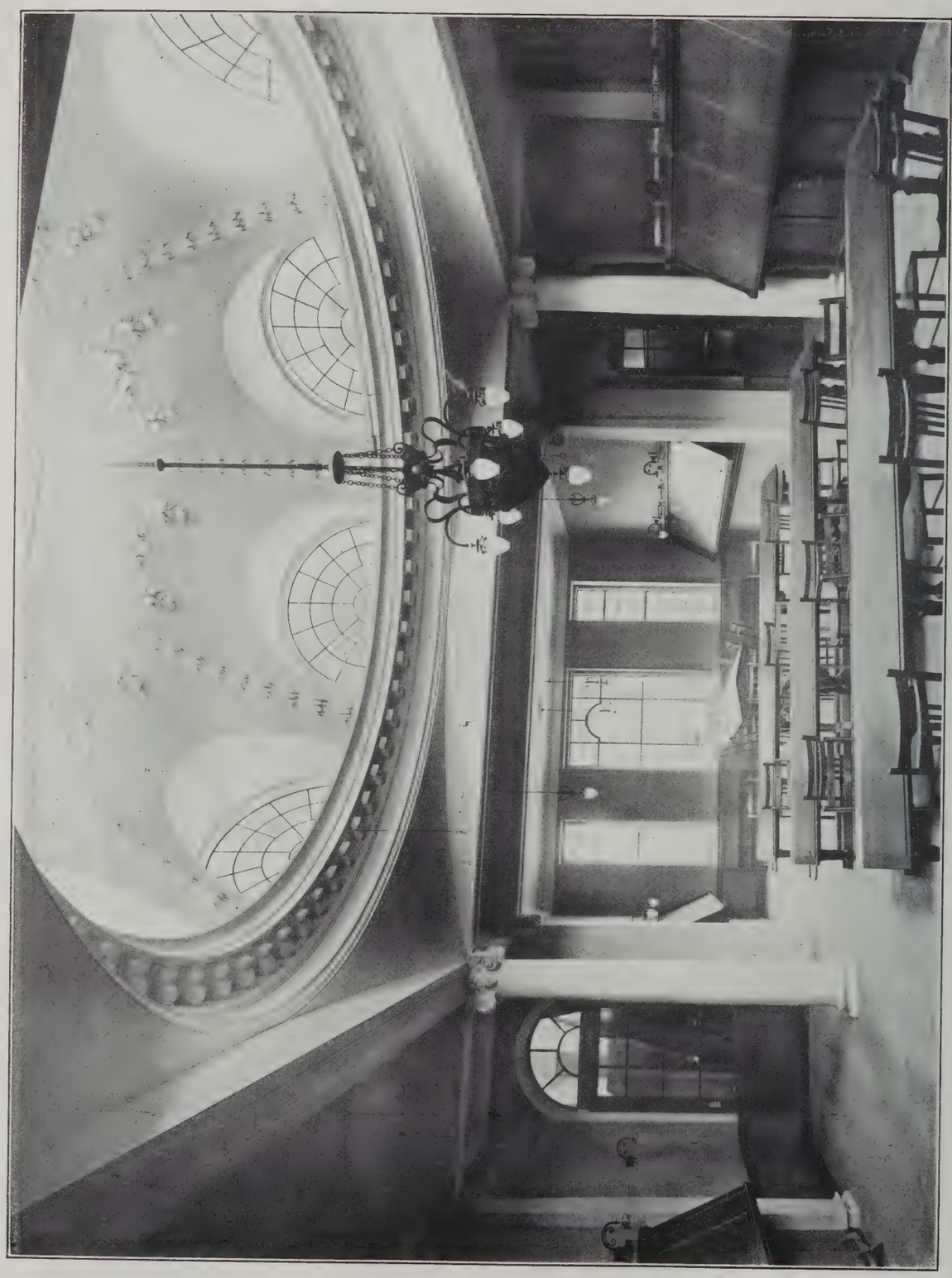


PUBLIC LIBRARY, ABERDEEN, GROUND PLAN. BROWN AND WATT, ARCHITECTS.



Photo: Arch. Review Photo Bureau.

BRANCH LIBRARY, LONDON ROAD, GREENWICH WILLS AND ANDERSON, ARCHITECTS.



BRANCH LIBRARY, LONDON ROAD, GREENWICH: NEWS AND MAGAZINE ROOM. WILLS AND ANDERSON, ARCHITECTS.

Photo: Arch. Review Photo Bureau.



Photo: Bedford Lemere & Co.

PUBLIC LIBRARY, ABERDEEN. BROWN AND WATT, ARCHITECTS.

NEW PREMISES FOR MESSRS. MAPPIN AND WEBB, OXFORD STREET, LONDON.

This building, which has been erected for the West End showrooms of Messrs. Mappin and Webb, is faced externally with Pentelikon marble, which is obtained from the quarries near Athens from which material for the Parthenon was obtained. The columns on the front are monoliths 20 ft. in length. The fronts on the ground and mezzanine floors are entirely of bronze.

The greater portion of the new basement was executed before the old building was destroyed and while business was going on in the ground and upper floors. This necessitated shoring up the whole of the old buildings, several pieces of which were very intricate work. The work was so arranged by the general contractors that the business of Messrs. Mappin and Webb was not suspended for one moment. Show-cases were made and fixed in the hoarding with almost as much space as the old fronts possessed. The panelling around walls of board-room, mantles, mahogany partitions, the whole of the joinery and the major portion of the fittings, were manufactured by the general contractors.

The ground floor is occupied by a fine show-room, which covers a space of about 5,400 sq. ft. The walls and columns are faced with Siena and statuary marble, giving a delicate white and gold effect which harmonises with the cases of silverware and jewellery. The ceiling is divided into panels by the main beams, and is enriched with modelled ornament. The eight-armed electroliers in the centre of each panel are of silvered bronze, specially designed. The interior is lighted by a central dome, and the rear portion by stained-glass windows, exhibiting the heraldic arms of the various cities at home and abroad in which the firm has branches. A special feature is the chimneypiece—of marble.

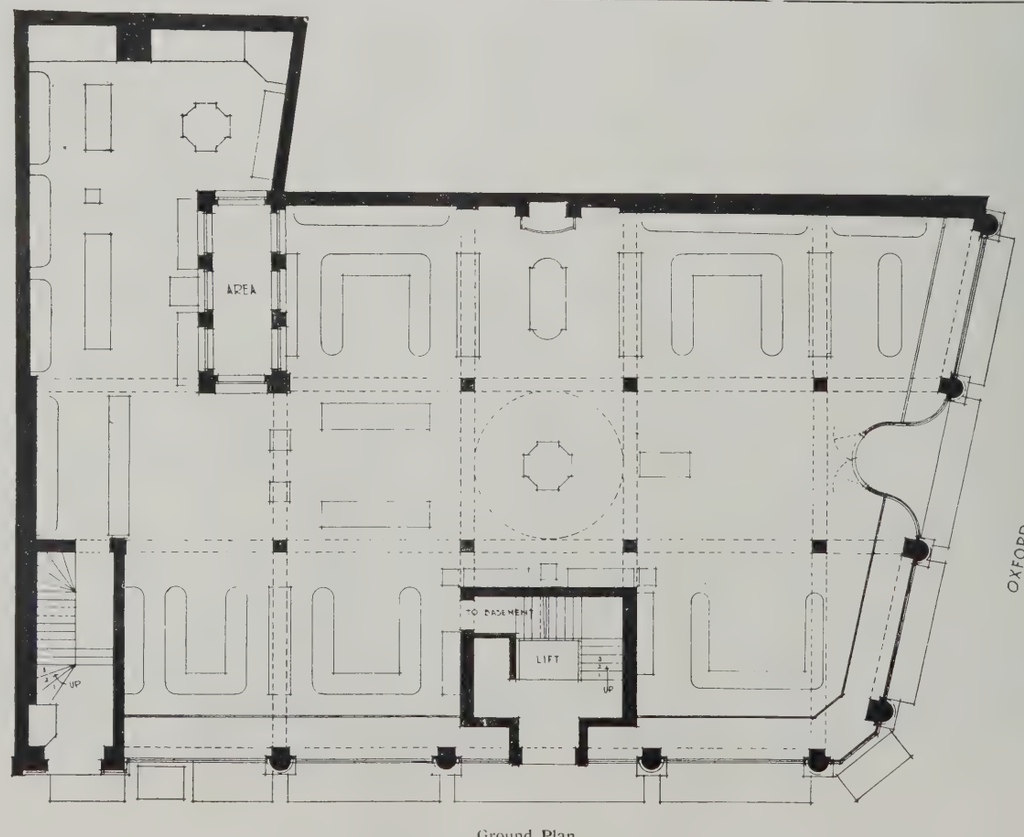
In the basement, for which a special retaining wall was built, are located the strong-rooms, cleaning, packing, and dispatch departments, both for home and export trade, and the general staff accommodation. The basement is lighted by pavement lights.

On the mezzanine floor are the board-room, secretarial and private offices, and the counting house, all finished in fine figured mahogany. The five upper floors are approached by a separate entrance and staircase, with an electric lift. These floors are so arranged that they can either be used as showrooms, or sublet as offices and business premises. They are lighted by steel-framed casements with gun-metal fittings; those on the first floor are of solid gun-metal. The windows occupy the entire space between the marble piers of the facade. The landing, lift, and staircase are separated from the remainder of the building by teak glazed partitions, glazed with fire-resisting glass.

Ample lavatory accommodation, with hot and cold water, is provided on each floor.

The oak parquet floors are of selected Austrian oak. The general contractors were G. Godson and Sons. The following are some of the sub-contractors:—

Pentelikon marble facings: Marmor, Ltd. *Retaining wall to site*: Columbian Fireproofing Co., Ltd. *Floors*: Kleine Fire-resisting Flooring Syndicate. *Tiles*: Craven Dunhill and Co. *Casements and fittings*: Hy. Hope and Sons, Ltd. *Fire-resisting glazing*: British Luxfer Prism Syndicate, Ltd. *Grates and art metalwork; special designs in bronze*: J. W. Singer and Sons, Ltd. *Sanitary ware and fittings*: Shanks and Co., Ltd.; Geo. Jennings, Ltd.; Doulton and Co., Ltd. *Parquet flooring*: Howard and Sons. *Plasterwork (modelled)*: George Jackson and Sons. *Electric light fixtures*: F. and C. Osler, Ltd. *Door furniture, casement fittings, and gearing*: Jas. Gibbons. *Lifts*: Archibald Smith and Stevens. *Show-cases*: Farmer and Brindley, Ltd. *Show-cases*: Harris and Sheldon; H. B. Laister; John P. White. *Pavement lights*: Improved Pavement Lights Co. *Constructional steelwork*: Edward Wood and Co. *Patent partition bricks*: Leeds Fireclay Co., Ltd.



Ground Plan.

NEW PREMISES FOR MESSRS. MAPPIN AND WEBB, OXFORD STREET, LONDON. JOHN BELCHER, ARCHITECT.



Photo: Arch. Review Photo Bureau.

NEW PREMISES FOR MESSRS. MAPPIN AND WEBB, OXFORD STREET, LONDON. JOHN BELCHER, A.R.A., ARCHITECT.



Photo: Arch. Review Photo Bureau.

NEW PREMISES FOR MESSRS. MAPPIN AND WEBB, OXFORD STREET, LONDON: VIEW IN THE SHOWROOM, GROUND FLOOR. JOHN BELCHER. A.R.A., ARCHITECT



Photo: Arch. Review Photo Bureau.

NEW PREMISES FOR MESSRS. MAPPIN AND WEBB, OXFORD STREET, LONDON: CHIMNEY PIECE IN THE SHOWROOM. JOHN BELCHER, A.R.A., ARCHITECT.

NEW ROYAL INFIRMARY, MANCHESTER.

The new Infirmary buildings which have been erected in Oxford Road and Nelson Street, Manchester, are to be opened by the King early in the new year. The old Infirmary buildings are situated in Piccadilly, but when the question of erecting a new building was proposed, it was decided to do so on an entirely new site, and the present site is largely the gift of the late Sir Joseph Whitworth, to which additions have been made by purchase, increasing its area to nearly 13 acres. For the buildings a competition limited to five architects conversant with hospital work was held, and the assessor, Mr. J. J. Burnet, A.R.S.A., selected the design of Mr. Edwin T. Hall and Mr. John Brooke.

In the new building provision is made for 592 patients and 339 resident officers, nurses, and servants. In all there are forty-eight separate blocks erected at a cost of about £500,000. The general disposition will be noted from the plans. The main frontage to Oxford Road shows the centre administration building flanked by the teaching department on the left hand, and the Female Staff Home on the right. On the Oxford Road frontage is the Out Patients' Department and Casualty Department. Each frontage has an entrance lodge by which all traffic must pass. The whole of the buildings are connected by covered ways, and while the distances separating the blocks are comparatively small, plenty of fresh air is provided. The whole of the internal traffic of the hospital is thus under cover. The sides of the covered ways are only enclosed to a height of 4ft., so that while fully protected by these sides and the overhanging glass roofs from the weather, the air has free access. Under these covered ways are subways in which all the heating, hot-water, steam, gas, and cold-water mains are laid, as well as the electric mains and telephone wires, so that they can be attended to without in any way interfering with the regular traffic of the institution. The wards are built on the pavilion system, with spaces of 60ft. between. Out of the ten pavilions six are allocated to surgical cases, and four to medical cases. Five pavilions have three floors, and the other five two floors, providing in all twenty-five large wards. All the pavilions lie north to south, so that the wards receive direct sunlight. They also lie at right angles to the covered ways, and the distance from the Administrative centre is reduced to a minimum. All the pavilions have open-air space between the lowest floor and the ground. In the basement are the branch mains from the various services, from which vertical pipes ascend direct to the wards. All horizontal pipes liable to collect dirt are thereby avoided. The staircases in all cases extend to the flat roofs, which are available for promenade purposes. Each ward has three small wards attached to it, one for two beds and two for one bed each. There is also a ward kitchen, linen room, and clothes store. The sanitary conveniences are situated in detached towers at the end of the wards. All the windows have fanlights at the top, with side draught protectors, and a special glass was utilised largely for the lower windows. This is the morocco pattern figured rolled glass; while showing obscure pattern, it is smooth on both sid thus fulfilling the sanitary requiremer of the Infirmary Committee.

The floors are of smooth concre covered with linoleum, but Dolome jointless flooring has been used throug out in the small wards. The skirtings a of teak, hollowed out to an easy cur and all wall and ceiling junctions a joined with a curve and painted a varnished. "Gilmour" hospital doo absolutely flat and smooth on both sid and made of polished wainscot oak, ha been used throughout the wards. T wards are heated by hot water, with rad tors hinged so that they can be eas cleaned. In the operating theatre the is a new feature in the shape of a sm gallery to accommodate some twenty-fo students, which is shut off from the oper ing part of the theatre by a plate-gl screen 7ft. high, designed to interce dust, but not to cut off a clear view or t sound of the surgeon's voice. A separ door connects this gallery directly w the lobby. The theatre walls are lin with Sicilian marble to a height of 7 and above with reconstructed marble; t ceiling is glazed with opal tiles, and t floor is of terrazzo. The surgical a sterilising appliances are kept in an anne communicating with the theatre throu an open archway.

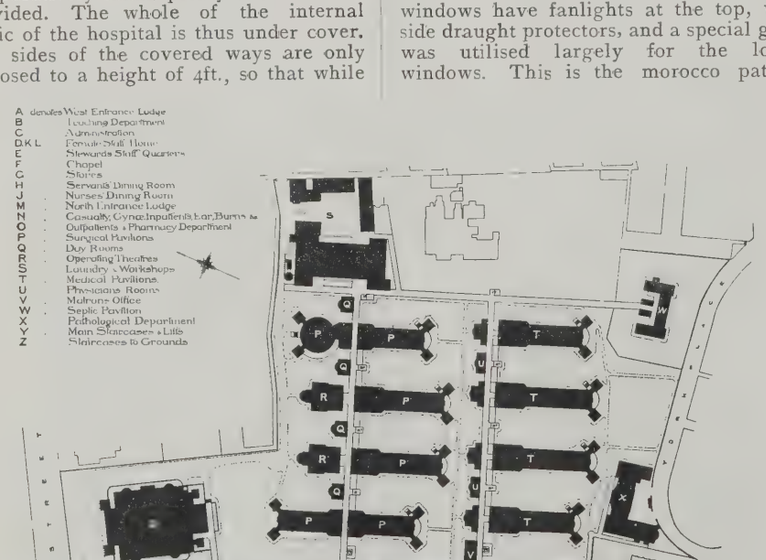
The exterior elevations are faced w red brick and Portland stone dressin The stained-glass window in the cha was given by the general contractors, a the frontal and curtains of the chapel w the gift of Mr. Edwin T. Hall.

The general contractors were Mess Harold Arnold and Son, of Doncast

Sculpture and carving: Gilbert Seale, Ltd., L don. *Window in chapel*: J. Dudley Forsyth, L don. *Sanctuary railing*: Veritys, Ltd., Manch ter

The following are some of the sub-c tractors:—

Glazed bricks: Burmantofts, Ltd., and Farn Iron Co., Leeds. *Portland stone*: The Bath St Firms, Ltd., Bath. *Granite*: Brookes, Ltd., M chester. *Artificial stone paving*: Hard York N slip Stone Co. (branch of Brookes, Ltd.), Lond *Mosaic pavements, etc.*: Rusts Vitreous Mos Co., London. *Jointless flooring*: British Dolom Co., Ltd., London. *Terrazzo flooring and opal ceilings*: The Art Pavements and Decoration Ltd., London. *Pavement lights*: St. Panc Ironworks Co., Ltd., London. *Marble wall co ings*: J. and H. Patteson, Manchester; Bri Stone and Marble Co., London. *Wall tili* T. and R. Boote, Burslem. *Heating and water plant and piping, steam mains, e* Dargue Griffiths and Co., Liverpool. *Hitc plant, steam and electric sterilizers, m pasteurisers*: James Slater and Co., L London. *Plastering*: S. Johnson and Son, M field. *Water closets, sanitary fittings, etc.*: Do ton and Co., London. *Kelvin taps*: The Palat Engineering Co., Liverpool. *Glazing*: Pilking Bros., Ltd., St. Helens. *Casements*: Geo Wragge, Ltd, Manchester. *Theatre gallery fr ing*. W. Shrivell, London. *Electric light fittin* Veritys, Ltd., Manchester; J. W. Singer and So Ltd., Frome; the General Electric Co., Ltd. M chester. *Oak hospital doors*: The Gilmour Door Ltd., London. *Locks, door furniture, and fanli gearing*: Colledge and Brigden, Wolverhampt *Folding partitions*: Peace and Norquoy, M chester. *Bronze panels*: J. W. Singer and So Ltd., Frome. *Chimneypieces and grates*: Ya Haywood and Co., London; Fletcher, Russell Co., Ltd., Manchester; Well Fire Co., Manchest Doulton and Co. (Faience), London. *Gas closets*: Richard Crittall and Co., London. *enclosures*: Brookes and Co., Manchester. *Ga and railings, staircase balustrade and fittings clothes and boot stores*: Cunliffe and Dean, M chester. *Furnishing*: Goodalls, Lamb and Hei way, Ltd., Manchester. *Operation theatre fur ture, instruments, etc.*: James Woolley, Sons a Co., Ltd., Manchester.



BLOCK PLAN



The West Entrance Lodge and Administration Block beyond.



Photos: Entwistle, Thorpe and Co.

The Nurses' Dining Room.

NEW ROYAL INFIRMARY, MANCHESTER. EDWIN T. HALL AND JOHN BROOKE, ASSOCIATE ARCHITECTS.



Lecture Theatre.



The Museum. *Photos: Entwistle, Thorpe & Co.*

NEW ROYAL INFIRMARY, MANCHESTER. EDWIN T. HALL AND JOHN BROOKE, ARCHITECTS.



Photo: Entwisle, Thorpe & Co.

NEW ROYAL INFIRMARY, MANCHESTER. THE CHAPEL. EDWIN T. HALL AND JOHN BROOKE. ASSOCIATE ARCHITECTS.



A Medical Ward.



The Kitchen. *Photos: Entwistle, Thorpe & Co.*

NEW ROYAL INFIRMARY, MANCHESTER. EDWIN T. HALL AND JOHN BROOKE. ASSOCIATE ARCHITECTS.

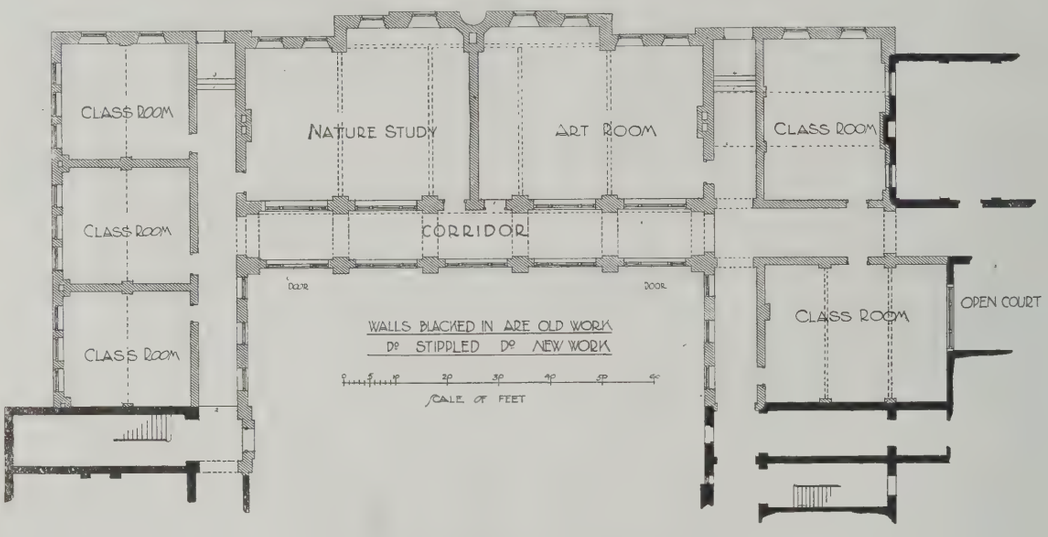


Photo: Arch. Review Photo Bureau.

ADDITIONS TO THE GOLDSMITHS' COLLEGE, NEW CROSS, LONDON. REGINALD BLOMFIELD, A.R.A., ARCHITECT.

ADDITIONS TO THE GOLDSMITHS' COLLEGE, NEW CROSS.

These additions, which have recently been completed, consist on the ground floor of five class-rooms, a large art room, and a large room for nature study. On the first floor are two rooms for crafts, a costume-life room, a design room, museum, and nature-study room, the head art-master's room, lavatory, and cloak room. On the second floor are two rooms for crafts, lecture room, nude-life room, higher-painting room, three modelling rooms, and casting room, with lavatories, etc. The facings are of red brick, with Portland stone dressings, and the roof is covered with Westmorland green slates. The older building, described in one of the Sunday papers as a charming Georgian building, was, in point of fact, built about 1840, and formed an indifferent example in brick and stucco of the heavy classic of the time. The general contractor for the new work was J. Carmichael, of Wandsworth. The sanitary work and heating was carried out by Burn Brothers, and the carving was executed by W. Aumonier and Son to the designs and under the supervision of the architect, Mr. Reginald Blomfield, A.R.A.



THE NORWICH UNION SOCIETY'S HEAD OFFICE, NORWICH.

This building, designed by Messrs. G. J. and F. W. Skipper, has been carried out in selected stone from the Clipsham Quarries, except the two statues, which were executed in Portland stone.

With regard to the interior, the requirements included a large general office, as well as many other smaller offices. The general office has been made the chief feature of interest, the other offices being placed around it. The necessity for providing ready access from this central domed hall to the other rooms suggested an open colonnade on the ground floor, and on the upper floor corridors are arranged giving access to the rooms occupied by the directors (board and committee rooms, etc.) on two sides, and the two other sides by offices.

The whole of the interior of the central hall has been carried out in marble from floor to ceiling. The columns, which are all structural, are monoliths of cipollino and verde antico marble. The caps and bases are in white statuary. The entablature is of alabaster, and the lining of the walls is of Skyros marble of a deep red veining below the impost moulding, and above the impost moulding of the greyer description of veining. The spandrels above the arches are panelled out with white marble used for the surround, and cipollino and porphyry-coloured rosso antico fill in the oblong panels; the cornice is in alabaster. The whole of the ceiling has been executed in plaster and painted. The floor for the chief part is polished marble, except where the clerks stand, and there the floors are laid in oak parquetry.

The interior of the hall is lighted by electric lamps hidden in flat bronze basins and behind the cornice in the dome, so that the light is reflected to the ceiling, and the glare of the lamps is entirely avoided. The desk lamps for the clerks are screened by green silk shades, so that every precaution has been taken to ensure the successful lighting of the building and the protection of the eyesight of the workers. Fresh warmed air enters this part of the building through a specially designed opening or fountain in the centre of the hall, and is dispersed by a canopy suspended immediately above it from the centre of the dome; surmounting this canopy is a suitable bronze figure, the work of H. C. Fehr. Two bronze sculptured subjects have been placed in panels in the vestibule under the titles "Solace" and "Protection," with special reference to the objects of the society.

Mr. J. Hurn, Norwich, was contractor for the foundations, and Messrs. G. E Hawes and Son, Norwich, were general contractors for the superstructure. The following were some of the sub-contractors :—

Constructional steelwork to dome, hollow brick floors to flat roofs, and asphalte: Homan and Rodgers, London. *Stoves, grates, and mantels*: Longden and Co., London; Artificers' Guild, Ltd., London. *Oak wood block flooring*: Art Pavements and Decorations, Ltd., London. *Marble work, staircase, and floors*: Farmer and Brindley, London. *Electric wiring, bells, and telephones*: Drake and Gorham, Ltd., London. *Fibrous and modelled plaster*: G. Crotch, Norwich. *Special woodwork and carving*: H. H. Martyn and Co., Ltd., Cheltenham. *Stained glass and leaded lights*: A. J. Dix, London; W. J. Neatby, London. *Painted frieze in directors' luncheon room*: W. J. Neatby, London. *Electric service lifts*: R. Waygood and Co., Ltd., London. *Cut metal work and electric light fixtures*: The Artificers' Guild, Ltd., London; J. W. Singer and Sons, Ltd., Frome. *Door furniture, etc.*: Jas. Gibbons, Wolverhampton. *Heating and ventilating*: James Keith and Blackman, Ltd., London. *Safes, strong room doors*: Milner's Safe Co., London. *Lightning conductors*: Gray and Co. *Luxer fire-resisting, glazing, and pavement lights*: British Luxfer Prism Syndicate, Ltd. *Fire-resisting floors, ceilings, and roofs*: Mark Fawcett and Co., London.

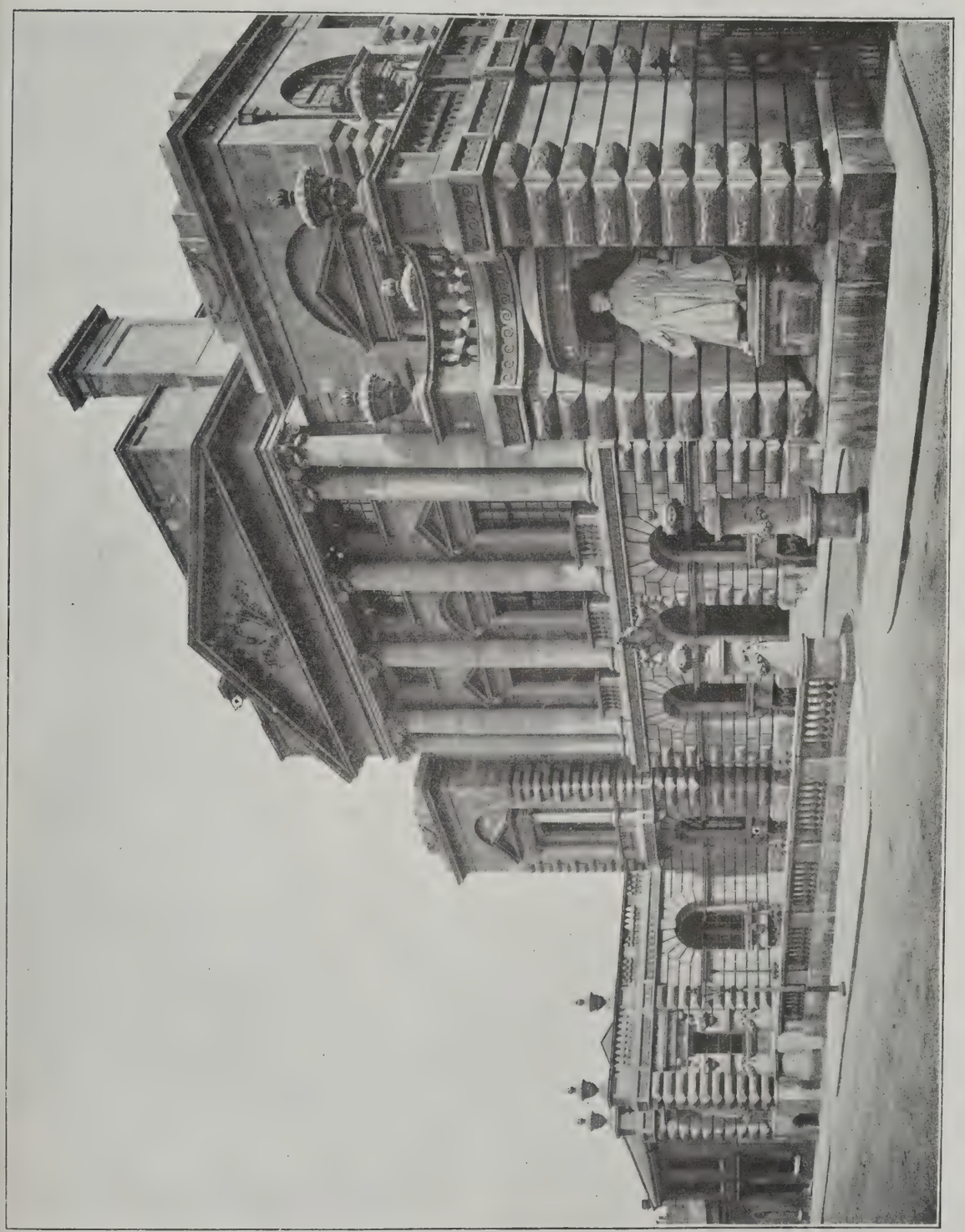


Photo: Knights Whittome.

THE NORWICH UNION SOCIETY'S HEAD OFFICE, NORWICH: GENERAL VIEW OF FACADE. G. J. & F. W. SKIPPER, ARCHITECTS.



Photo: Knights Whittome.

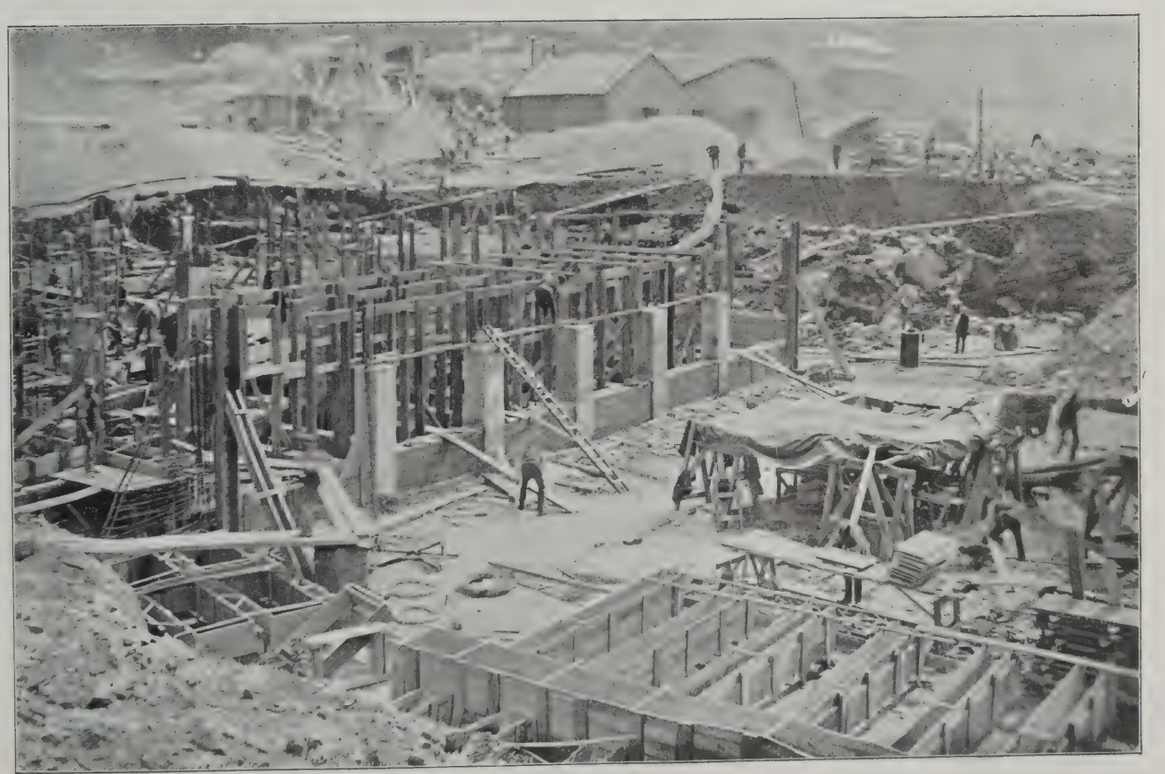
THE NORWICH UNION SOCIETY'S HEAD OFFICE, NORWICH: GENERAL VIEW OF GENERAL OFFICE. G. J. & F. W. SKIPPER, NORWICH.

SOME REINFORCED CONCRETE BUILDINGS, 1908.

(*Continued from page 112.*)



UNION OF LONDON AND SMITH'S BANK, HULL; THE CUPOLA. DUNN AND WATSON, ARCHITECTS. Cubitt Concrete Construction Co., Contractors.



BRITISH ALUMINIUM CO.'S WORKS (FOUNDATIONS, BUNKERS AND CULVERT), KINLOCHLEVEN ARGYLLSHIRE.
Coignet Re-inforcement. Robert MacAlpine & Sons, Contractors and Licensees.



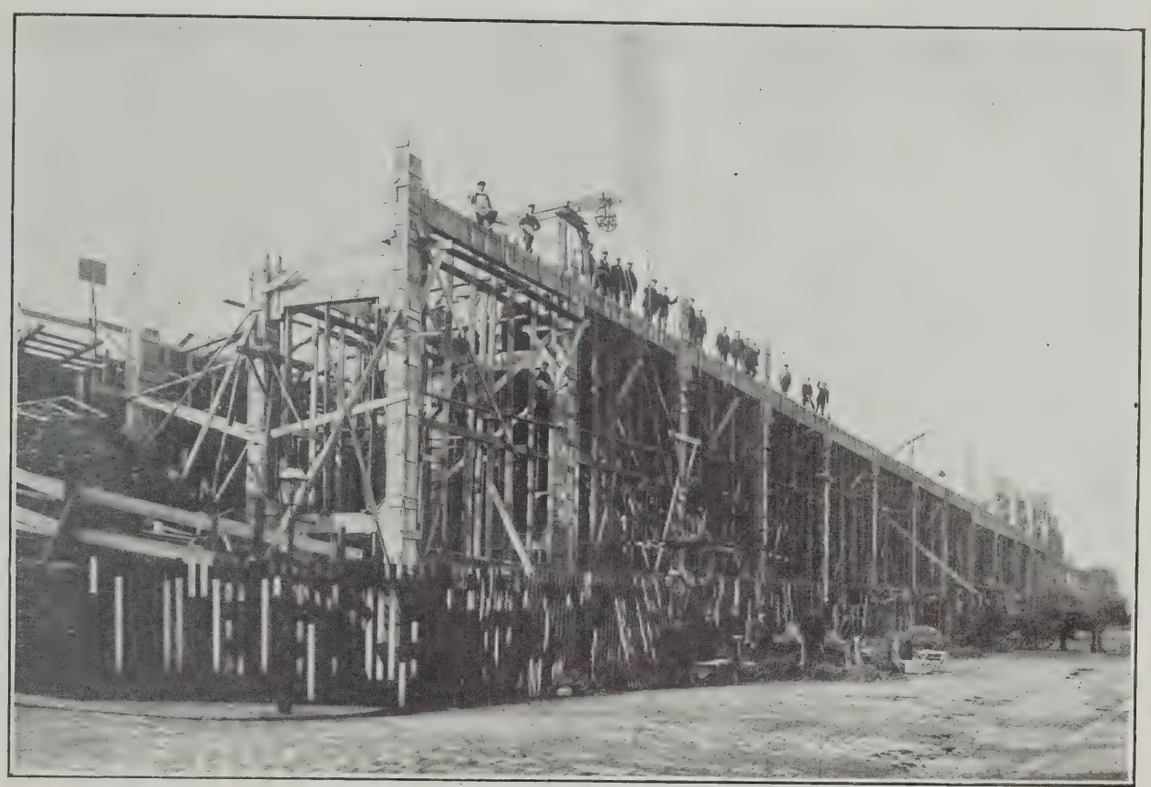
Showing an Upper Completed Floor and Forms for another Floor.



View of one of the Floors.

EXTENSION OF CAXTON HOUSE, WESTMINSTER.

Hennebique Reinforcement. Holloway Bros. (London), Ltd., Contractors.



BRADFORD FOOTBALL STAND. Kahn Reinforcement.



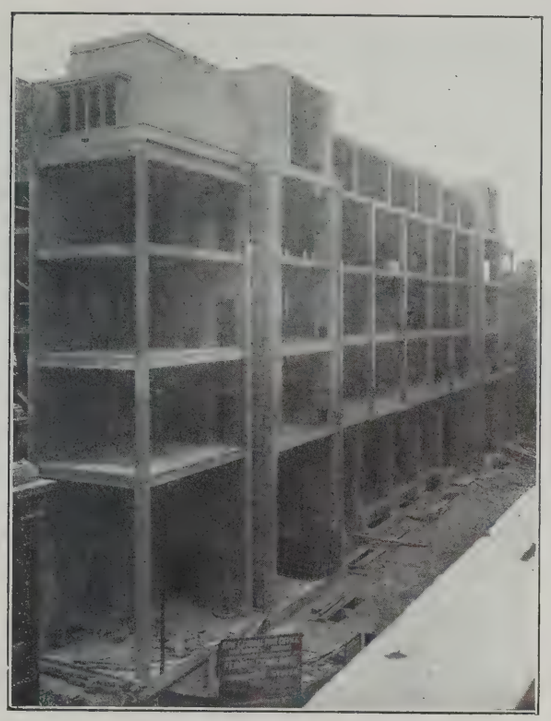
KODAK CO.'S PREMISES, WEALDSTONE. 36 FEET LONG. S. O. HANS, ENGINEER.
Kahn Reinforcement.



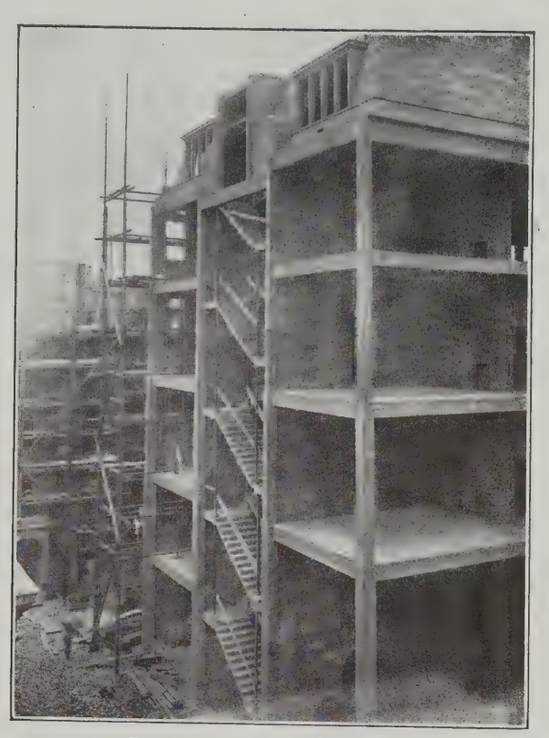
SELFRIDGE STORES, OXFORD STREET, LONDON, W. D. H. BURNHAM AND CO., ARCHITECTS.
Construction of Basement Floor. Indented Bar Reinforcement. The Waring-White Building Co., Ltd., Contractors.



BLACKLEY STORES, LIVERPOOL, SHOWING FLOOR CONSTRUCTION. AUBREY THOMAS, ARCHITECT.
Indented Bar Re-inforcement. Henry Johnson and Sons, Contractors.



Front Elevation of Public Office Block.



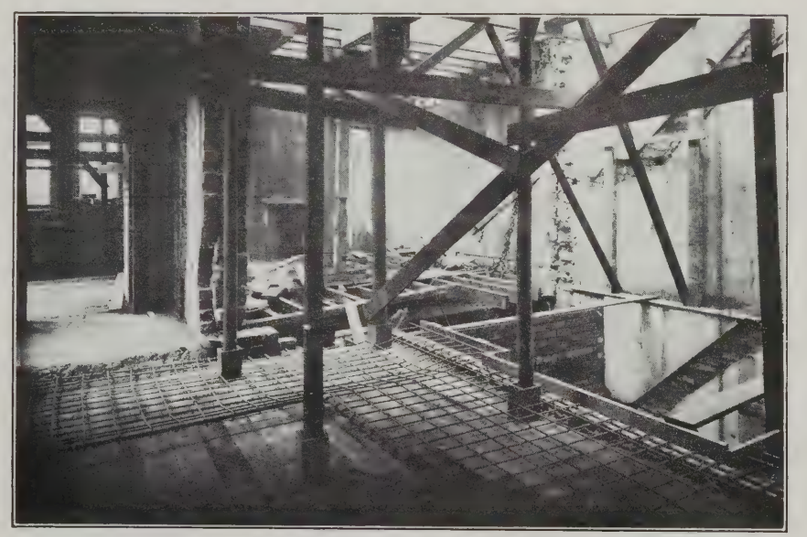
End Elevation of Public Office Block.



Back Elevation of Public Office Block.

THE GENERAL POST OFFICE, LONDON, EXTENSIONS. SIR HENRY TANNER, OF H.M. OFFICE OF WORKS. ARCHITECT.

Hennebique Reinforcement. Holloway Bros. (London), Ltd., Contractors.



Second floor staircase landing in course of construction.



Interior views of one of the floors.



Part of the flat roof.



The top floor.

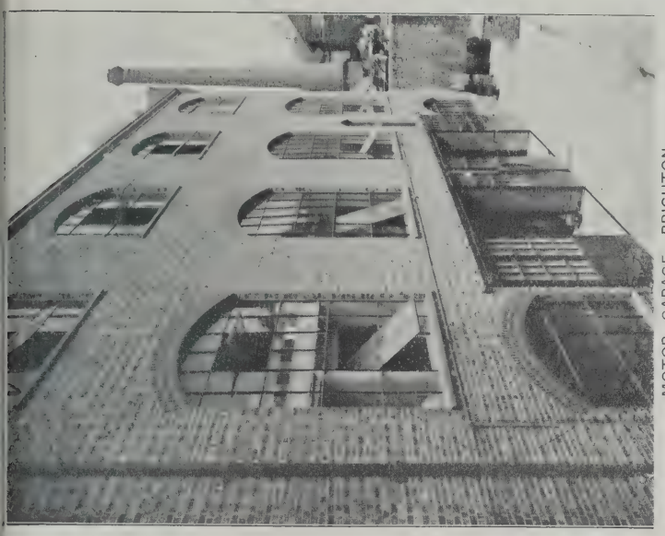
WAREHOUSE, WEST BAR, BOAR LANE, LEEDS.

BULMER AND PERKINS, ARCHITECTS. Henry Atkinson and Sons, Contractors and Licensees,

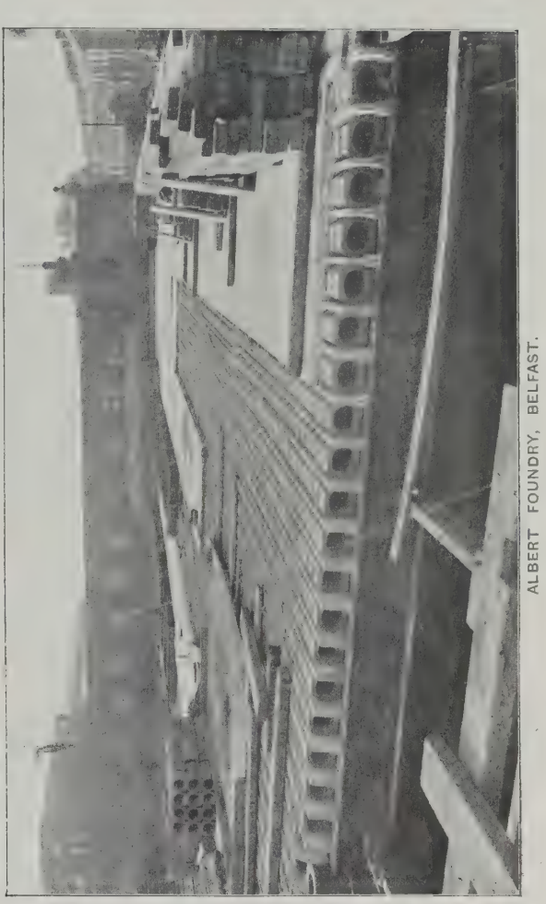
SECOND TOBACCO WAREHOUSE FOR THE BRISTOL CORPORATION.

W. W. SQUIRE, M.I.C.E., ENGINEER. W. Cowlin and Son, Contractors and Licensees.

Coignet Re-inforcement.



MOTOR GARAGE, BRIGHTON.

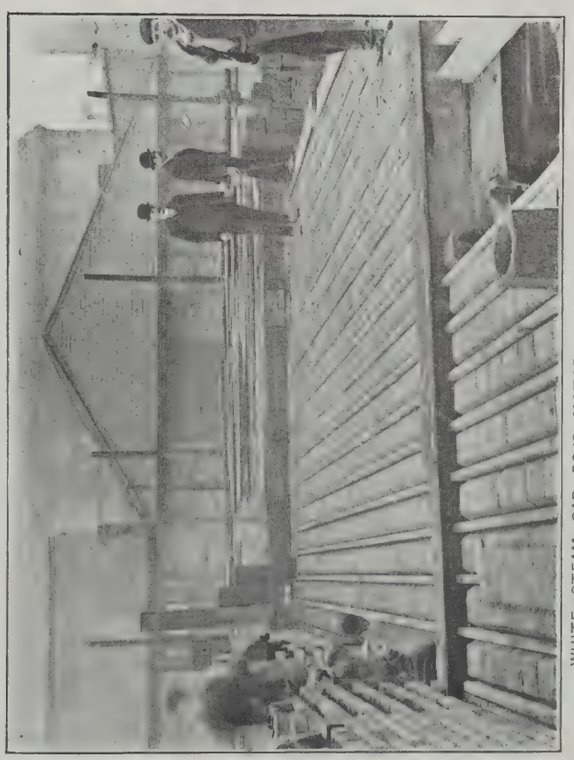


ALBERT FOUNDRY, BELFAST.
View showing portion of Flooring.

Armoured Tubular Floors.



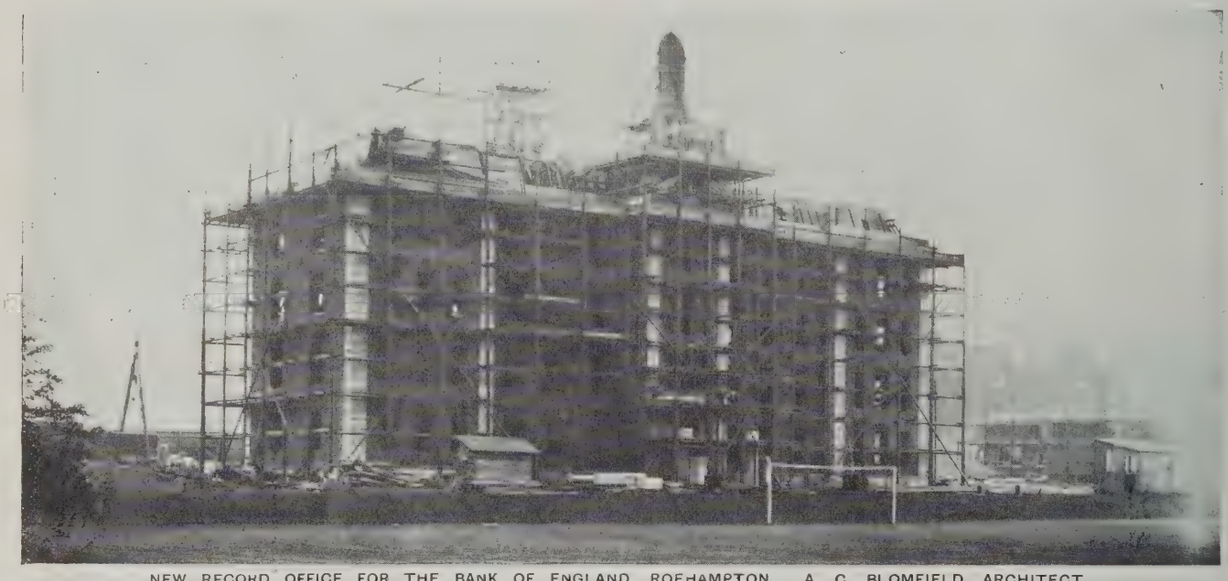
HOSPITAL WARD: CLEAR SPAN 30 FEET.
View shows the Floor under test.



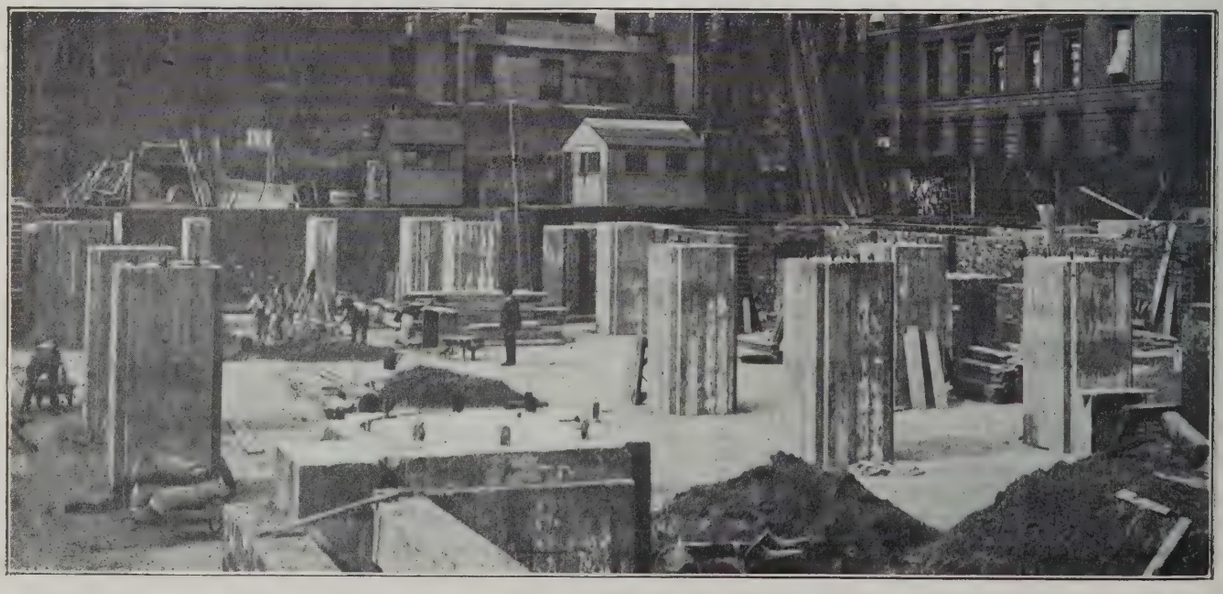
WHITE STEAM CAR CO.'S MOTOR FACTORY, CAMDEN TOWN.
Floor in course of construction.



ADDITIONS TO THE NATIONAL GALLERY LONDON FLOOR CONSTRUCTION. H, N. HAWKS, OF H.M. OFFICE OF WORKS, ARCHITECT
Kahn Reinforcement.



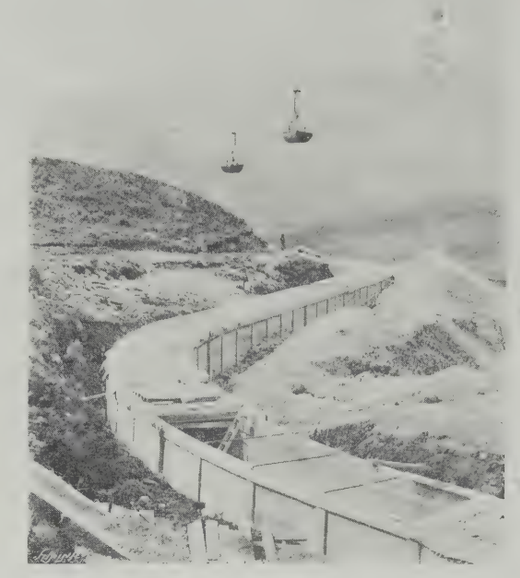
NEW RECORD OFFICE FOR THE BANK OF ENGLAND ROEHAMPTON. A. C. BLOMFIELD, ARCHITECT.
Kahn Reinforcemen in Floors. Round Bar Reinforcement in Columns. Cubitt Concrete Construction Company, Contractors.



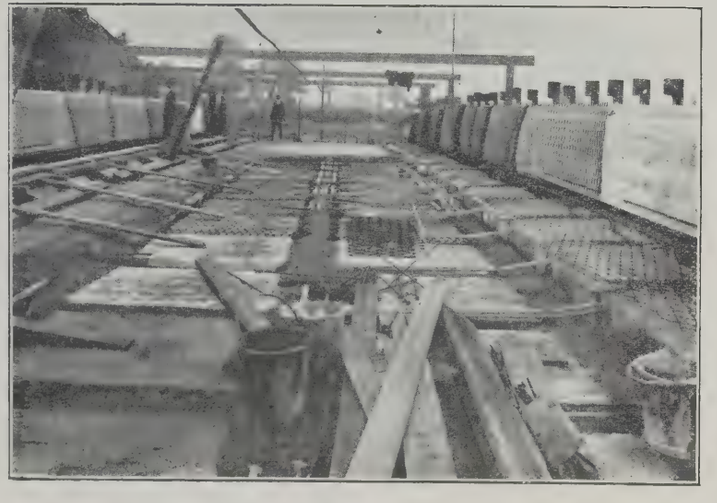
FOUNDATION OF NEW WESLEYAN HALL, WESTMINSTER. LANCHESTER AND RICKARDS, ARCHITECTS.
Kahn Reinforcement.



HULL G.P.O. H.M. OFFICE OF WORKS.
Expanded Steel Concrete Flooring and Steelwork Encasing throughout.



LOCH LEVEN WATER POWER. Conduit 8½ miles long.
Expanded Steel Concrete throughout.



REINFORCED CONCRETE BRIDGE, 85 FEET CLEAR SPAN.
Showing Expanded Steel and Bar Reinforcement.



ROYAL NAVAL TRAINING ESTABLISHMENT, SHOTLEY.
New General Block to Hospital. Expanded Steel Concrete Flooring throughout.



One of the Floors.



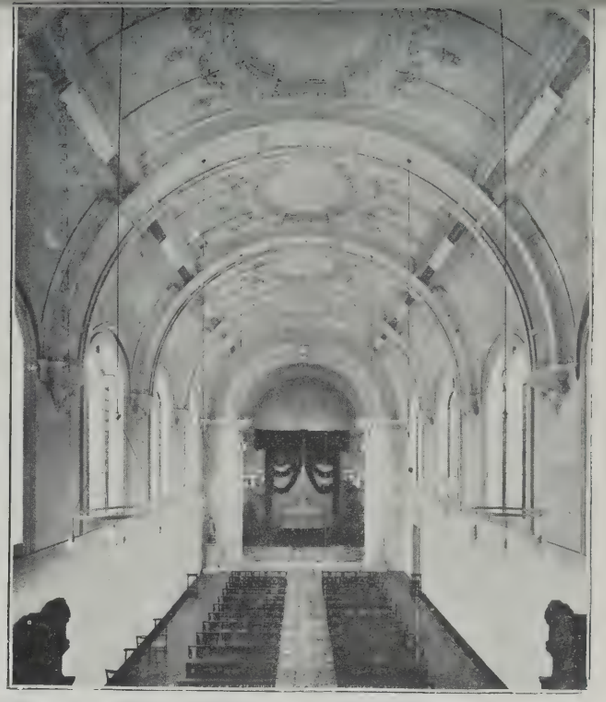
General View.

THE NEW TELEGRAPH STORES, BIRMINGHAM. H.M. OFFICE OF WORKS.

Kahn Reinforcement. Cubitt's Concrete Construction Co., Contractors.



NORWICH UNION SOCIETY'S PREMISES, PICCADILLY, LONDON.
Floors of Somerville Hollow Reinforced Concrete Block System.



ST. CHARLES CHAPEL NOTTING HILL. Reinforced concrete roof.
D. G. Somerville and Co., Contractors.



BRIDGE FOR EAST ASHFORD U.D.C.
Kahn Reinforcement. D. G. Somerville and Co., Contractors.



MODEL BAKERY FOR MACVITIE AND PRICE, BISCUIT MANUFACTURERS, FRANCO-BRITISH EXHIBITION. D. G. Somerville and Co., Contractors.



RHYL PAVILION: EXTERIOR.



RHYL PAVILION: INTERIOR.

Indented Bar Reinforcement.



FACTORY AT CLECKHEATON, YORKSHIRE. HOWARTH AND HOWARTH, ARCHITECTS.
Chain Concrete Construction.



TOP FLOOR, UNDER FLAT ROOF, OF FACTORY NEAR BRADFORD.
Chain Concrete Construction.



WHITBREAD AND CO.'S CROYDON STORES. Cubitt Concrete Construction Co.



BOURNEMOUTH GAS WORKS, POOLE. Cubitt Concrete Construction Co.


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